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ABSTRACT BOOK

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Meeting Chair
Mario De Gennaro

1 - TRAJECTORIES OF CHILDHOOD URINARY INCONTINENCE AND THEIR ASSOCIATION WITH LOWER URINARY TRACT SYMPTOMS IN YOUNG WOMEN FROM A UK COHORT

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INTRODUCTION AND AIMS

Few studies have examined the prognosis of different patterns of childhood urinary incontinence (UI) into adulthood. We examined whether different patterns of childhood UI are differentially associated with lower urinary tract symptoms (LUTS) at age 19.

MATERIALS AND METHODS

The sample comprised 4,244 girls from the Avon Longitudinal Study of Parents and Children (ALSPAC: http://www.bristol.ac.uk/alspac). We used latent classes of bedwetting and daytime wetting from 4 – 9 years: normative development of bladder control (69.0%), delayed (8.6%), persistent (day and night) wetting (5.1%), daytime wetting alone (8.6%) and bedwetting alone (8.7%). Female ALSPAC participants completed the ICIQ-FLUTS at age 19 (n= 1,594). We estimated rates of LUTS at age 19 across the five latent classes of childhood UI using Latent Gold.

RESULTS

Compared to girls with normative development of bladder control in childhood, there was over a fivefold increased rate of UI at age 19 among those with persistent (day and night) wetting (22.2% vs. 4.3%, p<0.001) and nearly a fourfold increase in UI in those with daytime wetting alone (16.5% vs. 4.3%). Girls with persistent wetting had more than double the rate of urge incontinence at age 19 compared to the normative class (35.1% vs. 16.8%, p<0.001). The rate of urgency was almost doubled in young women with childhood daytime wetting compared with the normative class (19.8% vs. 10.3%, p=0.065).

INTERPRETATION

We find strong evidence that girls who experience persistent (day and night) wetting and daytime wetting at 4–9 years have an increased rate of LUTS at age 19 compared to those with normative development of bladder control.

CONCLUSIONS

Increased evidence about the prognosis of childhood UI is needed to identify girls at risk of persistent problems with LUTS. This knowledge could aid early interventions to reduce the burden of this common health problem.

2 - POOR SCHOOL TOILET QUALITY IS ASSOCIATED WITH BLADDER AND BOWEL DYSFUNCTION IN CHILDREN

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INTRODUCTION AND AIM OF THE STUDY

Behaviour regarding toilet visits may influence both bowel and bladder function in children. The aim of this study was to evaluate children's behaviour regarding toilet visits at school, their assessment of toilet quality and their association with bowel and lower urinary tract symptoms.

MATERIALS AND METHODS

In 2017 19.577 children (6-18 years) in Denmark participated in this project which consisted of questionnaires on the children's perception of school toilets quality, their behaviour regarding toilet visits as well as reports of urinary incontinence, faecal incontinence, and bowel symptoms suggestive of constipation. Data was collected on the number of toilets per class, the date of the toilets last renovation and the frequency of cleaning. Data was analysed for associations between bowel and bladder symptoms and the children's evaluation of the school toilets as well as their frequency of toilet visits.

RESULTS

Overall, 50% of the children were very unhappy or unhappy with the quality of school toilets with no significant differences between sexes. Up to 25% of all children admitted to always or almost always avoid toilet visits while at school. Mean number of children sharing the same toilet was 17-25 depending on the region. A total of 15% of the 7-year-old children reported urinary or faecal incontinence at least once monthly and the percentage was 2-3% of the 18-year-old. We found significant associations between the reported symptoms and the children's satisfaction with the school toilets. Children who avoid using the school toilets shared odds ratios of 1.95 for reporting faecal incontinence and 1.72 for daytime incontinence.

CONCLUSIONS

Half of the children dislike the school toilets and 25% avoid using them. School toilet quality and behaviour regarding toilet visits seems associated with bowel and bladder symptoms. These disturbing results call for improvement of school toilets.

3 - ENURESIS, LUTD AND CONSTIPATION - A CROSS-SECTIONAL STUDY IN PRIMARY CARE

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INTRODUCTION AND AIM OF THE STUDY

Enuresis, LUTD and constipation are prevalent conditions during in pediatric population but still underdiagnosed and undertreated. This inflicts unnecessary suffering and sickness for millions of children globally. The aim of the study is to estimate the distribution of enuresis, LUTD amongst patients of a primary care unit.

MATERIALS AND METHODS

Cross-sectional study of subjects between 5-17 years of age in a primary care unit. DVSS was applied for the diagnosis of LUTD, Rome IV criteria and Bristol stool scale for the diagnosis of constipation. The data gathered was analyzed by the SPSS 20.0 version program. Categorical data was described with absolute and percentage values. The chi-squared and Fisher's Exact Test were used and a P value <0.05 was considered significant.

RESULTS

92 subjects between 5-17 years of age (mean and median: 10 years of age) were evaluated. 56 were male (60.9%) and 36 (39.1%) female. 10 (10.9%) were waiting for their first consult and 82 (89.1%) for their subsequent consult. 13 (19.1%) subjects were diagnosed with enuresis, 3 (8.3%) of which were female and 10 (17.8%) male (p=0.24). 21 (22.8%) subjects were diagnosed with LUTD and 31 (33.7%) subjects with constipation. Only 1 subject (1%) came to the primary care unit due to enuresis. None of the children were treating enuresis, LUTD or constipation at the time, but all showed interest in starting treatment.

INTERPRETATION OF RESULTS

Enuresis, LUTD and constipation were frequently observed in the population studied. Only a small percentage presented as a concerned for seeking medical care, however all showed interest in starting treatment once the diagnosis and opportunity was provided. This observation may reflect the lack of awareness both by parents and health providers of the impacts of these disturbs.

CONCLUSIONS

The present study shows elevated prevalence and low percentage of diagnose and treatment for pediatric patients within primary care.

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4 - IS OBESITY, INCONTINENCE AND NOCTURIA ASSOCIATED? RESULTS FROM A STUDY ON 4002 CHILDREN AND 2801 ADOLESCENTS

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INTRODUCTION AND AIM OF THE STUDY

Fecal and urinary incontinence are common childhood disorders. Simultaneous obesity is increasingly common. A possible relation between obesity and incontinence has been suggested. The aim of this study was to determine if obesity is associated with fecal incontinence (FI), daytime urinary incontinence(DUI), Enuresis (NE) and nocturia in children at school entrance and in adolescents.

MATERIALS AND METHODS

The study was conducted in the schoolyear 2015/16 and 2016/17. Pupils in first grade and sixth-eighth grade, were interviewed by their school nurse. Completed questionnaires were returned from 4002(95.1%) in the child population and 2801(84.4%) in the adolescent population. Questionnaires included information on age, height, weight and four simple questions on FI, DUI, NE and nocturia.

RESULTS

Mean of children were 6.49±0.41 years (boys), and for girls 6.40±0.37 years. 4.4% boys and 4.3% girls were obese. Overall 11.2% reported FI, 21.8% daytime urinary incontinence, 16.8% enuresis, and 31.4% had nocturia. Obesity (BMI SDS>2) was associated with fecal incontinence in boys (OR1.86 compared to normal weight).

Mean age of adolescent boys was 14.00±0.85 years, and the girls were 13.8±0.84 years. 7.6% boys and 5.5% girls were obese. Overall 2.1% had FI, 4.5% had daytime wetting, 1.0% had enuresis and 32.3% had nocturia. Obesity was significantly associated with nocturia in adolescents (OR1.74-2.01).

INTERPRETATION OF RESULTS

Obesity was only found significantly associated with FI in male children and with nocturia in adolescents. The latter may be explained by nocturnal polyuria as a result of the obesity. Due to low prevalence of obesity among children and low prevalence of FI, DUI and enuresis among adolescents, a relation between these entities cannot be completely ruled out, but obesity seems not to be a key cause of these symptoms.

CONCLUSIONS

Obesity is associated with fecal incontinence in young boys and nocturia in adolescents.

5 - BIOPSYCHOSOCIAL RISK FACTORS AND TRAJECTORIES OF CHILDHOOD BEDWETTING, DAYTIME WETTING AND COMBINED (DAY AND NIGHT) WETTING

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INTRODUCTION AND AIMS

Identification of risk factors that distinguish between different types of childhood urinary incontinence (UI) could increase understanding of the aetiology of UI. This study prospectively examines whether biopsychosocial risk factors in early childhood are differentially associated with trajectories of bedwetting, daytime wetting and combined (day and night) wetting in primary school-aged children.

MATERIALS AND METHODS

We used trajectories of childhood UI from 4–9 years including bedwetting alone, daytime wetting alone, delayed (daytime and nighttime) bladder control, and persistent day and night wetting (n= 8,751). These were extracted from longitudinal data on UI from the the Avon Longitudinal Study of Parents and Children (ALSPAC: http://www.bristol.ac.uk/alspac). We examined whether early childhood risk factors (developmental level, gestational age, birth weight, parental UI, psychological problems, stressful events, maternal depression, age at initiation of toilet training and constipation) are differentially associated with the trajectories using multinomial logistic regression (reference category= normative development of bladder control).

RESULTS

Maternal history of bedwetting was associated with almost a fourfold increase in odds of persistent wetting (3.60 [1.75-7.40]). Psychological problems were most strongly associated with combined (day and night) wetting e.g. behaviour problems were associated with delayed (daytime and nighttime) bladder control (1.80 [1.59-2.03]). Maternal postnatal depression was associated with persistent (day and night) wetting (2.09 [1.48-2.95]) and daytime wetting alone (2.38 [1.46-3.88]). Developmental delay, stressful events, and later initiation of toilet training were not associated with bedwetting alone, but were associated with the other UI trajectories. Constipation was only associated with delayed bladder control.

INTERPRETATION

We find evidence that different trajectories of childhood UI have differential associations with biopsychosocial risk factors.

CONCLUSIONS

Increased understanding of risk factors for different trajectories of childhood UI could help clinicians to identify children at risk of persistent incontinence.

6 - CONSTANT NOCTURNAL POLYURIA IS PREDICTIVE OF RESPONSE TO DESMOPRESSIN IN MONOSYMPTOMATIC NOCTURNAL ENURESIS IN CHILDHOOD

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INTRODUCTION AND AIM OF THE STUDY

The nocturnal polyuria (NP) is predictive of response to desmopressin in patients with monosymptomatic nocturnal enuresis (MNE) with the cut-off able to define nocturnal polyuria that is object of debate. We aimed to weight the impact of the different definitions and frequency of NP in predicting response to desmopressin.

MATERIALS AND METHODS

We prospectively and consecutively enrolled 103 patients with MNE (>50% of the wet nights). For 5 consecutive wet nights, nocturnal diuresis was measured. Then, the patients assumed 120mcg of sublingual desmopressin. After 2 months, if a complete response was not obtained, the dose increased to 240mcg. The nocturnal polyuria was defined as:
nocturnal urine production >130% of expected bladder capacity (EBC)
>100% EBC
>than 20 x(age+9) mL
The primary outcome was “response to desmopressin” after 3 months of treatment

RESULTS

Fifty-three patients responded to desmopressin. Comparing the response to desmopressin on the basis of NP defined according the 3 definitions, we did not found any significant difference. There was not a cut-off of NP expressed as percentage of EBC useful in providing significant ROC curve. Among the patients with NP according with definition 1, subjects with NP in 4 or 5/5 nights responded to desmopressin in higher percentage compared with other patients. Patients presenting NP according to definition 3 in 5/5 nights showed 100% of response to desmopressin.
At multivariate analysis, the OR to respond to desmopressin for the patients with >3 nights with nocturnal polyuria according with definition 1 was 5.1 (95%C.I.1.1-24.5)

INTERPRETATION OF RESULTS

A “constant” NP more than the presence/absence of NP is predictive of response to desmopressin in MNE.

CONCLUSIONS

NP in >3/5 wet nights accordingly to definition 1 and in 5/5 wet nights accordingly to definition 3 are predictive of response to desmopressin.

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7 - INFLUENCE OF USING DISPOSABLE DIAPERS ON PEDIATRIC BLADDER AND BOWEL DYSFUNCTION AND ITS RISK FACTORS IN MAINLAND CHINA

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INTRODUCTION AND AIM OF THE STUDY

To explore the influence of using disposable diapers (DD) on prevalence of pediatric bladder and bowel dysfunction(BBD) and to analyze the relevant factors in Mainland China.

MATERIALS AND METHODS

From March 2017 to September 2017, stratified sampling and simple random sampling were used to randomly select 19 kindergartens and 18 primary schools from 12 cities in Mainland China. Using the anonymous questionnaire, 8950 children aged 2 to 8 years were surveyed for epidemiological investigation of BBD. The children number of surveys in each school was more than 200. In order to ensure the accuracy of the questionnaire, the investigators conducted special training for the school head teacher before the investigation. The main contents of the questionnaire include: ①general information (gender, age, height, weight, date of birth, etc.)②using condition of DD after birth (whether DD is used, length of use, number of pieces per day, and whether there are untoward effect, etc.) ③elimination communication (EC) (including potting training, assistant infant's toilet training)starting time.④current voiding and defecation status, whether to meet the BBD diagnostic criteria.⑤whether or not there is an organic disease that affects urination and defecation. Besides definition of children's BBD: Children present with lower urinary tract symptoms and defecation dysfunction together, mainly manifested as urinary frequency, urgency, incontinence (sometimes enuresis, droppings, contaminated feces), dysuria, repeated urinary tract infections, constipation or diarrhea, etc. , clinically no evidence of neurological and anatomical organic diseases[1,2,3].SPSS 21.0 statistical software was used for statistical analysis. Qualitative data is expressed as a percentage, and comparisons of multiple groups are conducted using chi-square test and trend chi-square test. The Bonferroni method was used to test the pairwise comparison of the rates between the two groups. The normal distribution of quantitative data was represented by $\bar{x}\pm s$. The mean between groups was compared by t-test and analysis of variance. Multivariate analysis of the incidence of BBD using logistic regression. $P < 0.05$ for the difference was considerate as statistically significant.

RESULTS

A total of 8459 questionnaires are collected (effective collected rate is 94.5%) and 8026 questionnaires are qualified for statistical analysis, of which 4027 are males and 3999 are females. A total of 219 suffered from BBD from 8026 investigated children aged 2 to 8 years. The overall incidence rate is 2.73%. The incidence rate is different in different age groups ($P<0.05$) from 2 to 8 years old, each age is an age group. The trend of Chi-square test shows that the incidence decreases gradually with age ($P<0.001$), from 4.89% at age 2 to 0.85% at age 8. $P<0.001$）(Table 1).The increase of BBD prevalence shows a positive relationship with the usage of DD and delayed EC (including potting training, assistant infant's toilet training), ($P <0.001$).When the disposable diaper is used for less than 6 months, the incidence of BBD is 0.95%. However, when the disposable diaper is used for more than 24 months, the incidence of BBD is 6.11%. The incidence of BBD in children who have EC or toilet training within six months is 0.91%. However, when the EC or toilet training starts after 24 months, the incidence of children with BBD is 6.47%. From the birth of the child, the incidence of BBD as a whole has been increasing with the delay of EC. With the prolonged use of disposable diapers, the incidence of BBD increases.Multivariate analysis display using logistic regression showed that the total usage length and the number of DD used per day as well as the obesity are the risk factors for the BBD prevalence in children (OR> 1, $P<0.05$). EC within 6 months in children is the protective factors for BBD occurrence (OR <1, $P<0.05$) (Table 2).

INTERPRETATION OF RESULTS

The prevalence of BBD gradually decreases with age, however, with the extension length and the increasing amount in the use of disposable diapers, the time for children to initiate elimination communication or toilet training is delayed, resulting in the actual practice of missing children's early learning self-controlled urination and feces, as well as an increase in the incidence of BBD.

CONCLUSIONS

Rational usage of DD and early EC is recommended for preventing the BBD in children. It is better to begin EC within 6 months of the children's birth.

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Table 1 Relationship between incidence of BBD and age and gender
Note: N means the number of patients.

Related factors	Incidence rate（n）	χ^2	*P*
Length of using DD(months)			
T≤6	0.95%（16）	23.604	＜0.001
6＜T≤12	1.98%（29）		
12＜T≤18	2.28%（35）		
18＜T≤24	3.09%（67）		
T＞24	6.11%（72）		
Pieces of using DD			
M=0	0.80%（7）		
0＜M≤1	2.28%（45）	8.513	＜0.05
1＜M≤3	2.39%（897）		
M>3	5.35%（78）		
Starting time of potty training			
0~6	0.91%（19）		
7~12	1.31%（23）	19.107	＜0.001
13~18	2.47%（38）		
19~24	4.37%（67）		
25~	6.47%（72）		
Body mass index（BMI）			
<18.5	1.55%（23）		
18.5~23.9	1.51%（32）	10.328	＜0.05
24~26.9	1.61%（31）		
27~29.9	4.45%（82）		
≥30	7.67%（51）		

Table 2 Relationship between the incidence of BBD and multiple relevant factors

ages	number	BBD incidence		
		Mean Incidence rate（N）	male	female
2	1105	4.89%（54）	4.99%(28)	4.78（26）
3	1198	4.34%（52）	4.03%(24)	4.64%(28)
4	1206	3.65%（44）	3.78%(23)	3.52%(21)
5	1132	2.21%（25）	2.13%(12)	2.28%(13)
6	1154	1.82%（21）	1.72%(103)	1.93%(11)
7	1169	1.20%（14）	1.03%(6)	1.36%(8)
8	1062	0.85%（9）	0.94%(5)	0.76%(4)
Total	8026	2.73%（219）	2.68%(108)	2.78%(111)

8 - HOW COMMON IS LOWER URINARY TRACT DYSFUNCTION (LUTD) IN PAEDIATRIC PATIENTS REQUIRING KIDNEY TRANSPLANT?

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INTRODUCTION AND AIM

It is recognised that careful urological management is required to optimise kidney transplant function in patients with lower urinary tract dysfunction (LUTD) as the cause of end stage renal failure. However, the prevalence of bladder dysfunction in those with non-LUTD-related renal failure is unknown. This single centre study aims to assess prevalence of LUTD in all paediatric kidney transplant recipients.

METHODS

Retrospective data collection on all patients transplanted between 2012-2017 including renal diagnosis, voiding history, 48-hour bladder diary, uroflowmetry/ 4-hour voiding observation, bladder capacity (BC) and post void residual (PVR) plus subsequent bladder management. Definitions comply with ICCS 2014 terminology.

RESULTS

69 patients transplanted, 75% completed full assessment, results in table. The remaining patients were oligo-anuric prior to transplant and had no voiding symptoms following.

RESULTS TABLE

UT (Urotherapy), CIC (Clean intermittent catheterisation), AC (Anti-cholinergic medication), BA (Bladder augmentation and mitrofanoff performed after assessment).
*Includes patients with bladder augmentation

Renal Diagnosis	n	Assessment completed	LUT Symptoms	BC %normal	PVR	Bladder management following
Glomerular	19	9(47%)	8(89%)	5(56%)	7(78%)	7(78%) UTx7
Tubulo-interstitial nephritis	5	3(60%)	3(100%)	2(67%)	2(67%)	2(67%) CICx2, ACx1
Unknown	6	5(83%)	4(80%)	1(20%)	2(40%)	3(60%) CICx2, ACx1 Bulbar urethroplastyx1
Renovascular	3	1(33%)	0(0%)	3 (100%)	0(0%)	0 (0%)
Malignancy	1	0	-	-	-	-
Metabolic	2	2(100%)	2(100%)	1 (50%)	2(100%)	2(100%) CICx1, UTx1, ACx1
Renal dysplasia +/- VUR	21	20(95%)	16(80%)	10 (50%)* OR 6 (28%)	17(85%)	17(85%) CICx9, ACx8, UTx8
Obstructive uropathy	12	12(100%)	12 (100%)	8 (67%)* OR 7 (58%)	11(92%)	12(100%) CICx11, UTx1, ACx8, BAx2
Overall summary	**69**	**52(75%)**	**45(88%)**	**30 (58%)**	**41(79%)**	**43(83%)**

CONCLUSION

LUTD is common in the paediatric kidney transplant population and non-invasive urodynamics should be considered as an integral part of the pre-transplant preparation.

9 - DIGITAL HEALTH - DOES A DIGITAL HOME BLADDER MONITORING DEVICE INCLUDING UROFLOWMETRY AND VOIDING DIARY IMPROVE PATIENT COMPLIANCE AND DATA ACCURACY? INITIAL FEASIBILITY PILOT STUDY

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HYPOTHESIS / AIMS OF STUDY

Uroflowmetry and a voiding diary are important diagnostic tools to assess urinary tract symptoms. In-clinic uroflowmetry is a one off sampling and may not reflect the patient's actual voiding patterns especially in children. Paper voiding-diaries are a burden, for patients and frequently associated with poor compliance. Failure to collect accurate data may lead to an inaccurate assessment and diagnosis resulting in negative experiences for the patients.

iUFlow (fig. 1) is an easy to use home bladder-monitoring device, implemented on a mobile platform, allows every void at home to be a validated uroflowmetry and recorded in an electronic voiding diary. This study aims to assess the feasibility of using iUFlow in the pediatric population.

STUDY DESIGN AND METHODS

24 patients were asked to complete a 3-day home bladder monitoring using iUFlow, followed by patient Satisfaction questionnaire. Additionally, in-office uroflowmetry data were compared to multiple iUFlow readings captured at home.

RESULTS

22/24 (92%) subjects fully completed 3-day monitoring. Mean participant age was 7.3 years (std. dev: 3.7). Mean uroflowmetry measurements collected per participant was 12.07 (std. dev: 7.84). The shape of the curves and Qmax generated by iUFlow corresponded with the in-office uroflowmetry measurement (fig. 2) and the voiding diaries were accurate and complete for each at home void. Nighty four percent of the patients had a positive experience using iUFlow device and the related app. A minority of only six percent of the patients reported a preference to use the conventional pen and paper bladder diary over a digital bladder diary, while 62.5% favor a digital bladder diary; 31.3% reported that both are fine.

INTERPRETATION OF RESULTS

The main clinical advantage of the iUFlow is increased patient compliance when completing a voiding diary, since the device is always there (day and night), there is no need for the patient to read or write the volume of urine, and therefore there is no missing data. The data thus betters reflects the patient's underlying symptoms. A logical explanation for the high compliance could be supported by the fact that the perceptions of the children upon completion of the fully automated voiding diary trial were positive. The iUFlow reported as a relatively easy to use for monitoring fluid intake and bladder events at home.

The home uroflowmetry data collected by iUFlow produces a picture of the children's bladder behavior in-vivo, in its normal condition of the child daily life.

Importantly, patients found to be ripped to digital health. When were asked: "Do you think that there is a benefit in sending the diary to the doctor prior to your next visit?" 93.8% responded overwhelmingly positively, suggesting openness for new technological innovations (while 7.2% reported `possibly` and none answered `definitely no`).

CONCLUDING MESSAGE

iUFlow is an easy to use, automated method for monitoring fluid intake and bladder events at home improving compliance and quality of data collected. iUFlow may enable better understanding of the overall behavior of the bladder in the child's comfortable home environment.

Figure 1.
iUFlow device and app.

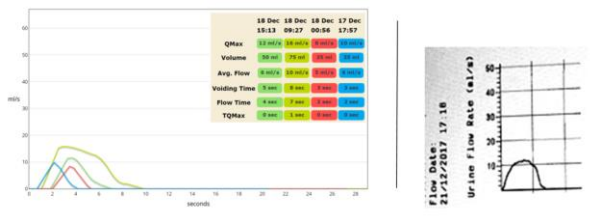

Figure 2.
Left: iUFlow multiple home- uroflowmetry; right: in-clinic uroflowmetry

10 - OBESITY AND LUTS IN BOYS AND GIRLS: IS THERE DIFFERENCE BETWEEN THEM?

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OBJECTIVE

To investigate the relation between obesity and LUTS) in children according to gender.

MATERIAL AND METHODS

Data was obtained from 2 centers. The case group was selected from a voiding dysfunction unit in a tertiary center. Children aged from 5 to 17 years, diagnosed with non-neurogenic LUTD, from Jan/2014 to July/2017, were included. Children with neurogenic or anatomical abnormality were excluded. The control group was selected rom a primary care unit. They were assessed for exact age, height, weight and DVSS. Exclusion criteria were LUTD and neurogenic or anatomical abnormality. The nutritional classification was assessed using WHO's BMI-age criteria - score Z (2007). The medical school ethics committee approved the research. The chi-squared test was applied.

RESULTS

The case group consisted of 139 subjects, mean age: 8.87 (5-17 years), 92 (66.2%) girls. The control group consisted of 155 subjects, mean age: 9.17 (5-17 years), 95 (61.3%) girls. Nutritional classification in the case and control groups was respectively: thinness 4 (2.9%) and 2 (1.3%); eutrophic 54 (38.9%) and 103 (66.5%); overweight 40 (28.8%) and 23 (14.8%); obesity 41 (29.5%) and 27 (17.4%) (p<0.001). When analyzing LUTS and BMI according to the sex, obesity was associated with LUTD in girls (p=0.002) but not in boys (p=0.704). Daytime UI was associated with obesity in girls (p=0.022), but not in boys (p= 0.47).

INTERPRETATION OF RESULTS

LUTS were associated with obesity in girls. The increase in intra-abdominal pressure and in urethral mobility due to central adiposity may lead to daytime incontinence. The obesity treatment should be considered as part of LUTD management in children and adolescents.

CONCLUSION

Obesity was associated with LUTD in children and obese girls are at higher risk daytime incontinence.

11 - INCONTINENCE IN PERSONS WITH PHELAN-MCDERMID SYNDROME

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INTRODUCTION AND AIM OF THE STUDY

Phelan-McDermid Syndrome (PMD) is a congenital syndrome caused by a deletion on chromosome 22q13.3 (1). About 600 cases have been identified worldwide. PMD is characterized by neonatal hypotonia, moderate/severe intellectual impairment, severe/absent expressive language and typical dysmorphic features (1). Psychological symptoms as hyperactivity, attention problems, restlessness, and stereotyped-repetitive behaviour were reported (2). Incontinence in PMD has not been assessed, so far. Therefore, the aim of the study was to investigate the rate of incontinence and associated psychological problems in PMD.

MATERIALS AND METHODS

33 children (4-17 years) and 8 adults (18-55 years) with PMD were recruited through a German PMD support group (46.8% male, mean age 12.5 years). Parents or care-givers completed the Developmental Behavior Checklist (DBC), as well as the Parental Questionnaire: Enuresis/Urinary Incontinence, including 6 questions on toileting skills (e. g. Does he/she use the toilet to pass urine/stools?).

RESULTS

Rates of nocturnal enuresis (NE), daytime urinary incontinence (DUI) and fecal incontinence (FI) were 89%, 76% and 81% in children, and 71%, 63% and 72% in adults, respectively. Constipation was present in 21% of children and in none of adults. 36.7% of children and 37.5% of adults had a clinically relevant DBC score. Incontinence was not associated with psychological symptoms. Toileting skills were more developed in adults than in children. 60% had further physical disabilities, including neurological (17% of cases), gastrointestinal (6.4% of cases) and genitourinary tract anomalies (12.8% of cases).

INTERPRETATION OF RESULTS

Incontinence rates in PMD are high in all age groups. However, persons with PMD can improve their toilet skills. Constipation does not seem to be a problem in PMD.

CONCLUSIONS

Assessment and treatment of incontinence in persons with PMD is recommended. Due to the high prevalence rates of somatic conditions, an assessment for organic and functional incontinence and treatment in persons with PMD is recommended.

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12 - COMMUNITY HEALTH PRACTITIONERS' KNOWLEDGE AND EXPERIENCE WITH MANAGING URINARY INCONTINENCE THAT BEGINS IN CHILDHOOD

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INTRODUCTION AND AIM

Urinary incontinence that begins in childhood commonly presents to community health practitioners, but there is often unwarranted variation in its management. We surveyed Australian community health practitioners about their experience and knowledge in managing this condition.

METHODS

Health professionals registered on a private health education database were invited to participate in an online survey. The survey, which focused on childhood enuresis, childhood daytime urinary incontinence (DUI) and adult enuresis, collected demographic and contextual data, and asked questions about participants' experience, knowledge and confidence in managing these conditions. Associations between participant characteristics and answers to knowledge questions were examined using chi-square tests.

RESULTS

1495/17,361 clinicians participated (8.6% response rate). Most (84%) were female, aged 45 years and above (70%), had ≥ 10 years in clinic practice (78%) and practiced in a metropolitan area (69%). 67% were doctors, and 30% were nurses.
Most (88%) reported being knowledgeable about managing childhood enuresis (88%) and DUI (75%) but only 37% reported being knowledgeable about adult enuresis. 48% correctly identified abnormal physiology of sleep and bladder function as the most common cause of childhood enuresis, 34% thought it was a delay in developing toileting skills, 10.4% due to psychological causes and 2.3% due to a child's laziness. 93.4% gave an acceptable answer for first-line treatment of childhood enuresis1, 81.5% for DUI2 and 60.1% for adult enuresis. Incorrect answers included using enuresis alarm (7%), desmopressin (8%) and tricyclics (2%) as first-line treatment for DUI.

INTERPRETATION OF RESULTS

Younger, female, doctor participants were more likely to answer questions correctly, but years of

experience, experience with seeing patients with these conditions, practice location and confidence about managing these conditions did not affect answers.

CONCLUSIONS

Participants were generally knowledgeable about managing childhood enuresis, but were less knowledgeable about childhood DUI and adult enuresis.
This study was supported by Healthed.Pty Ltd

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13 - LOWER URINARY TRACT DYSFUNCTION AND EMOTIONAL AND BEHAVIORAL ALTERATIONS IN CHILDREN AND ADOLESCENTS: A POPULATION BASED STUDY

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OBJECTIVE

We aim to test the dual hypothesis that the Bladder Bowel Dysfunction (BBD) increases the risk of psychological symptoms in children and adolescents and that other Lower Urinary Tract Symptoms (LUTS), in addition to incontinence, are associated with various emotional and behavioral changes.

METHODS

This is a multicenter cross-sectional study that was conducted at public venues in two Brazilian cities. Parents of children between the ages of 6 and 14 years answered three questionnaires: the Dysfunctional Voiding Score System (DVSS), the Strengths and Difficulties Questionnaire (SDQ), and the Rome III questionnaire.

RESULTS

804 children and adolescents were involved in this study, with a mean age of 9.1 + -2.7 and with 53% of subjects being female. We observed that in the multivariate analysis children with LUT dysfunction or with constipation presented more emotional and behavioral changes than those without one of these conditions (32.8%, 33% and 21.7%, respectively; $p<0.001$). For BBD the rate of psychological symptoms was higher still (49.1%). Other associated factors were children who were studying in public schools ($p = 0.000$) and the low level of parents' education ($p = 0.000$).

In respect of the association of LUTS and emotional changes, infrequent urination ($p = 0.018$), holding maneuvers ($p = 0.001$), and urgency ($p = 0.000$) were significantly associated. In regard to behavioral changes, urinary incontinence ($p = 0.003$), urgency ($p = 0.000$), urge incontinence ($p = 0.022$), and holding maneuvers ($p = 0.000$) were significant.

CONCLUSIONS

LUT dysfunction, constipation, the low educational level of parents, and children who study in public schools are independently associated with emotional and behavioral changes in children and adolescents. BBD increased the rate of psychological changes evident in the subjects. In addition, urinary incontinence, urgency, holding maneuvers, and infrequent voiding were associated not only with emotional and behavioral changes.

14 - INCONTINENCE IN PERSONS WITH TUBEROUS SCLEROSIS COMPLEX (TSC)

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INTRODUCTION AND AIM OF THE STUDY

The multisystem genetic disorder Tuberous Sclerosis Complex (TSC) is associated with a wide range of physical manifestations, but also with psychiatric and psychosocial problems. It has a prevalence of 1:60 000 and is caused by a mutation in the TSC1 (on chromosome 9) or TSC2 (on chromosome 16) genes. The aim of the study was to investigate the rate of incontinence and associated psychological problems as well as the level of adaptive behaviour skills (self-care, daily living skills, social abilities) in persons with TSC.

MATERIALS AND METHODS

26 children (4-17 years) and 15 adults (18-50 years) with TSC were recruited through the international parent support group (38.6% male, mean age 15.4 years). Patients, parents or care-givers filled out the Parental Questionnaire: Enuresis/Urinary Incontinence, the Developmental Behavior Checklist for parents (DBC-P) or adults (DBC-A) and additionally, the Vineland Adaptive Behavior Scales (3rd edition) to gain information about adaptive behavior and the level of intellectual disabiltiy.

RESULTS

65.2% of children had nocturnal enuresis (NE), 45.8% daytime urinary incontinence (DUI) and 44% fecal incontinence (FI). 50% of the adults had NE, 50% DUI and 30.8% FI. 64% of children and 53.3% of adults had a clinically relevant DBC score. NE and psychological symptoms were associated in adults. The mean Adaptive Behavior Composite (ABC) score of the patients was 57.5 (SD=25.2). 35.6% had an ABC score in the average or below-average range (IQ>70), 31.1% with a mild, 11.1% with a moderate and 22.2% with a severe/profound intellectual disability. The ABC score was significantly lower in the entire group with incontinence, but was associated with psychological

symptoms only in adults.

INTERPRETATION OF RESULTS
Incontinence rates and psychological symptoms in children and adults with TSC are high. Incontinence was more common in persons with lower adaptive skills and in adults with psychological symptoms.

CONCLUSIONS
Screening for organic and functional incontinence, as well as psychological problems in persons with TSC is recommended, as they affect daily functioning and well-being.

15 - LOWER URINARY TRACT SYMPTOMS IN PEDIATRIC PATIENTS WITH AND WITHOUT DIABETES

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INTRODUCTION AND AIM
Rates of diabetes mellitus are rapidly increasing, particularly in children. Bladder dysfunction in diabetic adults can progress from lower urinary tract symptoms (LUTS) to urinary tract infections, pyelonephritis, nephrolithiasis, chronic kidney disease and end stage renal disease. LUTS are common in the adult diabetic population with an estimated occurrence rate between 37-70%, but the prevalence of LUTS in children has been rarely examined. To determine the prevalence of LUTS in pediatric patients with and without diabetes and patient factors associated with LUTS.

METHODS
A cohort of 120 children aged 11-17 from pediatric clinics at an academic medical center completed a questionnaire, which included a validated LUTS measure and questions about age, ethnicity, gender, BMI and self-reported degree of bother of LUTS. Unadjusted patient characteristics were compared between children with and without diabetes, and logistic regression was conducted to examine patient factors associated with LUTS.

RESULTS
The cohort of 120 pediatric patients had an average age of 13 and an average BMI of 21.7, 56% were female and 55% were non-Hispanic white. The unadjusted prevalence of LUTS in patients with diabetes was twice (33.3% vs. 16.7%) that of patients without diabetes, but diabetes was not significantly associated with LUTS in logistic regression (odds ratio (OR)=2.5X, p=0.056). Being of Hispanic/Latino decent was associated with increased rates of LUTS. (OR 8.45, p= 0.011).

CONCLUSION
Over one-fifth of pediatric patients had self-reported LUTS and the prevalence was doubled in patients with diabetes. Providers caring for children with diabetes may need to more closely monitor patient risk for developing LUTS, which is an under-recognized complication of diabetes.

16 - PREVALENCE OF MICTURITION DISORDERS IN 7-10-YEAR-OLD SCHOOL CHILDREN IN POLAND. SURVEY AMONG PARENTS

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INTRODUCTION AND AIM OF THE STUDY
Urinary incontinence is a common clinical problem in childhood, however a few percent of patients continue to suffer from this disorder in adolescence. Intermittent urinary incontinence should be treated as a pathology in patients who are at least 5 years old. This disorder can be qualified as day-time incontinence (DUI) and nocturnal-incontinence (enuresis-NE). There is very little epidemiological data available concerning urinary incontinence in Polish children.
Our aim was to assess the incidence of micturition disorders in children aged 7 to 10 according to International Children's Continence Society guidelines and to analyze accompanying symptoms and social background of these problems.

MATERIALS AND METHODS
Parents of 954 children were surveyed during parent-teacher meetings held in January and February 2017 in 11 randomly selected schools in southern Poland. The questionnaire was based on International Children's Continence Society guidelines. Study population was divided into subgroups according to demographical data, presence of accompanying symptoms and the type of micturition disorder. Subgroups were compared using statistical methods.

RESULTS
≥1 symptom of urinary bladder malfunction was reported in 18% of cases (17.5% girls and 18.8% boys). Significant (≥1/month) NE was present in 1,7 % of children and significant (≥1/month) DUI in 2,2%. Significant NE combined with significant DUI occurred in 1% of children.

INTERPRETATION OF RESULTS
Significant correlations between incontinence and the age at which children stopped wearing diapers, urinary tract infections, soiling and constipation episodes were observed.

Minor wetting is a common in the studied population, however the group of children with clinically significant incontinence becomes smaller after applying current ICCS criteria. Unified and clearly defined terminology should be used in order to correctly describe and compare the scale of this problem. Urinary incontinence should not be underestimated, because if untreated it may lead to physical but also psychological and social disorders.

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Case	Age at presentation in years	Presenting LUTS	MRI findings	Age at surgery in years	Type of surgery	Histological diagnosis	Resolution of LUTS after surgery
1	15	Secondary onset daytime urinary incontinence with raised abdominal pressures	Adnexial solid and liquid mass	15	Open ovarian cystectomy	Mature cystic teratoma	Yes
2	15	Urge incontinence and nocturnal enuresis	Didelphys uterus, sagittal vaginal septum and partial left transverse vaginal septum	16	Division of vaginal septae		Yes
3	12	Urge incontinence and nocturnal enuresis	Adnexial solid and liquid mass	15	Laparoscopic ovarian cystectomy	Benign serous cystadenoma	Yes
4	9	Urge incontinence and nocturnal enuresis	Adnexial liquid, septated mass	11	Open ovarian cystectomy	Mature cystic teratoma	Yes once constipation resolved

17 - PELVIC MASS AND LOWER URINARY TRACT SYMPTOMS: REVIEW OF 4 CASES.

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INTRODUCTION AND AIM OF THE STUDY

It is well known in adult practice that pelvic masses may present with LUTS. We report on 4 girls referred for urinary incontinence who were found to have a pelvic mass.

MATERIALS AND METHODS

Retrospective review 2010-2017: 4 patients identified. All underwent clinical examination and trans-abdominal pelvic ultrasound scan (USS) performed by the bladder doctor, followed by formal pelvic USS and pelvic MRI by paediatric radiology consultant. All patients subsequentally were referred to Gynaecology and underwent surgical operation. The patients were followed up by gynaecology and paediatric bladder services.

RESULTS

The main results of the clinical cases are summarised in the table.

CONCLUSION

Pelvic masses should not be forgotten as an underlying cause of LUTS in children and adolescents. They are usually easily seen on USS which should be routinely performed.

18 - KIM-1 AND NGAL AS POTENTIAL PREDICTORS OF RENAL DETERIORATION IN CHILDREN WITH NEUROGENIC BLADDER DUE TO MYELOMENINGOCELE.

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INTRODUCTION

Neurogenic bladder due to myelomeningocele is a condition strongly associated with multiple disturbances which untreated can result in progressive renal damage. On the basis of scientific literature, KIM-1 and NGAL are interesting and promising biomarkers not only in acute renal failure but also in chronic inflammatory processes. The lack of early biomarkers of renal deterioration in children with neurogenic bladder pursue us to conduct the study.

THE AIM OF THE STUDY

We wanted to investigate urinary levels of NGAL and KIM-1 and their correlation with renal function in children with neurogenic bladder in comparison to healthy control group.

MATERIALS AND METHODS

This prospective analysis was conducted on two groups: 62 children with neurogenic bladder after myelomeningocele and 26 healthy children. Urinary NGAL and KIM-1 levels were measured using ELISA methods. Children's medical charts were analysed to determine age, sex, anthropometric measurements, BMI, activity assessment using the Hoffer's scale and renal function parameters.

RESULTS

There were no differences in the age, sex, weight and BMI between the studied groups. The median urine levels of KIM-1 and NGAL were higher in studied group compared with controls. Enrolled to the study girls had higher NGAL levels in comparison to boys. We found correlation between Hoffer scale and both studied markers. Gender, thickness of bladder wall in ultrasonography, urine osmolality, proteinuria and serum albumin correlated with NGAL level. Negative correlations between urodynamics findings and KIM-1 and NGAL were founded.

CONCLUSION

KIM-1 and NGAL could be considered as biomarkers of renal deterioration in children with neurogenic bladder due to myelomeningocele.
Physical activity may be the factors which influence the urinary concentration of KIM-1 and NGAL.

KEYWORDS

KIM-1, NGAL, neurogenic bladder, myelomeningocele

19 - HOW DOES WORK ANALYSIS COMPARE TO STANDARD URODYNAMIC CRITERIA IN THE EVALUATION OF YOUNG CHILDREN WITH NEUROGENIC BLADDERS DUE TO SPINA BIFIDA

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INTRODUCTION

Urodynamics (UDS) is the gold standard for the functional assessment of neurogenic bladders (NB). Recent studies have reported the subjective nature of UDS interpretation, highlighting the inter- and intra-observer variability's. We hypothesized that a program capable of measuring UDS work (W) can provide an objective assessment of NB function to augment the individual UDS interpretation.
De-identified data obtained from the authors spina bifida database was analyzed using software developed to measure UDS work by FIAS corp (MI, USA). Numerous UDS parameters as well as total W, detrusor activity W (DAW) and vesicoelastic W (VEW) were measured. Categorical frequency and quantitative data were analyzed with Fisher's exact test and Kruskal-Wallis (KW).

RESULTS

Data was available from 20 patients with mean age of 8.5±6.5 mo. DAW was reduced in patients on anticholinergics (89.8±37.7 vs 376±385 cmH2O/ccH20, p=0.025). No correlations were found on Fisher's exact test for bladder risk scores and Pressure (P), theoretical

P (tP) based on TW, theoretical compliance (tC) on TW and compliance (C). There were no correlations between TW increasing or decreasing and bladder risk scores. KW analysis revealed no difference between tP and P nor tC and C. Statistically significant differences were noted between bladder risk scores and C, P, DAW, tP_{DAW}, tP_{vew}, $tP_{TW,}$ tC_{DAW}, tC_{VEW}, and tC_{TW}.

CONCLUSIONS

A quantitative method to evaluate detrusor contractions can be implemented using DAW. Additionally, typical UDS parameters such as max detrusor storage P and C are comparable to tP and tC which can be directly calculated from W. Being able to calculated these quantitative parameters removes confounding issues that commonly occur with UDS. Although this study is limited by the number of patients less than one year of age and the expected low bladder volumes of these infants, W analyses is a promising quantitative tool in the urodynamic analyses of neurogenic bladder.

20 - FAST FOURIER TRANSFORM ANALYSIS IN URODYNAMIC DATA CAN PICK UP LOW AMPLITUDE PHASIC BLADDER AND RECTAL CONTRACTIONS IN NEUROGENIC PATIENTS.

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HYPOTHESIS

Fast Fourier transform (FFT) analysis is a form of signal analysis which is capable of taking data that has a cyclic nature and identifying periodicity in the data. We hypothesized that in many of our neurogenic patients we would be able to find rhythmic patterns using FFT on the raw urodynamic data.

MATERIALS AND METHODS

Urodynamic data was extracted into a text delimited format and run through MATLAB where spectral analysis was performed using FFT over the whole time span of the urodynamic procedure. Approximate entropy (ApEn) was calculated and displayed. Low amplitude rhythmic contractions (LARC) were recorded and the frequency of the 3 highest peaks for each channel were recorded. The direction of the ApEn was compared to the urodynamic curve and confirmation was made whether the entropy rose or declined with increasing bladder volume.

RESULTS

Data from 9 male and 12 female patients with a mean age of 10.8 (sd=5.1) had Spectral density graphs produced for each urodynamic study. In 35 of 39 plots phasic detrusor contractions were identified in the second spectral band (median 2.7 cycles/min). 17 of 39 studies had a drop in approximate entropy and 3 of the 4 without phasic detrusor contractions showed no decrease in the ApEn. The patient with underactive bladder did not have a decrease in ApEn nor did he have phasic contractions. Of the 7 patients that underwent Botox injections 6/7 had no decrease in entropy and the one that did had an injection more than 6 months earlier.

CONCLUSIONS

We have seen that use of FFT based spectral analysis can produce results that give important data that can substantiate the effects of medical treatment in this pilot study. Our findings indicate that there is a similarity and a regularity to the overactive detrusor contractions seen in both OAB and NDO patients.

21- THE IMPORTANCE OF ECHOSONOGRAPHIC MEASUREMENT OF TRANSVERSE RECTAL DIAMETER IN ESTIMATING URINARY INCONTINENCE SEVERITY IN SPINA BIFIDA PATIENTS.

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PURPOSE

To prove the importance of echosonographic measurement of transverse rectal diameter in estimating urinary incontinence severity in Spina Bifida patients.

MATERIALS AND METHOD

The research was carried out over the 2014–2017 period, during which 40 Spina Bifida patients aged 4 to 22 were observed. The patients were on average 8.8 years old ± 4.2 SD, of whom 45% were males and 55% females. During the above period, the patients were administered CIC, anticholinergic medication therapy, as well as bowel management with an aim of treating lower urinary tract dysfunction and the accompanying constipation and fecal incontinence. As part of the assessment of treatment results, all the patients underwent echosonographic measurement of transverse rectal diameter, which were subsequently compared with the average dry interval between two CICs.

RESULTS

After applying Spearman's correlation coefficient, we ascertained a close, negative, statistically highly relevant interrelation between transverse rectal diameter and average dry interval between two CICs ($r=-0.927$; $p<0.001$). The larger the transverse rectal diameter, the shorter the average dry interval between two CICs became.

CONCLUSION

Patients with larger transverse rectal diameter had more severe urinary incontinence, which was reflected in a shorter average dry interval between two CICs. Transverse rectal diameter measured

echosonographically are important parameter in estimating urinary incontinence severity and therefore they should be mandatory in all Spina Bifida patients.

KEYWORDS
Transverse rectal diameter, urinary incontinence, spina bifida.

22- URODYNAMIC STRATIFICATION OF INFANTS WITH SPINA BIFIDA PROVIDES PREDICTABLE UROLOGIC OUTCOMES

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INTRODUCTION AND AIM OF THE STUDY
Urodynamic evaluation of infants with spina bifida (SB) is utilized for risk stratification. Early identification allows for proactive intervention. We hypothesized that urodynamic stratification of neurogenic bladder (NGB) risk during infancy directs urologic care with predictable and stable urologic outcomes.

MATERIALS AND METHODS
SB newborns were prospectively enrolled and managed in the CDC Urologic and Renal Protocol for the Newborn and Young Child with SB. NGB were stratified into safe, intermediate, and high-risk groups before 3 months and 1 year of age. Secondary outcomes measured included detrusor compliance, detrusor compliance at half bladder capacity (C50), anticholinergic use, CIC, detrusor overactivity (DO), post-void residual (PVR), vesicoureteral reflux and hydronephrosis. Patients with incomplete data were excluded. Statistical analyses were performed with ANOVA and the F-statistic with an alpha error of 5%.

RESULTS
Fifty-six SB infants were enrolled since 2015; 26 had complete records. The majority of neonatal NGB were intermediate risk (65%). Detrusor compliance at terminal filling improved in 68% of intermediate and 71% of hostile bladders. The majority of intermediate (63%) and hostile bladders (71%) had improved C50 at year 1. DO, DSD, CIC, and hydronephrosis remained unchanged after one year. Both PVR and maximum detrusor storage pressure worsened over the year for intermediate- and high-risk groups. VUR improved over the year for high-risk group. CIC and anticholinergic use were more likely to be started for the high-risk group.

CONCLUSIONS
Urodynamic risk stratification using the CDC protocol can be used to direct urologic care. After 1 year, most patients remained stable or improved risk stratification across all 3 categories (safe NGB 100%, intermediate 82% and hostile 57%). A significant proportion of ostile bladders improved with intervention (57%). Our early report of NGB stratification supports the importance of early identification of high- and intermediate-risk groups to direct care and prevent worsening bladder function.

23 - UROFLOWMETRY PARAMETERS IN CHILDREN WITH SPINA BIFIDA WHO CAN VOID VOLUNTARILY

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INTRODUCTION AND AIM OF THE STUDY
Periodical video urodynamic study (VUDS) is an essential examination to rule out a high pressure bladder in children with neurogenic bladder dysfunction. Based on the data of VUDS, urological management such as clean intermittent catheterization (CIC) and anti-cholinergic agent is planned (1). Since a few children with spina bifida can void voluntarily due to mild neurogenic bladder bowel dysfunction, urological management is not needed. Although uroflowmetry is generally considered an important and noninvasive diagnostic tool in children with lower urinary tract symptoms (LUTS)(2), implications of uroflowmetry is not elucidated in children with spina bifida. Here we analysed the results from uroflowmetry in the clinic in children with spina bifida who can void voluntarily

MATERIALS AND METHODS
Eighteen children (5 boys and 13 girls, average age 10 years old: 5-16) with spina bifida who can void voluntarily were enrolled to this study. Additionally, we divided their voiding conditions into 2 groups: voluntary voiding without CIC (group VV) and voluntary voiding with CIC (group CIC), and compared uroflowmetry parameters in the clinic [Qmax, Qave, voided volume (VV)/estimated bladder capacity (EBC), post-void residual (PVR), and flow pattern] in both groups. Interpretation of flow pattern was done according to Flow Index (FI)(3).

RESULTS
Group VV consisted of 16 children, and group CIC were 2 boys. There was no significant difference between the groups with respect to Qmax, Qave, VV/ EBC, and PVR. Regarding flow pattern, group CIC showed plateau pattern in 2, and group VV showed as follows: bell pattern in 9, tower pattern in 1, and plateau pattern in 6. Regarding FI, group VV showed significantly higher scores than group CIC (0.81±0.3 vs 0.32±0.0, p=0.041).

INTERPRETATION OF RESULTS
63% of children with group VV showed bell or tower flow pattern. Children with group CIC showed plateau flow pattern and lower FI. It was suggested that children with group VV possibly relaxed the urethral sphincter during voiding. Instead of periodical VUDS, uroflowmetry could screen children who need CIC.

CONCLUSIONS
Uroflowmetry is useful to evaluate voiding function in spina bifida children who can void voluntarily. If uroflowmetry showed plateau flow pattern and lower FI, CIC would be needed.

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24 - PRESERVATION OF RENAL/BLADDER FUNCTION IN NEWBORNS WITH SPINA BIFIDA MANAGED WITH EARLY TREATMENT BY NEW DEFINITION OF POOR COMPLIANCE IN URODYNAMIC EVALUATION.

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INTRODUCTION AND AIM OF THE STUDY

Low compliance bladder can result in elevated detrusor pressure (Pdet), bladder deformities, hydronephrosis or vesicoureteral reflux, which leads to impairment of renal/bladder function. Howerver what low-compliance in newborns with spina bifida (SB) is has yet to be determined. A Pdet above 20cmH2O in baseline pressure during filling and/or multiple detrusor overactivities (DO) seen prior to the expected bladder capacity (EBC) might reflect the low detrusor compliance. The aims of this study were to assess the relationship between low detrusor compliance based on our definition on urodynamic study (UDS) and bladder deformities and to determine if proactive measurements, including CIC and antimuscarinics, could prevent renal/bladder deterioration.

MATERIALS AND METHODS

A retrospective review was performed of 77 children with SB evaluated by UDS aged 0-1 years from June 2008 to August 2017. Low-compliance bladder was defined by Pdet above 20cmH2O and/or multiple DO noticed before EBC. A series of Dimercaptosuccinic acid (DMSA) renal scans and functional bladder capacities (FBC: < Pdet 40cmH20 without any urinary leakage) were also evauated.

RESULTS

Multiple DO or Pdet above 20cmH20 in baseline pressure during filling before EBC was seen in 5 (8%) and 9 (15%) patients respectively. Eleven (18%) had low-compliance bladder and 11 (18%) had bladder deformities. Pdet above 20cmH2O, multiple DO before EBC, or both were statistically correlated with bladder deformities (p=0.0006, 0.005, 0.0003 respectively). New onset of renal scarring was found in 2 of 20 children who had DMSA renal scans done. The ratio of FBC/EBC based on UDS at birth and 5 years of age were 1.05 and 1.19 respectively (p=0.25).

CONCLUSIONS

Our new definition of the low detrusor compliance in newborns with SB is correlated with bladder deformities. Proactive intervention based on UDS might help to keep healthy upper and lower urinary tracts.

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25 - POSTNATAL UROLOGIC OUTCOMES THROUGH INFANCY IN PRENATAL FETOSCOPIC VERSUS PRENATAL OPEN MYELOMENINGOCELE REPAIRS

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INTRODUCTION AND AIM OF THE STUDY

Following the report on early postnatal bladder function after fetoscopic meningomyelocele repair (FMR), we sought to compare urologic outcomes between prenatal open (POMR) and FMR.

MATERIALS AND METHODS

Following IRB approval, clinical data were prospectively collected up to one year of age for prenatally-repaired meningomyelocele patients managed according to CDC Urological and Renal Protocol for the Newborn and Young Child with Spina Bifida. Patients with incomplete data were excluded. Urodynamics data were collected and neurogenic bladders were classified as abnormal but safe (safe), intermediate-risk or hostile.

RESULTS

Out of 34 patients who underwent FMR, complete data was available for 10 patients which were compared with a cohort of age-, sex-, shunt- and lesion-matched POMR patients. FMR was performed at a mean gestational age of 24.6 +/- 1.2 WGA versus 23.5 +/- 1.7 WGA for POMR (p > 0.05). Twenty percent of FMR patients required intervention for hydrocephalus versus 40% of POMR patients (p > 0.05). CIC and febrile UTI rates were not different between the two groups. On initial urodynamics, most (80%) FMR patients were classified as intermediate risk but 25% improved to a safe classification on their one year study. Bladder status did not worsen in any FMR patient. In the POMR group at birth, 40% were classified as safe and 50% as intermediate risk. After one year, 40% of POMR

patients worsened to a hostile or intermediate-risk classification. FMR patients had a statistically significant improvement in bladder function at one year of age when compared to POMR patients (p=0.005).

CONCLUSIONS

Although this small cohort study is limited by inherent design biases, preliminary data demonstrated a significant improvement in bladder status after one year in prenatal fetoscopic meningomyelocele patients who were managed according to the CDC Urological and Renal Protocol for the Newborn and Young Child with Spina Bifida.

26 - THE IMPACT OF IN UTERO MYLEOMENINGOCELE REPAIR ON BLADDER FUNCTION IN EARLY CHILDHOOD

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INTRODUCTION

Recent data on the urological outcome after prenatal myelomeningocele (MMC) repair indicate a possible positive effect on postnatal bladder function. We aim to present an update on the urologic outcome during early childhood after prenatal MMC repair.

PATIENTS AND METHODS

The incidence of NBD and the development of bladder function during early childhood of all patients operated prenatal for MMC at our institution was assessed using data collected prospectively. Data included the need for CIC and anticholinergics, the occurrence of UTI, and results from renal US, VCUG and urodynamic studies.

RESULTS

Fifty children operated between 2010 and 2016 were included in this study. Postnatal urodynamics revealed NBD in 42%. The percentage of NBD increased during the first 6 months to 69% and remained stable at 72% during the further follow-up. After 6 months only one of the patients with normal bladder function spontaneously developed bladder dysfunction; however 5 patients lost normal bladder function after removal of intradural dermoids. All 4 patients with normal bladder function at age 4 years are successfully potty-trained. Vesico-ureteral reflux was found in 9 (18%) patients. Nine patients had at least one febrile UTI, all in the NBD group. CIC and anticholinergic therapy was initiated in all NBD patients. Four patients additionally received intravesical botox injections, one patient developed upper tract deterioration and underwent vesicostomy.

CONCLUSIONS

In our cohort, NBD was less frequent compared to the incidence of MMC-associated NBD reported in the literature (>90%). Thus, our data suggest that data suggest that prenatal MMC repair yields less bladder dysfunction than expected after postnatal repair. However, further evolution of bladder function in these patients throughout childhood is indispensable.

27 - IS INCREASING BLADDER OUTLET RESISTANCE WITHOUT AUGMENTATION SAFE IN NEUROGENIC BLADDER?

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INTRODUCTION

We hypothesize that a significant number of children undergoing bladder neck sling/reconstruction (BNR) without augmentation cystoplasty (AC) will result in altered bladder storage function and lead to re-emergence of incontinence and risk for upper tract changes.

METHODS

We retrospectively reviewed all neurogenic bladder patients with spinal dysraphism who underwent BNR and appendicovesicostomy without AC at our institution between 2000 and 2017. We performed multivariate analysis to identify preoperative clinical factors that predicted subsequent augmentation and/or BNR.

RESULTS

Thirty patients met inclusion criteria with a mean follow up 74.5 months. Two patients developed both VUR and HDN, 1 patient developed VUR only, and 1 patient developed HDN only. No patients developed CKD. Thirteen patients (43%) ultimately had additional bladder outlet procedures for new incontinence.
Twelve patients had subsequent bladder augmentation. Five of these 12 patients were included in the previously mentioned group of 13 who had additional bladder outlet procedures to achieve continence: BNC (3), redo BN sling (1), and BNI (1). Indications for AC included loss of bladder compliance (4), incontinence (4), combined loss of compliance and incontinence (3). When we analyzed the 12 patients who required AC and the 18 patients without AC, we did not identify any preoperative risk factors predictive for AC.
For the entire cohort of 30 patients, there were significant changes from preoperative to postoperative urodynamics with a mean increase in detrusor end filling pressure of 14.8 cm H2O (p = 0.028) and a decrease of expected bladder capacity (EBC) by 26.1% (p = 0.005) despite anticholinergic usage increasing from 60% to 93.3% of patients.

CONCLUSION

Our data illustrates BNR without AC is effective and safe in selected patients with normal bladder compliance and normal/near normal expected capacity. 53% of the patients had subsequent major reconstructive procedures with six-year follow-up.

28 - EFFICACY AND SAFETY O DOXAZOSIN IN THE DETRUSOR-SPHINCTER DYSSYNERGIA OF CHILDREN WITH SPINA BIFIDA

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OBJECTIVE

A major comorbidity of children with spina bifida is severe kidney disease caused by obstructed urinary tract emptying. One of the complications of urinary tract denervation is detrusor-sphincter dyssynergia (DSD). The purpose of the study is to identify additional pathogenetic factors, besides denervation, that underlie contracture of the urinary sphincter.

MATERIALS

Blood flow in the vessels of the anterior pelvic region (APR) was estimated using rheopelviography in 37 children aged 12-15 years with neurogenic detrusor overactivity, detrusor-sphincter dyssynergia, VUR I/II in 25 patients out of 37. All patients had angiospasm in the APR. Patients were divided into two groups. In group 1 (n=17) oxybutynin was administered, whereas group 2 (n=20) received oxybutynin and the alpha-1 antagonist doxazosin in 1mg. After 1, 3 and 12 months, urodynamic and rheographic monitoring was performed.

RESULTS

After 1 month of treatment in group 1, intravesical pressure decreased from 27-35 cm H2O to 23-25 cm H2O and the Cystometric capacity of the bladder increased from 60 ml to 150-160 ml, which indicates partial detrusor relaxation. Angiospasm persisted. Bladder function returned to baseline 2 months after treatment end. After 1 month of treatment in group 2 there was a significant improvement in rheoindices, median volume increased to 170-180 ml, intravesical pressure decreased and no adverse reactions were reported. These changes were maintained at follow-up at 1 month. Both groups received oxybutynin and doxazosin for 1 year in 30 day courses every 2 months. After 1 year the volume of the bladder was restored in all and its emptying improved. In 9 cases VUR disappeared, in 6 it lessened, in 10 no change.

CONCLUSION

Spina bifida with DSD is characterized by persistent angiospasm in the APR. For such patients it is advisable to provide combination therapy aimed at stabilizing the detrusor and sphincter.

29 - NEUROGENIC BLADDER BY MYELOMENINGOCELE AND TREATMENT WITH ONABOTULINUMTOXINA

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INTRODUCTION AND AIM OF THE STUDY

Intradetrusor Onabotulinumtoxin is a therapeutic alternative in patients refractory to anticholinergics, but a significant proportion of injected cases do not show significant decreases in endovesical pressures. The objective is to evaluate the effects of repeated intradetrusor OnabotulinumtoxinA injections and to propose new approach in neurogenic bladder anticholinergic-resistant.

MATERIALS AND METHODS

A total of 102 patients with a mean age of 11.3 years, with neurogenic bladder dysfunction, refractory to oral oxybutynin, received OnabotulinumtoxinA endoscopically. Patients with clinical and / or urodynamic improvement were reinjected. Patients without changes were send to bladder enlargement.

RESULTS

The patients were reinject with onabotulinumtoxinA, two, three, four and five times: 20 cases, 7, 4 and 1 case, respectively. About 50% on average achieved total urinary continence. In the first and second injection there was a significant increase in the mean cystometric capacity (p1: 0.007 and p2: 0.014), respectively. Mean intravesical pressure at the end of filling decreased on average from 47 to 44 cmH2O (not significant). In almost 25%, bladder enlargement was performed.

INTERPRETATION OF RESULTS

Although with intra-detrusor onabotulinumtoxinA, urinary continence and improvement in cystometric capacity were achieve in some cases; bladder hypertonia has not been improved. It is necessary to accelerate the increase of antimuscarinics, until reaching high doses. So define early anticholinergic refractoriness and consider the use of botulinum toxin.

CONCLUSIONS

The use of onabotulinumtoxinA in adolescents improves some variables, but it does not improve bladder hypertonia. Currently, onabotulinumtoxinA may delay the indication of bladder enlargement in some cases, but it does not replace it. Perhaps, to consider earlier the use of botulinic toxin can change the evolution of the disease.

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30 - LONG TERM SURGICAL OUTCOMES OF SPINAL LIPOMA AFTER PROPHYLACTIC UNTETHERING IN INFANCY: DOES LIPOMA TYPE PREDICT THE FUTURE UROLOGICAL CONDITION?

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INTRODUCTION AND AIM OF THE STUDY

Although the number of untethering for spinal lipoma at younger age is increasing, Yerkes et al1 recently reported 23% of patients required clean intermittent catheterization (CIC) and 14 % had urinary incontinence. The aim of this study is to evaluate the risk factors particularly the lipoma type for these urinary conditions after prophylactic untethering for spinal lipoma in infancy.

MATERIALS AND METHODS

Children with spinal lipoma of conus medullaris (except filar type) who underwent untethering under 1 year of age at our institution between 1990 and 2010, were investigated. Exclusions were children with less than 5 years of follow-up and symptomatic patients. Our outcomes of interest were the following; need of CIC, urinary incontinence and deterioration of renal function. Analysis included types of lipoma, level of conus, and follow-up time. Types of lipoma were classified into four categories according to embryopathogenetic surgicoanatomical classification (EPSAC)2 and the Chapman's classification3: caudal(C), dorsal(D), transitional(T) and lipomyelomeningocele (LMMC).

RESULTS

53 (24 males, 29 females) met inclusion criteria. Mean follow-up time was 13.6 years (range 6.0-24.0 years). During the follow-up, 10 (19%) patients required CIC. According to severity of spinal lipoma, the rates of CIC is significantly increasing (p= 0.0081). The number of patient with CIC is C : 0, D : 3(14%), T : 5(36%), LMMC : 2(40%). As for the urinary continence, there was a significant difference between lipoma type C, D and T, LMMC. No patient with lipoma type C, D showed urinary incontinence. Level of conus was not significantly associated with urinary conditions. Two patients (4%) had kidney scarring, one with T and one with D.

CONCLUSIONS

19% of patients with spinal lipoma who underwent prophylactic untethering eventually required CIC. Types of lipoma, both transitional and lipomyelomeningocele, were strong predictors of need for CIC and urinary incontinence.

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31 - ADOLESCENTS WITH NEUROGENIC BLADDER WITH MYELOMENINGOCELE: KIDNEY AND BLADDER FUNCTION AT TRANSITION TO ADULT CARE.

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INTRODUCTION AND AIM OF THE STUDY

The short-term prognosis for children with neurogenic bladder (NB) with myelomeningocele (MMC) has improved in recent decades, but the long-term outcome for kidney and bladder function is still a matter of debate. Today children with MMC are followed from birth till 16-18 years of age by both pediatric nephrologists and urologists. The kidney function and bladder status at the sensitive time of transition to adult care has not been clearly defined.

MATERIALS AND METHODS

The data of 64 children with NB were analyzed at time of transition to adult care. The average time of observation following myelomeningocele surgery was 17 years (15-18yrs). Outcome measures were defined as kidney and urinary tract damage or loss of function. Kidney damage was assessed by ultrasound (lack of corticomedullary differentiation) and kidney function by eGFR (MDRD calculation) with KDOQI categorization of Chronic Kidney Disease (CKD). Urinary tract damage was assessed by ultrasound (presence of hydronephrosis). Bladder status was further assessed according to need of CIC (clean intermittent catheterization), bladder surgeries and continence.

RESULTS

60% (39/64) of subjects developed CKD. 26% (17/64) had CKD1 with normal eGFR, the remaining 34% had decreased eGFR (22%-CKD2, 9%-CKD3, 1.5%-CKD4) with 1 boy requiring renal replacement therapy (1,5%-CKD5). The vast majority of children required CIC (85%), but only 45% performed the procedure independently. 37% (24) of subjects had augmented bladders with a stoma for catheterization. 58% (37) were incontinent between CIC procedures.

INTERPRETATION OF RESULTS

One-third of adolescents with NB due to MMC have decreased eGFR at time of transition to adult care and a further 1/3 have signs of kidney damage with preserved eGFR. The majority are incontinent and frequently dependent on a caregiver for CIC

CONCLUSIONS

Adolescents with NB require therefore close

surveillance and further active treatment following transferal to adult nephrology and urology care as they are at high risk of developing ESRD and present ongoing severe bladder problems.

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32 - PREDICTING POSTERIOR URETHRAL OBSTRUCTION IN BOYS WITH LOWER URINARY TRACT SYMPTOMS USING DEEP ARTIFICIAL NEURAL NETWORK

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PURPOSE

To assess prediction model for late-presenting posterior urethral valve (PUV) in boys with lower urinary tract symptoms (LUTS) using artificial neural network (ANN).

Materials and Methods: 408 boys aged 3-17 years (median 7.2 years) with LUTS were examined and had bladder diary, ultrasound, uroflowmetry, urine, and urine culture. Cystoscopy was recommended when peak flow rate (Qmax) was persistently ≤5th percentile in patients who were unresponsive to urotherapy. With four-layered backpropagating deep ANN the probability of finding PUV was estimated using noninvasive, quantitative parameters (age, Qmax, time to peak flow, voided volume, flow time, voiding time, average flow rate).

RESULTS

There were 97 patients with low Qmax and 74 were unresponsive. In 41 cystoscopy was performed and PUV was diagnosed in 37 (9.1%). In multivariate analysis, significant variables in favor of PUV were urgency (OR=3.96, 95% CI=1.30-12.03, p=0.015), increased voiding frequency (OR=3.81, 95% CI=1.03-14.11, p=0.045), and weak stream/intermittency (OR=8.30, 95% CI=2.49-27.63, p=0.001). The ANN dataset included 87 uroflows of children with PUV and 114 uroflows classified normal. Best performance was with two hidden layers with four neurons each. Best test accuracy was 92.7% and AUROC was 98.0%. With cut-off value of 0.8, sensitivity was 100.0%, specificity 89.7%, positive predictive value 80.0%, and negative predictive value 100.0%.

Conclusions: With ANN model, we accurately predicted 92.7% of late-presenting PUV using uroflowmetry. Considering high frequency of PUV in boys with LUTS, especially in cases of urgency, increased voiding frequency, and weak stream or intermittency, accurate prediction could lead to timely treatment.

KEYWORDS

artificial neural network, boys, lower urinary tract symptoms, posterior urethral valve, cystoscopy

33 - DOES BLADDER CAPACITY (BC) AND POST-VOID RESIDUAL (PVR) AT 5 YEARS OF AGE IN BOYS WITH POSTERIOR URETHRAL VALVES (PUV) CORRELATE WITH RENAL FUNCTION?

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INTRODUCTION AND AIM OF THE STUDY

BC and PVR in PUV may be abnormal. We aimed to evaluate these at the age of 5 and establish whether they correlate with renal function.

MATERIALS AND METHODS

Retrospective review and data collection of non-invasive urodynamics (NIU) and eGFR performed at 5 years of age in PUV boys. Outcome measures: BC, percentage ratio of BC to expected BC (EBC), voided volume (VV), PVR and eGFR. EBC, BC (large>150% EBC, small<65% EBC) and PVR (incomplete emptying>10% BC) defined as per ICCS criteria1.

Pearson coefficient used to compare VV and PVR, BC/EBC% and eGFR (p significant <0.05).

RESULTS

We identified 62 boys who underwent NIU and eGFR between 2008-2018. 4 excluded because had already undergone bladder augmentation and 4 due to missing data.

Table 1. Distribution of incomplete emptying with BC.

BC/EBC%	Total n=54	Satisfactory emptying n=17 (32%)	Incomplete Emptying n=37 (68%)
Large	n=12 (22%)	n=0	n=12 (100%)
Normal	n=37 (68%)	n=14 (38%)	n=23 (42%)
Small	n=5 (9%)	n=3 (60%)	n=2 (40%)

VV does not correlate to PVR (p=0.1335).

BC/EBC% does not correlate to eGFR (p=0.8796).

Table 2. Distribution of incomplete emptying with CKD stages.

	CKD Stage 1 n=19 (35%)	CKD stage 2 n=16 (30%)	CKD stage 3A/3B n=9 (17%)	CKD stage 4 n=3 (6%)	CKD stage 5* n=7 (13%)
Satisfactory emptying n=17 (32%)	n=6 (32%)	n=6 (37%)	n= 2 (20%)	n=1 (33%)	n=1 (14%)
Incomplete emptying n=37 (68%)	n=13 (68%)	n=10 (63%)	n=7 (78%)	n=2 (67%)	n=6 (86%)

*Includes transplanted patients

14 patients (26%) had normal BC and normal PVR. Among these, 8 (57%) had renal impairment.

CONCLUSIONS

At 5 years only 11% of PUV boys had normal BC, PVR and eGFR. None of the analysed parameters correlate with eGFR.

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34 - IS PEAK CREATININE INFLUENCED BY POST-RESECTION BLADDER FUNCTION IN INFANTS WITH POSTERIOR URETHRAL VALVES?

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INTRODUCTION AND AIM OF THE STUDY

Bladder function in boys born with posterior urethral valves (PUV) is often abnormal. PUV patients are also seen to have deranged renal function which is directly related to the degree of renal dysplasia. This is influenced by multiple factors in the antenatal period such as age at diagnosis, degree of renal dilatation and loss of corticomedullary differentiation. The deranged renal function is reflected by the peak creatinine level.
The aim of this study was to determine any correlation between the bladder function (BFA – bladder capacity, emptying) of infants with Renal Function (peak creatinine level).

MATERIALS AND METHODS

Between July 2015 and March 2018 we prospectively evaluated bladder function of all infants (0-3 months) with PUV after primary resection using 4-hour voiding observation. Bladder Capacity, bladder emptying, and Peak Creatinine (PC) were recorded. Estimated bladder capacity (eBC) was determined using Capacity (ml) = 7 × weight (kg). Large or small BC (>150% and <65% eBC respectively) was considered abnormal. Peak creatinine post birth was also recorded. Patients were divided in 2 groups: peak creatinine over 80umol/L and below 80uml/L. All results given as median (range). Chi square used for statistical analysis.

RESULTS

25 male infants, median age 25 days (5-94) were included. All had 4-hour voiding observation within 7 days (median 1 day) after catheter removal post primary valve resection. Bladder capacity (BC) was abnormal in 14 babies (56%), large in 10 (40%) and small in 4 (16%). 11 babies (44%) had incomplete bladder emptying. In group 1 (15 infants, 60%), median creatinine was 171.5 umol/L (99-708). In Group 2 (10 infants, 40%) median creatinine was 74.5 umol/L (41-80).

INTERPRETATION OF RESULTS

Bladder capacity or incomplete emptying had no significance on peak creatinine (p=0.621 for both parameters).

CONCLUSIONS

Peak creatinine does not seem to be influenced by bladder capacity or incomplete bladder emptying in PUV infants.

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35 - MANAGEMENT OF THE BLADDER WITH POSTERIOR URETHRAL VALVES AND TRANSPLANTATION

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INTRODUCTION AND AIM OF THE STUDY

Posterior urethral valves (PUV) represent a spectrum of disease with varying degrees of renal dysplasia and bladder dysfunction. Unfortunately, a significant percentage of boys progress to End Stage Renal Disease (ESRD) and are candidates for renal transplantation. We outline our institution's experience with evaluation and management of PUV boys, prior to and following transplantation to identify significant trends.

MATERIALS AND METHODS

A retrospective review was performed of all boys presenting to our transplant center with PUV. Radiographic imaging, lab testing and urodynamic studies were evaluated and postoperative care was assessed.

RESULTS

23 boys with PUV, ranging in age from 1 -18 years at the time of transplant evaluation were identified and 22 proceeded to transplantation. Age at diagnosis of PUV ranged from antenatal (39%), with 2 undergoing vesicoamniotic shunt, to 10 years. Initial management was transurethral resection in 30% with the balance having pyelostomy or vesicostomy. Augmentation cystoplasty was required in 26%, utilizing ileum or ureter equally. Pretransplant urodynamic testing was limited by age and presence of high grade vesicoureteral reflux, and revealed detrusor overactivity/hypertonicity in 22% with large capacity in 13% (excluding augmented cases), in boys of 4 -17 years. After transplantation, anticholinergic therapy was used in 27%, intermittent catheterization in 36% (some with nocturnal bladder drainage) and 1 patient required post-transplant augmentation cystoplasty. 32% experienced difficulties with UTI. The most prevalent continence issue was nocturnal enuresis – 18%, with average surveillance after transplantation of 6.27 years. Hydronephrosis of the transplant occurred in 14%. Only 1 case of postoperative deterioration of renal function could be attributed to bladder factors – poor compliance with catheterization.

INTERPRETATION OF RESULTS

Boys of all ages with PUV in ESRD can demonstrate variable degrees of bladder dysfunction which may impact renal transplantation.

CONCLUSIONS

Careful evaluation and management of the bladder dysfunction with PUV is critical to optimize continence and graft success after transplantation.

36 - COWPER'S SYRINGOCELE IN THE PEDIATRIC POPULATION: A RETROSPECTIVE STUDY OF 122 PATIENTS

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INTRODUCTION AND AIM OF THE STUDY

Syringocele is a rare cystic dilatation of the duct of Cowper's gland, afflicting mostly the paediatric population. Syringoceles have a wide range of symptoms and may cause urethral obstruction. We analysed 122 cases in order to clarify the clinical manifestation, diagnostic approach, management and incidence in the pediatric population.

MATERIALS AND METHODS

All patients diagnosed with a syringocele at our department between August 1991 and October 2016 were analysed retrospectively by assessing medical charts.

RESULTS

The overall incidence of syringoceles was 3.0%, based on UCS performed in approximately 4.000 boys over 26 years. The most frequent presenting symptoms were UTI (50.0%) and obstructive voiding symptoms (45.9%). UCS revealed 31 open and 83 closed syringoceles. In 8 patients two coexisting syringoceles were found. Approximately half of the patients also had PUV. Treatment consisted of incision of the syringocele with a diathermy hook.

INTERPRETATION OF RESULTS

The youngest half of our patients had significantly more UTIs at presentation than older patients, who presented with significantly more obstructive voiding symptoms, post-voiding residuals and incontinence. In addition, the younger group had a significantly higher incidence of VUR and dilatation of the upper urinary tract. An association between syringoceles and PUV suggests a common origin, which could be overgrowth of epithelium.

CONCLUSIONS

With an incidence of 3.0%, syringoceles should be considered in the differential diagnosis of obstructive urethral lesions. The presentation ranges between signs of severe obstructions in the pre- and postnatal period to mild urinary incontinence problems at later age. UCS proved to be diagnostic in confirming the diagnosis, as well as therapeutic in allowing transurethral incision.

37 - INTERMEDIATE-TERM URINARY AND BOWEL SYMPTOMS AND UROFLOW CURVE PATTERN OUTCOMES AFTER HYPOSPADIAS SURGERY: A RETROSPECTIVE COMPARATIVE STUDY

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INTRODUCTION AND AIM OF THE STUDY

Several techniques are available for hypospadias repair. Tubularized incised-plate (TIP) urethroplasty is preferred for low complication rates and acceptable cosmetic results1) although it reduces maximal urinary flow (Qmax) values in childhood.2) We aimed to analyze urinary and bowel symptoms and urethral functional outcomes after TIP.

MATERIALS AND METHODS

A cross-sectional assessment of intermediate-term outcomes (including uroflowmetry results and symptoms—daytime urinary incontinence, enuresis, and constipation) of patients (4–25 years old), who underwent hypospadias surgery under a single surgeon during infancy, was performed in August 2017. Obstructive urinary flow patterns, defined as Qmax <5th percentile of Miskolc's nomogram (plateau) and uroflowmetry patterns were categorized into 5 groups according to ICCS recommendations3). We compared

the results of patients treated with TIP to those treated differently.

RESULTS

The median follow-up period was 11 (3-20) years and average age at primary surgery was 1.5 (0-7) years. Among 55 patients, 24 (44%) underwent TIP, and 12, 10, 3, 5, 2, and 1 underwent the Onlay, Koyanagi, Duckett, MAGPI, BAVIS, and Burcat procedures, respectively. Qmax was lower after TIP compared to the control nomogram. Uroflowmetry showed bell-shaped curves in 10 cases, a tower-shaped curve in 1, and plateau-shaped curves in 9. Plateau-shaped curves were significantly more common after TIP versus other methods (10/24 (42%) versus 2/31 (6%); p=0.008). Of 55 patients, 1 had daytime incontinence after TIP. Enuresis occurred more often after TIP (8/24 (33%) versus 9/31 (29%); p=0.7) whereas constipation occurred more often after other methods (3/24 (13%) versus 6/31 (19%); p=0.78).

INTERPRETATION OF RESULTS

At intermediate-term follow-up after hypospadias surgery, patients who underwent TIP showed occult urethral obstruction.

CONCLUSIONS

Patients who underwent TIP had abnormal urinary flow patterns; there were no correlations among urinary symptoms, constipation, and surgical methods. TIP urethroplasty is an acceptable intermediate-term method.

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38 - TRANSVESICAL LAPAROSCOPIC CROSS-TRIGONAL URETERAL RE-IMPLANTATION FOR VUR PATIENTS WITH BLADDER BOWEL DYSFUNCTION

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INTRODUCTION AND AIM OF THE STUDY

We have reported 170 cases of transvesical laparoscopic cross-trigonal ureteral re-implantation (TLCUR) since 2005 for correction of VUR as a minimally invasive alternative surgical option. Although bladder dysfunction is reported as an important predictor of the surgical outcomes for correction of VUR, no data are yet available regarding impact of Bowel bladder dysfunction on the outcomes ofC. This objective was to evaluate the impact of bladder bowel dysfunction on VUR surgical outcomes by TLCUR.

MATERIALS AND METHODS

Fifteen patients (3 males and 12 females) with VUR, who suffered from symptomatic bladder bowel dysfunction, underwent TLCUR. The outcomes of the 15 TLCUR with BBD were compared to those of other 100 patients (control group) who underwent TLCUR without any bladder dysfunction.
Post-operative evaluation included voiding cystourethrography (VCUG) at post-op six months and DMSA scintigraphy at post-op one year. In the all 15 BBD patients, treatments for BBD were continued through pre- and post-operation. A success of VUR surgery was defined as that VUR was either cured or downgraded at once, and also febrile urinary tract infection was never observed.

RESULTS

The median age was 9 years (2-59). The median time for one-sided surgery was 135 min (115-230 min) was not statistically different from that of control group of 145min. The median time for both-sided surgery was 220 min (165-315 min) was not statistically different from that of control of 216 min.
Success rate of the 15 BBD patients was 75% (18/24) with that of 83% in the one-sided cases (5/6), and that of 72% in both-sided cases (13/18). On the other hand, success rate of control group was 96%with that of 94% in one-sided cases, and 96% in both-sided cases. The patients with BBD had significantly ($p<0.0007$) lower success rate.

INTERPRETATION OF RESULTS

BBD is a risk factor against TLCUR surgery success rate.

CONCLUSIONS

Success rate of TLCUR to treat VUR in the patients with BBD was lower than that in VUR patients without BBD.

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39 - A PROSPECTIVE STUDY ON HEART RATE VARIABILITY AND HEMODINAMIC PARAMETRES IN CHILDREN AND ADOLESCENTS WITH LUTD

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INTRODUCTION AND AIM OF THE STUDY

The autonomous nervous system (ANS) participates in the control of the lower urinary tract and digestive system, any alteration of the ANS may cause dysfunctions of both organ systems. The aim of the study is to analyze and compare the pattern of variability amongst cardiac frequency and hemodynamic measurements in children and adolescents with and without LUTD.

MATERIALS AND METHODS

The cases were composed of 32 subjects (22 female and 10 male) and the control group of 29 subjects (15 male and 14 female) (p= 0.10). The evaluation included BMI, DVSS, SDQ, SDSC, Rome IV criteria and a questionnaire about physical activity, ultrasound, uroflowmetry with EMG. The study of the SNA was performed with a Finometer during rest, during deep respiration (parasympathetic stress) and during orthostatism (predominant sympathetic stress).

RESULTS

During rest, a smaller interval RR was found (740 vs. 796; p=0.014) within the cases of BH. Under deep respiration the same was observed within cases of LUTS (756 vs. 825; p=0.049), BH (760 vs. 825; p=0.037) and enuresis (719 vs. 825 p=0.036). SDNN under deep respiration was (50.3 vs. 60.6; p=0.052) for BH cases and (74.1 vs. 103.4; p=0.009) for cases of enuresis. The TP under the same condition was (5880 vs. 9443; p=0.054) for OAB and (5401 vs. 9443; p=0.023) for cases of enuresis. The hemodynamic measurements during rest for LUTS cases were: stroke volume (36.5 vs. 50.8 p=0.050) and cardiac output (2.86 vs. 3.93; p=0.034). For OAB cases, stroke volume (39.2 vs. 50.8; p=0.046) and for Enuresis cases, stroke volume (39.3 vs. 50.8; p=0.030) and cardiac output (2.91 vs. 3.93; p=0.036).

INTERPRETATION OF RESULTS

The present study evaluated HRV as well as hemodynamic measurements and was able to point out that lower parasympathetic responses and higher sympathetic responses were found specially within cases of enuresis, which is compatible with recent studies.

CONCLUSIONS

Hypoactivity of the parasympathetic system and faster response of the sympathetic system was seen within the case group, especially within cases of enuresis and overactive bladder.

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40 - LOWER URINARY TRACT DYSFUNCTION IN CHILDREN WITH HYPERMOBILITY OF JOINTS

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INTRODUCTION

Joint hypermobility (JH) is a clinical condition that can occur alone or with various genetic disorders such as Ehler-Danlos syndrome, Marfan syndrome, osteogenesis imperfecta and Down syndrome in children. There is excessive laxity at the some joints in this condition. Lower urinary tract dysfunction (LUTD) is one of the childhood urological problems that constitute a serious problem for families and children. There are very few publications that have examined the relationship between JH and LUTD in children. The aim of this study was to investigate the presence and sub-types of LUTD in children with JH.

MATERIALS AND METHODS

Between 2016 and 2017, we retrospectively analyzed the hospital records of a total of 69 children who identified LUTD after toilet training. Non-invasive tests [3-day-bladder diary, urinary ultrasonography, the dysfunctional voiding and incontinence symptom scoring system (DVISSS), uroflowmetry with electromyography (UF-EMG)] were used while the patients are evaluated in terms of LUTD. Children who were admitted to our clinic with LUTD were taken to biofeedback treatment. The patients were assessed by a trained nurse with the Beighton scoring system in terms of JH.

RESULTS

It was determined that 12 out of 69 patients (17.3%) had LUTD with JH. The mean age of the patients was 7.58 and 4 (33%) of them were boys and 8 (67%) were girls (Table 1). The mean Beighton score of the patiens was 6.08 (Table 1). Among the sub-types of LUTD, the most frequent one was OAB (66.6%) (Table 1). It was found out that 3 of the patients had constipation and 1 had fecal soiling. It was determined that 6 out of 12 patients had been treated for urinary tract infection.

CONCLUSION

LUTD may be frequently detected in children with JH. These children should be evaluated and treated in terms of LUTD. We think that collagen synthesis abnormalities such as JH are related to the

pathophysiology of pelvic floor dysfunction. Future prospective studies are needed to verify the relationship between LUTD and JH.

Table 1

	Patients
Age (years)	
Mean and range	7.58 (5-11)
Gender no. (%)	
Girls	8 (66.6%)
Boys	4 (33.4%)
LUTD no.	69
LUTD with JH no. (%)	12 (17.3%)
Sub-types of LUTD with JH no. (%)	8 (%)
OAB	2 (%)
DV	1 (%)
VP	1 (%)
PNE	
Beighton score	
Mean and range	6.08 (4-8)
Constipation no. (%)	3 (25%)
Fecal soiling (%)	1 (8.3%)

41 - HEART RATE VARIABILITY IN CHILDREN AND ADOLESCENTS WITH OVERACTIVE BLADDER.

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INTRODUCTION AND AIM OF THE STUDY

The aim of this study is to evaluate the autonomic balance in children and adolescents with overactive bladder (OAB).

MATERILS AND METHODS

The Inclusion criteria were age from 5 to 17 years and the presence of urgency. The exclusion criteria were neurological and anatomical abnormalities of the lower urinary tract, diabetes, kidney failure and hypertension. The symptoms were evaluated by dysfunctional voiding system score (DVSS) and Rome III questionnaire. For HRV we used polar and the MP 150 device Data Acquisition System. Healthly patients of the same age from the pediatric ambulatory unit were used as controls. The HRV data was collected for one minute when the patient was at rest (pre-filling phase), when the bladder was full and right after voiding.

RESULTS

Total of 20 controls (G1) and 44 OAB participants (G2). The mean age and gender were similar between groups. G1 mean HR (BPM) in the pre-filling (PF), Pre-voiding (V) and post-voiding (PV) phases was 92.8 ± 17.2, 87.9± 16.1, 89.9 ± 15.3 respectively (p=0.02); LF/HF PF, V and PV phases was 1.3 (0.8-2.5), 0.8*(0.5-1.9) and 1.5 (1.1-1.7), respectively (*p=0,05).Regarding G2 the RR triangular index PF, V, PV phases was 10 (7.5-12), 9.8 (7.7-14.4) and 9.8 (8.2-13), respectively (p=0.03); the Peak VLF (sec2/Hz) PF, V, PV phases was 0.03* (0.02-0.04), 0.02 (0.01 – 0.03) and 0.02 (0.01-0.03), respectively (*p=0.03).Comparing the groups Peak LF (sec2/Hz) in PV phase were 0.09 (0.05-0.1) in G1 and 0.07 (0.04-0.1) in G2 (p=0,03) and the BMI was higher in G2 (p=0,01).

CONCLUSIONS

Patients with OAB had a lower VLF and LF activity which is associated with sympathetic activity. Also, the OAB group had higher sympathetic action at post voiding phase and were more likely to be overweight.

42 - AN INNOVATIVE NEW DEVICE TO MEASURE URINARY-PATTERN

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INTRODUCTION AND AIM OF THE STUDY

Frequency-volume charts are a valuable tool used to gain more insight in the voiding pattern in everyday life(1-2). If due to mental retardation and/ or severe syndromes this is not achievable an innovative new device measuring urinary pattern might be an option. In this case study we examined this new device.

MATERIALS AND METHODS

A 9 years old boy diagnosed with CHAOS-syndrome, PDD-NOS and severe psychomotor retardation, visited our clinic. His parents asked for potty train options but due to his condition his urinary-pattern was unclear.
An innovative device built-in in a diaper, designed to measure urinary loss in millilitres (ml), is attached via Bluetooth to a tablet. Also fluid intake and signs like urgency, restlessness or absences can be filled in. Meanwhile diapers were weighed when changed.

RESULTS

Urinary-pattern was measured 3 x 24 hours (72 hours)
Mean daytime frequency: 17 (14-20) x, mean capacity: 97 (25-225) ml.
Diaper was changed 7-9x/24 hours, diaper weight correlated with urinary loss. The total loss was between 1700-2325 ml/24 hours. Fluid intake: 2050-2275ml.
Mean night time frequency: 3,6 (3-5) x, mean capacity: 110 (25-225) ml.
The patient has Oxygen during the night. Patients/caregivers experienced restlessness during night time urination 3) and Oxygen alarm at that moment.

INTERPRETATION OF RESULTS

Based on the results of the device there seems to be a small bladder capacity due to an overactive bladder. Antimuscarinics were started in a low dose and the patient was placed on a toilet every half an hour after drinking (6-8x/day). Due to this regime the parents experience significant less diaper change and weight.

Furthermore night time Oxygen could be reduced whilst the alarm was related only to urination and not to other respiratory problems.

CONCLUSIONS

Innovative devices can be a good solution to measure daily urinary-pattern in children or adults with severe syndromes or cognitive problems.

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43 - FUNCTIONAL MAGNETIC RESONANCE IMAGING (FMRI) DURING TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS)- A PRELIMINARY REPORT

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INTRODUCTION AND AIM OF THE STUDY

The exact mechanism of transcutaneous electrical nerve stimulation (TENS) is still unexplained and has not been examined by imaging techniques yet. Preliminary data from a small sample showed that CNS centers such as the frontal inferior gyrus and the anterior cingulate gyrus can be activated during TENS stimulation. The aim of this study was to analyze the effects of parasacral TENS on CNS centers during functional brain MRI in a larger sample of continent adults (n=12).

MATERIALS AND METHODS

Two surface electrodes (verum) were attached parasacrally at the level S2-S3. Another two surface electrodes (lateral) were placed laterally below the verum electrodes to create a control condition. The electric nerve stimulation was performed by a technically modified TENS device, adapted to MRI conditions. We defined three conditions: verum stimulation, lateral stimulation and no stimulation. A 10-Hz frequency with a 35-sec pulse duration and biphasic waveform was used for verum und lateral stimulation. While performing a brain fMRI, all three conditions were randomly administered six times per person. This study protocol was performed in 12 healthy adults.

RESULTS

The preliminary results demonstrate that, compared with no stimulation, there is a qualitative difference between lateral and verum stimulation. We could not show an activation of the pontine micturition center. A large heterogeneity regarding activated brain areas between subjects could be demonstrated.

INTERPRETATION OF RESULTS

This study replicates previous findings, showing an immediate effect of TENS on CNS activation. The methodology of our study seems to be feasible in children, as well. The study design will be performed in a larger sample of continent adults first and then in incontinent children and continent controls.

CONCLUSIONS

The study shows clearly that TENS activates diverse centers of the CNS, which could be a major reason for the effectiveness of this treatment in OAB. The placement of the electrodes seems to have an impact on CNS activation.

44 - THE WATCH STUDY – ALARM WATCH FOR TREATING DAYTIME URINARY INCONTINENCE

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INTRODUCTION AND AIM

Timed voiding is a common treatment for daytime urinary incontinence (DUI)1. Alarm watches are sometimes used to aid timed voiding in children2. However, it is uncertain whether the alarming affects treatment success. We conducted a randomised controlled trial to compare an alarming watch with a non-alarming watch for timed voiding in children with DUI.

METHODS

Children aged 5 to 13 years with DUI referred to a tertiary continence service were invited to participate. Participants were randomized to either an alarming watch (with the alarm set to approximately two hourly intervals at times defined by the parents to fit in with the child's daily routine) or an identical non-alarming watch for 3 months. Participants were stratified by age, gender and severity of incontinence. The primary outcome was the proportion achieving 14 consecutive dry days at 3 months. Secondary outcomes include reduction in incontinence frequency, dysfunctional voiding and quality of life.

RESULTS

241 children (mean age 8 year, 37% boys) participated. 121 had an alarming and 120 a non-alarming watch. At

baseline, 39% alarm versus 28% non-alarming group had a ≥ 10ml post void residual volume (difference: 11%, 95%CI: -1%; 22%).
After treatment 15% alarm versus 12% non-alarming groups achieved 14 consecutive dry days (difference: 3%, 95%CI: -6%; 12%). 49% alarm vs 27% non-alarming groups had a ≥ 50% reduction in incontinence frequency (difference: 22%, 95%CI: 7%; 31%). Dysfunctional voiding resolved in 66% alarm versus 55% non-alarming groups who had dysfunctional voiding (difference: 11%, 95%CI: -11%; -32%).

INTERPRETATION OF RESULTS

There was no statistical difference in achieving 14 dry days and in resolution of dysfunctional voiding between groups, although more in the alarming watch group achieved ≥ 50% reduction in incontinence frequency.

CONCLUSIONS

Both alarming and non-alarming watches are effective for reducing daytime wetting in children doing timed voiding.
This study was supported by a Foundation for Children Grant.

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45 - IS EFFICACY OF TENS TREATMENT FOR OVERACTIVE BLADDER IN CHILDREN INFLUENCED BY BMI AND COMPLIANCE?

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INTRODUCTION AND AIM OF THE STUDY

Transcutaneous electric nerve stimulation (TENS) has been used for treating day and night-time urinary incontinence secondary to overactive bladder (OAB) as alternative to urotherapy and anti-muscarinic drugs. We hypothesized that compliance and body shape have a significant role in the outcome of TENS and aimed to assess it in our population.

MATERIALS AND METHODS

We randomly selected a cohort of patients from our prospectively maintained database. Patients were prescribed TENS treatment for a maximum of 84 days. A bladder-voiding diary was completed by parents. Patients were followed-up 3 months after the initiation of treatment. Demographic data including age, gender and BMI were collected. Outcome parameters included: resolution of symptoms, length of treatment and compliance. We analysed results dividing patients based on BMI (table 2: Underweight (BMI<18.5), normal (18.5< BMI < 25), Overweight (BMI > 25)) and compliance (table 3). Chi squared and Fisher's test were used to explore significance.

RESULTS

	Total n=326	Females n=197(60%)	Males n=129(40%)
Median age	9(4-17)	10(4-17)	9(4-16)
Good Compliance	274(84%)	171(87%)	103(80%)
Median Days used/84	82(5-84)	81 (5-84)	82(7-84)
No response	142(44%)	82(42%)	60(47%)
Partial/complete response	184(56%)	115(58%)	69(53%)

	Total N=303	Underweight n=168(55%)	Normal n=102(34%)	Overweight n=33(11%)	p
No response	135(45%)	77(46%)	42(41%)	16(48%)	
Partial/complete response	168(55%)	91(54%)	60(59%)	17(52%)	0.67

	Total n=326	Poor compliance n=52(16%)	Good compliance n=274(84%)	p
No response	140(43%)	27(51%)	113(41%)	
Partial/complete response	186(57%)	25(49%)	161(59%)	0.17

INTERPRETATION OF RESULTS

Both BMI and compliance have not reached statistical significance in regards to the success of the treatment.

CONCLUSIONS

In this large cohort we have obtained partial/complete response in more than half of the patients. Compliance was high (84%) but not associated with success.

46 - EFFECTIVENESS AND FEASIBILITY OF PERCUTANEOUS TIBIAL NERVE STIMULATION (PTNS)FOR REFRACTORY OVERACTIVE BLADDER IN CHILDREN.

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INTRODUCTION AND AIM OF THE STUDY

Overactive bladder (OAB) is a common condition in school aged children. In 20-40% standard treatment options like urotherapy, psychological counseling and medication are insufficient. Percutaneous Tibial Nerve Stimulation (PTNS) is an approved treatment for therapy refractory OAB in adults but not yet frequently used in children. We evaluated the effect and feasibility of PTNS in Dutch children.

MATERIALS AND METHODS

Prospective, explorative, observational study in children with refractory OAB for at least one year. A total of twelve consecutive outpatient PTNS treatment sessions were given lasting 30 min each. Frequency voiding

chart (PVC) parameters, quality of life questionnaires and episodes and severity of incontinence were assessed at baseline, at 3 months and during follow-up.

RESULTS

A total of 20 children with a mean age of 9.7 years were included. A complete response was seen in 9 patients (45%), a partial response in 7 patients (35%) and in 4 patients (20%) no response was seen. There were no significant changes in urgency, day-and nighttime frequency, diaper weight and maximum voided volume corrected for expected bladder capacity for age (EBC) from baseline to the end of the study. Average voided volumes corrected for EBC increased significantly (p= 0.03) as quality of life (p 0.0002). No side effects or fear for needle insertion was recorded.

INTERPRETATION OF RESULTS

PTNS is a feasible treatment modality in children with an additional 45% complete response rate in those patients treated for a prolonged time without success. FVC parameters remain unchanged except for a slight increase in average voided volumes corrected for EBC. Peer contact and social interaction during the treatment sessions might positively influence the outcomes.

CONCLUSIONS

PTNS is feasible in children with therapy refractory OAB with an overall effect of 80 %.

47 - VOIDING CAMP AS A TREATMENT OF DAYTIME INCONTINENCE OR ENURESIS

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BACKGROUND

Enuresis and daytime urinary incontinence (DUI) are common in children. Despite different adequate therapies, some children remain therapy-resistant. An outpatient bladder rehabilitation program, in the concept of a voiding camp (organised by the 'Bond Moyson') was established as an alternative strategy for treatment of these children.

OBJECTIVE

The aim of the study was to evaluate the outcome of this voiding camp program for children with therapy-resistant incontinence (DUI and /or enuresis).

MATERIAL AND METHODS

We performed a retrospective review of 132 children, 47 girls and 58 boys aged 5-14 years, followed at the Ghent University Hospital, who attended a voiding camp between 2012 and 2017. Some children attended the camp more than once which results in a total of 156 cases. Outcome was evaluated by comparing number of wet days and wet diapers registered in a voiding diary before, during and after the camp. 5 time points were analyzed: at 1st consultation, at entry and completion of voiding camp, 3 and 6 months after voiding camp.

An exact sign test was used to compare the number of wet days (per week) and wet nights (per week) between the consultation before the camp and the consultation immediately after the camp. The same was done to the number of wet days and nights between the consultation immediately before the camp and 3 months after the camp.

RESULTS

The number of wet days (per week) and the number of wet nights (per week) did not significantly change between the consultation immediately before the camp and immediately after (p = 0,289 and p=508 respectively). The number of wet days (per week) did significantly change between the consultation immediately before camp and 3 months after the camp (p= 0,039). However, the number of wet nights (per week) did not significantly change between those two consultations (p = 0,92).

CONCLUSION

Voiding camp does seem to have some effect on daytime incontinence, but none on enuresis in a three months period after the camp. This outcome can be explained by the fact that when a child has both enuresis and DUI, the therapy will first focus on DUI. Only once daytime urinary continence has been established will the therapy start to focus on enuresis.

48 - INCONTINENCE: THE IMPORTANCE OF ANATOMICAL VARIATION IN THE LEVEL OF ATTACHMENT OF THE PUBORECTALIS MUSCLE TO THE FEMALE URETHRA

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INTRODUCTION AND AIM OF THE STUDY

The level of attachment of the pelvic floor muscle may vary from a few mm of the bladder neck to distal around the urethra near the meatus. In dysfunctional voiding(DV) the length of the spinning top urethra gives away the point of engagement of the puborectalis muscle.The aim of this study was to evaluate in a pilot study if the length of the spinning top urethra in girls with DV plays a role in the outcome of urotherapy.

MATERIALS AND METHODS

Video urodynamic investigations of 57 girls were studied and the length of the spinning top urethra was categorized into 4 levels. The scoring was done by two independent reviewers. In a retrospective chart review the effect of the urotherapy was evaluated to see if there was a correlation between the length of the spinning top urethra and the result of urotherapy. As end points for evaluation were taken complete dryness and improvement at the end of urotherapy.

RESULTS

26 of the 57 girls had a spinning top urethra on video urodynamics. There was no difference between the length of the spinning top urethra and the effect of urotherapy in this group. There also was no difference

between the length of the spinning top urethra and the final end points of complete dryness and improvement at the end of urotherapy.

CONCLUSIONS

In our pilot study we found a variety in the length of the spinning top urethra in incontinent non neurogenic girls. However we could not find a correlation between the length of the spinning top urethra and a predictive role in the outcome of urotherapy.

49 - THE USE OF UROFLOWMETRY COMBINED WITH ELECTROMYOGRAPHY TESTING IN HEALTHY CHILDREN

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INTRODUCTION AND AIM OF THE STUDY

To investigate if the standard protocol for uroflowmetry, recommended by the International Children's Continence Society1, remains accurate when integrating EMG measurement by means of superficial electrodes.

MATERIALS AND METHODS

A cross-sectional study was conducted including healthy children. Group A performed two direct repetitions of uroflowmetry in combination with electromyography (uroflow/EMG). Group B performed a preceding measurement of isolated uroflowmetry, followed by two randomized measurements of uroflowmetry with and without EMG. Interpretation of uroflow curve was assessor blinded by a pediatric urologist1 and secondly performed using the flow index methodology2. Statistical analysis compared different voids within each group and between group A and B.

RESULTS

83 children were included and 206 uroflow measurements were obtained. In both groups statistical findings confirmed that it is preferable to perform an additional measurement before the use of uroflow/EMG (Qmax p = 0.001 and p = 0.07; global test curve classification p < 0.001 and p < 0.001 for group A and B respectively). Although both groups showed improvement between voids, the group with initial uroflow measurement followed by uroflow/EMG measurement showed more improvement in concern of curve pattern (p = 0.03 for evolution from fractionated to smooth curves). An initially better first void in group A, but no statistical difference between the second void in group A and uroflow/EMG testing in group B further demonstrates a higher improvement in group B.

INTERPRETATION OF RESULTS

It should be mandatory to perform one measurement in advance of testing to ensure the reliability of the results. Based on demonstrated results and time- and cost-efficiency, it is suggested to initiate with a single uroflowmetry measurement followed by one measurement of uroflow with EMG testing.

CONCLUSIONS

The use of a precedent uroflowmetry without EMG is preferable to immediate testing with EMG.

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50 - IS IT IMPORTANT TO DO PELVIC FLOOR EMG TO DEVELOP "NORMAL" NOMOGRAMS?

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The definition of normal varies dependent on the population one is examining. Therefore a well defined and precise definition is critical when trying to define the normal voider. Many nomograms have been created and the vast majority do not utilize pelvic floor EMG to determine if there is pelvic floor activity. This is common in both the adult and pediatric literature. We hypothesize that supposed normal bell voiders who void with abnormal pelvic floor activity would have discernible differences in flow rates from those with quiet pelvic floors.

Utilizing our database of 4133 female uroflows we identified all who were >12 yo and all flows that were in 1st SD of the Liverpool nomograms. We then refined the criteria further to make sure that all voided at least 50 cc, had a PVR < 20 cc, and VV was ≤ 115% of EBC (398) All flows had to be continuous with a bell shaped curve and separated those with silent and active pelvic EMG. 95 studies were quiet and 141 were active pelvic floors. Kruskal-Wallis analysis of the Qmax, the various estimated Qmax derived from different formulas and the Flow Index (Qmax act/Qmax est) were evaluated for differences.

RESULTS

When Qmax is analyzed there is no difference noted between the quiet and active pelvic floor groups (p=0.360). Furthermore the estimated Qmax utilizing all the different formulas available did not show a difference as well. When the flows were converted to a Flow index which is a measure of voiding efficiency, we found that irrespective of the method of calculating the flow index we could discern a statistical difference between the quiet and active pelvic groups.

CONCLUSIONS

By normalizing the flow rates and creating a flow index that corrects for volume we can clearly see that there is a difference in the group that has a quiet pelvic floor compared to an active pelvic floor. These differences are critical and underscore the need to consider EMG in uroflows that are used to develop nomograms. These findings also highlight the value of a flow index instead of using raw Qmax. The Flow index allows translation from study to study irrespective of the age or volumes voided.

51 - TIME TO QMAX: A NEW PARAMETER FOR PREDICTING FAILURE IN THE USE OF PARASACRAL TENS WHEN TREATING CHILDREN AND ADOLESCENTS WITH OVERACTIVE BLADDER

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OBJECTIVE

To test the hypothesis that a shorter time taken to reach maximum urinary flow rate (Qmax) is associated with the greater therapeutic failure of parasacral transcutaneous electrical nerve stimulation (PTENS).

MATERIALS AND METHODS

This was a prospective study of 38 children and adolescents with pure overactive bladder (urgency + bell-shaped / tower-shaped uroflow curve pattern, without post-void residual urine). Patients with anatomical or neurological alterations of the lower urinary tract were excluded. Time to Qmax was defined as the period of time between the beginning of the flow and the point at which maximum flow was reached. A complete response to treatment with PTENS was considered to have occurred when the visual analog scale (VAS) was 10 (the score ranges from 0 to 10).

RESULTS

The mean age of the group of children and adolescents studied was 7.68 years (± 2.90). 64.9 % of subjects in the study were girls.

The results are shown in the following table:

Conclusion- Children and adolescents with overactive bladder and a shorter time to achieve maximum urinary flow rate (Qmax) fail more often to respond to PTENS treatment.

	Complete resolution	Number	Average	Standard deviation	P-value
Time to Qmax	sim	13	10.38	4.13	0.025
	não	25	7.34	2.62	
Voided volume	sim	13	153.23	95.57	0.836
	não	25	156.16	75.10	
Qmax	sim	13	11.53	3.91	0.110
	não	25	14.18	5.26	
TOTAL		38			

52 - IDEALIZED FEMALE VOIDERS- IS THERE A DIFFERENCE IN QMAX AMONGST AGE GROUPS WHEN VOIDS ARE VOLUME CORRECTED.

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The concept of an ideal voider, the person that voids perfectly; without a PVR, at a volume that is not too low or too high and is bell shaped with no evidence of obstructed voiding is critical in the development of a benchmark where all voids can be measured. The definition of norm is variable given the population one is addressing and therefore a well defined and precise definition is essential to compare patients. In an effort to quantify flow rates and eliminate ambiguity of reading shapes we have developed Idealized voider equations that predicts estimated flow rates in children. We set out create an ideal voider equation from young females who were nulliparous and had normal uroflow curves without evidence of pelvic floor EMG Activity.
Utilizing our database of 4133 female uroflows we identified all who were >12 yo and all flows that were in 1st SD of the Liverpool nomograms. We then refined the criteria further to make sure that all voided at least 50 cc, had a PVR < 20 cc, and VV was ≤ 115% of EBC (398). All flows had to be continuous with a bell shaped curve and a pelvic EMG that was silent during voiding. 95 studies met these criteria, using non linear regression 2 formulas were developed. Bland Altman analysis was used to validate the accuracy of the formulas.

RESULTS
Patients ranged from 12-27 years of age with median age of 14 (IQ 13-16). With median VV=189.2 ml (IQ=106.2-247.7) and PVR= 6.0 ml (IQ=1.5-14.0). A quadratic and a Ln based formula were developed. These were tested against our pediatric idealized voider equation and the original Liverpool equation as well as the Barapatre Qmax equation uncorrected for age utilizing Bland Altman analysis as well as paired 2 tail t-test.

CONCLUSIONS
Creation of an ideal voider flow nomogram or formula requires meticulous culling of flows to isolate truly normal voids (95/244 bell curves) when this is done it is apparent that our adolescent and young adult female formula, our pediatric formula and the Liverpool formulas produce remarkably similar findings indicating that known ideal normal females void with striking similarity regardless of age.

53 - DO LOWER URINARY TRACT SYMPTOMS CORRELATE WITH UROFLOWMETRY RESULTS IN CHILDREN?

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INTRODUCTION
Uroflowmetry has become a common tool in the evaluation of children with bowel and bladder dysfunction (BBD). There have been attempts to ascribe uroflow characteristics to certain voiding symptoms. Our hypothesis is that there is no correlation with voiding symptoms.

METHODS
The records of 265 children were collected prospectively in a running database and initial and final uroflowmetry results as well as the outcomes of the initial presenting symptoms were reported as Complete, Partial or no response. Patients were also diagnosed as having OAB, Dysfunctional Voiding (DV) and underactive bladder (UAB). Pairwise comparisons of the flow results before and after treatment were analyzed using Kruskal Wallis analysis and where appropriate T tests were done using SPPS.

RESULTS
227 females and 38 males with a mean age of 7.2±2.8 yrs at initiation of treatment and 10±2.8 yrs at end of treatment. We did not find a relationship between common symptoms of UTI, Urgency, Dysuria, or daytime wetting with either the pre or post treatment flow rates. On initial uroflowmetry voided volume was different amongst patients with OAB, DV and UAB ($p<0.001$ and $p=0.016$). Qavg was different between OAB and UAB ($p=0.028$). After treatment no differences were seen between the groups.
There were differences noted before and after treatment in the OAB group in VV, Qmax, Qavg, TBC, Qmax est, Qavg est, Qmax FI, Qavg FI(all $p<0.002$). In the UAB group we saw only PVR was different ($p<0.001$). In the DV group we saw differences in the PVR, Qmax, Qavg, TBC/EBC, Qmax est, Qavg est, Qmax FI and Qavg FI (all $P<0.04$).

CONCLUSIONS
Uroflowmetry is not good at differentiating between common LUT symptoms but it is clearly capable of showing differences related to treatment. These findings underscore the need for individualized evaluation and diagnosis based on the whole clinical picture.

54 - FLOW SHAPE ALONE MISSES TWO THIRDS OF DYSFUNCTIONAL VOIDERS.

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INTRODUCTION AND AIM OF THE STUDY

Dysfunctional voiding (DV) is 'characterised by an intermittent and/or fluctuating flow rate… A uroflow with EMG is required to document DV'.1 In 2016 we introduced 2-lead EMG (abdominal and pelvic) with uroflow into our non-invasive urodynamics. We postulated that flow shape alone is inadequate for diagnosing DV. In patients with a diagnosis of DV, we reviewed LUTS and uroflow shape.

MATERIALS AND METHODS

We performed a retrospective analysis (2016-2017) of patients diagnosed with DV based on at least 2 uroflow/EMGs. LUTS and flow shape were reviewed.

RESULTS

31 consecutive patients (median age 10 / 5-18yrs) 23 girls and 8 boys.
Patients presented with a variety of LUTS prior to assessment:

Presenting LUTS*	n (%)
Day and night urinary incontinence	7 (22)
UTI	15 (48)
Constipation	13 (41)
Difficulty initiating void	7 (22)
Nocturnal enuresis	1 (3)

*Some presented with >1 symptom
There were a variety of flow shapes.

Flow shape	***n* (%)**
Mixed flow	11 (35)
Bell	6 (19)
Staccato	6 (19)
Fractionated	4 (14)
Plateau	4 (14)

INTERPRETATION OF RESULTS

Only one third of patients had staccato and fractionated flows, typically characteristic of DV. Nearly one fifth have a normal flow shape.

CONCLUSIONS

Presenting LUTS and uroflow shapes may not accurately predict dysfunctional voiding in children. EMG should be an integral part of non-invasive urodynamics.

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55 - UROFLOWMETRY PARAMETERS AFTER COMPLETE RESPONSE OF LOWER URINARY TRACT SYMPTOMS IN CHILDREN

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INTRODUCTION AND AIM OF THE STUDY

Uroflowmetry is generally considered an important and noninvasive diagnostic tool in children with lower urinary tract symptoms (LUTS)(1). It is not elucidated how the parameters of uroflowmetry will change after complete response of LUTS. Here we compared the results from uroflowmetry in the clinic before and after treatment in children with LUTS.

MATERIALS AND METHODS

From January 2016 to April 2018, seventy-five children (54 boys and 21 girls: aged 6-18 years old) were enrolled to this study, who were confirmed complete response of LUTS: monosymptomatic nocturnal enuresis (MNE) (26), non-MNE (NMNE) (24), Daytime urinary incontinence and or dysfunctional voiding (DUI/DV) (25). We compared the following data of before and after treatment: Dysfunctional Voiding Symptom Score (DVSS)、Bristol Stool Scale (BSS), maximal voided volume(MVV) from frequency volume chart (FVC)/ estimated bladder capacity (EBC) and uroflowmetry parameters in the clinic (Qmax, Qave, voided volume/estimated bladder capacity, flow pattern).

RESULTS

After complete response of LUTS, DVSS significantly decreased in NMNE and DUI/DV, but showed no changes in MNE (P<0.001). BSS showed no changes in all groups. MVV from FVC/ EBC significantly increased after complete response of LUTS in all groups (P=0.0389, 0.00068, 0.0025). Regarding uroflowmetry parameters, the results as follows: Qmax significantly increased in MNE and DUI/DV (P=0.024). Qave and voided volume/estimated bladder capacity showed in all groups. Approximate half of children with LUTS showed similar flow pattern before and after treatment. The percentages of Bell pattern after complete response of LUTS showed 46% in MNE, 29% in NMNE, and 50% in DUI/DV.

INTERPRETATION OF RESULTS

Judging from the increased MVV from FVC, functional bladder capacity got larger after complete response of LUTS. However, uroflowmetry in the clinic failed to disclose bladder growth and dynamics after treatment. It is difficult to predict the treatment outcomes from uroflowmetry parameters in the clinic

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CONCLUSIONS

Parameters of clinic uroflowmetry in children with LUTS show the same results after complete response of LUTS.

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56 - SENS-U: CLINICAL EVALUATION OF A FULL BLADDER NOTIFICATION – A FEASIBILITY STUDY

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INTRODUCTION AND AIM OF THE STUDY

Urinary incontinence is a frequent problem in school-age children. Since many children remain unaware of a full bladder sensation, the SENS-U™ Bladder Sensor was developed. The SENS-U is a small, wearable ultrasound sensor, which is positioned on the lower abdomen by a skin-friendly adhesive. The sensor continuously estimates the bladder filling status and informs the child when it is time to proceed to the bathroom. In this study, the aim is to examine the performance of the SENS-U as a full-bladder-based notification system in children during inpatient bladder training.

MATERIALS AND METHODS

We are currently including 15 children (6-16 years) who are admitted for an inpatient cognitive bladder training program at the department of pediatric urology. Parallel to this standard clinical protocol, the child wears the SENS-U during one day. The SENS-U determines the average anterior – posterior bladder dimension (every 30 sec.) to estimate the filling status and inform the patient when the bladder is almost full. When the child received a full-bladder notification, the child is taught to inform the urotherapist / researcher, in order to determine how the child acts on the notification.

PRELIMINARY RESULTS

At this moment, 5 patients (boys/girls: 3/2) [mean age: 13.0 ± 1.1 years; mean BMI: 21.3 ± 2.8 kg/m2] are included in the study. The first results show that the SENS-U is able to measure the changes in bladder size over time and provide a full-bladder notification prior to micturition. In addition, the children are aware of the full-bladder notification and respond as expected by informing the urotherapist / researcher in time before going to the toilet.

CONCLUSIONS

Based on the first results, the SENS-U Bladder Sensor is able to monitor the changes in bladder volume over time during the day and provided a full-bladder notification prior to micturition to which children responds as expected.

57 - VOLUME-DEPENDENT CATHETERIZATION WITH A WEARABLE ULTRASONIC BLADDER SENSOR IN A TEENAGE BOY: A CASE REPORT

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INTRODUCTION AND AIM OF THE STUDY

Time-dependent intermittent self-catheterization (TDIC) is an established method for voiding regulation in patients who are not able to empty their bladder properly. However, repeated insertion of a catheter can cause infection and tissue-damage. Literature suggests that volume-dependent intermittent self-catheterization (VDIC) may be beneficial by avoiding unnecessary catheterizations of a relatively empty bladder and avoiding urinary leakage due to bladder over-filling. Recently, a new, wearable ultrasonic bladder sensor was developed, the SENS-U™ Bladder Sensor. The SENS-U is a small, wearable ultrasound sensor, which is positioned on the lower abdomen by a skin-friendly adhesive and provides an individualized notification when the bladder is almost full.

PATIENT AND METHOD

We present a case of 11-year-old patient [152 cm, 37 kg, BMI: 16.00 kg/m2], who had history of PUV and detrusor overactivity, eventually resulting in bladder hypo-contractility (MBC = 390 ml). He experiences wet accidents of his (under)pants three times a day. The boy started TDIC (5 times/day), reducing the number of wet accidents. However, the patient still suffered from urinary leakage. Therefore, it was decided to start him on a VDIC training, based on a maximum SENS-U volume-range of 300-324 ml, for a period of 16 days. One week after, an evaluation was scheduled.

RESULTS/DISCUSSION

While performing SENS-U – assisted VDIC, he was able to stay dry during the entire period of 16 days. With this approach, the number of catheterizations was reduced to 4 times/day (11am is cancelled) with similar volumes. In addition, the patient reported satisfaction due to the appropriateness of catheterization and the degrees of freedom he experienced while wearing the SENS-U (i.e. going to school, no monitoring of fluid-intake). One week later, he restarted TDIC, followed by an increased the number of wet accidents.

CONCLUSIONS

Based on this first case, the SENS-U Bladder Sensor is feasible approach to assist in volume-dependent intermittent self-catheterization.

58 - NON-INVASIVE URODYNAMIC ASSESSMENT AS PRELIMINARY DIAGNOSTIC TOOL IN PATIENTS REFERRED FOR PRIMARY NOCTURNAL ENURESIS.

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INTRODUCTION AND AIM OF THE STUDY

Aim of the study was to evaluate the outcome in patients referred to a major referral centre with the diagnosis of primary mono-symptomatic (PMNE) and non mono-symptomatic nocturnal enuresis (PNMNE) undergoing a pre-assessment which included non-invasive urodynamic.

MATERIALS AND METHODS

Children referred between 2014 and 2017 for primary nocturnal enuresis were included in the study. All patients underwent a non-invasive urodynamics after following a program on urotherapy and bowel management of constipation, (if present), based on international standards. In particular, non-invasive urodynamics included uroflowmetry with electromyography of the pelvic floor muscles and pre and post-void ultrasonographic residual assessment. Exclusion criteria were neuropathic bladder, abnormality of the bladder and bowel, urethral stenosis, patients with neurological and psychiatric problems, patients that did not follow the diagnostic protocol with a follow-up less than six months.

INTERPRETATION OF RESULTS

151 patients were included in the study, 95 (63%) males and 56 females (37%). 43% males and 11% had a PMNE, while 57% males and 89% females had a PNMNE. Patients with clinical and urodynamic features of overactive bladder (OAB) were 74% and 35% in males and females, respectively. A voiding dysfunction (DV) was present in 11% and 22% while a combination of OAB+DV in 15% and 41% in males and females, respectively. In female group, 2% had an under-active bladder. In 15 cases (10%), PNE resolved after urotherapy alone. A single or multimodal therapy was efficient in 97% and 87% of PMNE and PNMNE, respectively.

CONCLUSIONS

Considering the high percentage of patients with PNMNE observed in our study and revealed by non-invasive urodynamic, we believe that this approach could be considered as the first line approach to PNE.

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59 - ULTRASOUND MEASUREMENT OF POST VOID RESIDUAL IN CHILDREN – IMPROVING ACCURACY

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INTRODUCTION AND AIM OF THE STUDY

Measuring post void residual urine (PVR) in children is an important aspect of determining voiding mechanics. ICCS has recommendations regarding elevated levels. Accurate measurement of small bladder volumes by ultrasound is difficult. Treatment pathways may well be defined by the results.
The formula for determining the volume of a bladder is based on (bladder width x depth x height) x a correction co-efficient (CC). Most ultrasound machines use a predetermined CC 0.526.

AIMS

1. To obtain evidence that CC (= 0.526) for spherical bladders is invalid.
2. To determine if different bladder shapes can be identified
3. To determine what proportion of PVR bladder shapes are spherical

MATERIALS AND METHODS

A database of 400 ultrasound-based determinations of children's PVR was used.
2D image quality
Image quality of the transverse and sagittal images of the first 123 database subjects was independently assessed by 3 clinicians
2D image shape
Three clinicians estimated the shape of the urine-bladder-wall outline in transverse and sagittal planes
3D shape determination
The most likely shape of the bladder was mathematically deduced.

RESULTS

Independent analysis of PVR bladder shapes confirmed that a majority of the examined database had shapes that produced volumes greater than an approximately spherical shape for which 0.52 is the CC

INTERPRETATION OF RESULTS

0.70 is more accurate and this confirms the work of both Kuzmic and Bij (Bij et al.,1998)

CONCLUSIONS

We are underestimating PVR urine in children.

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60 - PELVIC FLOOR REHABILITATION IN CHILDREN WITH FUNCTIONAL LUTD: DOES IT IMPROVE THE OUTCOME?

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INTRODUCTION AND AIM OF THE STUDY

LUTD is an umbrella term for filling and voiding disorders wherein urotherapy is considered to be the first line treatment.1 According to a recent study, 20% of children with OAB are refractory to common treatment options.2 When standard therapy refractory children are referred to our institution, a perineal ultrasonography is performed to determine whether the child is able to voluntary control his pelvic floor muscles (PFM).3 If inadequate pelvic floor mobility is observed, children are referred to the physical therapist for pelvic floor rehabilitation by means of Biofeedback with Anal Balloon Expulsion (BABE). This study was conducted to assess the added value of pelvic floor rehabilitation by BABE in the urotherapeutic treatment of standard therapy refractory children with functional LUTD.

MATERIALS AND METHODS

A retrospective file study was performed and data was retrieved on all consecutive patients that were referred by the urologist to the physical therapist and urotherapist department between the years 2010-2016. After exclusion based on pre-determined inclusion criteria, n=40 patients were enlisted for further analysis, and divided by physiotherapy - bladder-training chronology in a study (n=19) and control group (n=21). All patients included in analysis were unable to voluntary control their pelvic floor and underwent a 10-day inpatient cognitive training program that emphasizes on achieving bladder awareness and encompasses biofeedback by real-time uroflow. Preparatory to inpatient training, only children in the study group received BABE.

RESULTS

We found no statistically significant difference in inpatient bladder training outcome (Fisher's exact test p= 0.311). From the 19 children that underwent BABE preparatory to inpatient training, 15 (78.9%) accomplished a good or improved training result. In the control group, wherein the children did not undergo additional physical therapy, 13 of the 21 (61.9%) achieved improvement or were cured. Of the children that underwent BABE, 11 (57.9%) improved pelvic floor function.

INTERPRETATION OF RESULTS

Children who underwent additional physical therapy, preparatory to inpatient training, did not achieve a significant better training outcome than children who solely underwent inpatient training. Rehabilitation of voluntary pelvic floor mobility by BABE did not influence the bladder training outcome in our institution.

CONCLUSIONS

We conclude that combined BABE and inpatient training is as effective as our inpatient bladder-training program solely.

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61 - DOES A VOIDING CAMP INFLUENCE THE BLADDERVOLUME AND UROFLOWMETRY?

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BACKGROUND

Despite different therapeutic strategies for children with enuresis and daytime urinary incontinence (DUI), some remain therapy-resistant. A voiding camp has been proposed as a valid alternative bladder rehabilitation program.

OBJECTIVE

The aim of the study was to investigate whether this voiding camp has a positive effect on bladdervolume by introducing a standardized fluid intake.

MATERIAL AND METHODS

We performed a retrospective review of 132 children, 47 girls and 58 boys aged 5-14 years, followed at the Ghent University Hospital, who attended a voiding camp between 2012 and 2017. The voided volume at the daily uroflowmetry was registered. The highest voided volume of day one was compared to the highest voided volume after the camp, using a Wilcoxon test.
The uroflow curve of each patient was recorded before, during and after the camp. The ratio of Bell-shaped curves to non-Bell-shaped curves at each stage was determined using descriptive statistics.

RESULTS

On average the highest voided volume after the camp is 29,62± 5 ml higher than the highest voided volume on day one. This translates to a 5% increase in the median of highest voided volume on the uroflowmetry.

However, this increase in voided volume was not statistically significant (p=0,416).
Only a few patients maintain a Bell-shaped uroflow curve. Before the camp the ratio is 54,5%. On the first day of the camp only 12,1% had a bell shaped curve. After the camp the ratio increased to 43,9%.

CONCLUSION
Voiding camp does not seem to have a significant effect on bladder volume. Most children with incontinentia diurna have a non-bell-shaped uroflow curve at the start of voiding camp. Voiding camp does not show a clear impact on the uroflow curve.

62 - AN EPIDEMIOLOGICAL STUDY OF NOCTURNAL ENURESIS IN CHINESE CHILDREN AGED 5-18 YEARS OLD BY ONLINE QUESTIONNAIRE: A NATIONWIDE MULTICENTER STUDY.

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INTRODUCTION AND AIM OF THE STUDY
To study the prevalence of nocturnal enuresis (NE) and its risk factors in Chinese children aged 5-18 years old.

MATERIALS AND METHODS
A cross sectional study was conducted in 225 kindergartens, primary and secondary schools in China. A self-administered online questionnaire was distributed to these children's parents to collect data of sociodemographic, the presence of bedwetting and previous therapies.

RESULTS
In total, 100,071 completed questionnaires were received with an overall response rate of 77.0%(100,071/129,952). The prevalence of NE for 5 ,10,16 years old children was 15.2%,4.8% and 1.1%, respectively. Central-south region has a higher prevalence of NE than the other 5 regions investigated. The prevalence of NE for mild (＜3 nights/week), moderate (3-6nights/week) and severe(7nights/week) group was 81.4%,13.5% and 5.1%,respectively.This proportion was 81.4%, 13.7%, 4.9% in children group (5-14years old) and 80.5%, 10.5%, 9% in adolescent group (15-18 years old). It was found that 35.7% parents blamed their NE children.868 NE children had sought for professional help, and they concentrated on Urology Department (378 children), Traditional Chinese Medicine Department (331 children),General Pediatrics(245 children) and Nephrology department(168 children).Among the 868 NE children,97 children were asked to waiting for maturation,583 children were asked to live more regularly and/or use an alarm o'clock, only 169 NE children got professional treatment such as medications, alarms or bladder function training.

INTERPRETATION OF RESULTS
Using logistic regression analysis, 4 factors were identified as significant predictors of severe NE: 1) positive family history; 2) having daytime LUT symptoms 3) being blamed by parents;4) having no dry period larger than 6 months.

CONCLUSIONS
Further education about NE needs to be implemented not only to the parents of NE children but also to the doctors who didn't pay enough attention to nocturnal enuresis.

63 - NOCTURIA IS A COMMON SYMPTOM IN BOTH HEALTHY CHILDREN AND ADOLESCENTS - AN INTERVIEW STUDY INCLUDING 6803 SCHOOLCHILDREN

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INTRODUCTION AND AIM OF THE STUDY
Large population based studies on prevalence of nocturia among children and adolescents are lacking. This study aimed to reveal the prevalence of nocturia, fecal incontinence (FI), daytime urinary incontinence (DUI), and enuresis in children and adolescents.

MATERIALS AND METHODS
A population of 7527 children and adolescents from first grade and sixth-eighth grade of municipality schools were offered a routine school nurse visit. At this visit, they were interviewed with a standard questionnaire included information on age, height, weight and questions on whether nocturia, FI, DUI, and enuresis were experienced at least once per month.

RESULTS
Ninety-four percent attended the offered visit. A full questionnaire was obtained from 6803 (96%) of these (4002 first grade children and 2801 adolescents). Mean age of the children were 6.45±0.39. In this group, 11.2% had FI, 22.2% had daytime wetting, 17.1% had enuresis and 31.6% had nocturia. Significant more boys had FI, DUI, enuresis, and nocturia with OR 1.70, 1.16, 1.95 and 1.18 respectively. The mean age of the adolescent was 13.90±0.85. Overall 2.1% had FI, 4.5% had daytime wetting, 1.0% suffered fom enuresis and 32.3% had nocturia. Significant less boys experienced DUI with OR 0.49 but nocturia was significantly more common in boys OR 1.31.

INTERPRETATION OF RESULTS
The prevalence rates of fecal and urinary incontinence in children are high compared to data of previous reports. The prevalence of enuresis, DUI and FI in adolescents are comparable to what have been described formerly. Interestingly, and to our knowledge not previously addressed, nocturia is present at very high and equal rates in first grade children and adolescents.

CONCLUSIONS
The study confirms that incontinence is very common in children but also that around 1/3 of both children and adolescents experience nocturia.

64 - GENOME-WIDE ASSOCIATION STUDY OF NOCTURNAL ENURESIS IDENTIFIES RISK-LOCI ON CHROMOSOMES 6 AND 13

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INTRODUCTION AND OBJECTIVES

Nocturnal enuresis (NE) is a common condition with a twin-based heritability estimate of 70%. Common genetic variants may play a substantial role in disease risk, but this has never been evaluated in large hypotheses free case-control studies. Here we present the first genome-wide association study (GWAS) of NE based in iPSYCH2012. iPSYCH2012 is a large population-based Case–Cohort sample established in order to investigate major psychiatric disorders in the Danish population.

METHODS

Genotyped individuals in iPSYCH2012 included ~50,000 individuals with schizophrenia, bipolar disorder, ADHD, autism spectrum disorder, anorexia nervosa and major depressive disorder and ~25,000 randomly selected individuals. Individuals within iPSYCH2012 with NE (5-25 years) were identified either in the "The Danish National Patient Register" and "The Danish Psychiatric Central Register" based on IDC10 codes, or in the "The Danish National Prescription Registry" based on desmopressin prescriptions. In total, the analysis contained 3,882 NE cases and 34,955 controls. The GWAS was based on unrelated individuals and a genetically homogenous sample and performed using logistic regression including relevant covariates e.g. psychiatric disorders.

RESULTS

We identified 6 common variants surpassing the threshold for genome-wide significance (P< 5x10-8) in two independent loci on chromosomes 6q16.2 and 13q22.3. In subsequent evaluation, these findings did not seem to be caused by comorbid psychiatric disorders.

CONCLUSION

We hereby report the first genome-wide significant loci for NE. Our study represents an important step to provide further insight into the genetic architecture and underlying biological mechanisms of NE. Ongoing analyses are expected to provide further information on implicated genes, the amount of NE risk which can be attributed to common variants, and the genetic correlation between NE and other phenotypes.

65 - CORRELATION OF SYMPTOMATIC SUBGROUP AND NON-INVASIVE BLADDER CHARACTERISTICS WITH INVASIVE URODYNAMIC FINDINGS IN SECONDARY SCHOOL ADOLESCENTS WITH TREATMENT-RESISTANT NOCTURNAL ENURESIS

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INTRODUCTION AND AIM OF THE STUDY

Nocturnal enuresis occurs in 2.5% of 14 year olds 1 and is associated with emotional distress and despondency. We aimed to correlate NE symptomatic subgroup and bladder capacity(BC) from non-invasive UDs (NIU) with detrusor overactivity (DO)/bladder outlet obstruction (BOO)on invasive videoUDs.

MATERIALS AND METHODS

Retrospective review/recording (2009-2017) of 12-18 year olds with treatment-resistant enuresis (minimum 3 specific treatments) with both NIU (diary+uroflowmetry) and invasive videoUDs:NE subgroup, BC from NIU, cystometric capacity (CC), DO, BOO on videoUD 2. Z test: p significant <0.05.

RESULTS

30 patients identified (15M, 15F) median age 14 (12-18) years (2 secondary onset, 4 infrequent NE). Comparison between MS and NMSNE in Table 1.

Table 1.

Bladder Characteristics	Monosymptomatic NE (MSNE) n=7 (23%)	Non-Monosymptomatic NE (NMSNE) n=23 (77%)	Significance Z test
Normal BC n (%)	6 (86)	6 (26)	0.005
Normal CC n (%)	6 (86)	8 (34)	0.02
DO present n (%)	2 (29)	16 (70)	0.052
BOO n (%)	1 (14)	5 (22)	0.66

NMSNE bladder characteristics in Table 2.

Table 2.

NMSNE n=23	Normal BC n=6 (26%)	Small BC n=17 (74%)
DO present n=16 (70%) *	2 (33)	14 (82)
BOO n=5 (22%)	1 (17)	4 (24)

*p=0.01

INTERPRETATION OF RESULTS

Three quarters of adolescent NE is NMS and 3/4 of these have small BC on NIU which correlates well with DO on UDS. Overall, 18 (60%) had DO on UDS: 16 were classified as NMSNE, 15 had small BC and 3 had

BOO (2 DV and 1 PBND). Of 12 without DO, 7 were classified as NMSNE with 3 being Dysfunctional Voiders (DV).

CONCLUSIONS

Correct symptomatic subgrouping, evidence of small BC and BOO using uroflowmetry+EMG will correctly assign 87% of adolescent patients with NE and help to plan bladder management.

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66 - IS RHINITIS ASSOCIATED WITH ENURESIS, LUTD AND CONSTIPATION IN CHILDREN?

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INTRODUCTION AND AIM OF THE STUDY

Enuresis, LUTD and constipation are common disorders during childhood that frequently occur simultaneously. Some studies show association between these disorders and allergic diseases, however, they are scarce and rarely include all three comorbidities. The aim of the study is to evaluate the association between rhinitis and enuresis, constipation and LUTD in children.

MATERIALS AND METHODS

63 children and adolescents aged 5-17 years old were assessed during their routine consults at a primary care unit. Children with cardiac, pulmonary or neurologic malformation were excluded. The evaluation included the application of DVSS for LUTD, Rome III criteria for constipation and the ARIA questionnaire for allergic rhinitis. The analysis was made using the SPSS 20.0 version. The chi-squared and Fisher's Exact Test were used and a P value <0.05 was considered statistically significant.

RESULTS

63 subjects between 5-17 years old (mean: 9.86; SD: 3.14+) were analyzed. 56.2% of the population was male and 43.8% female. 29 of the subjects (46%) had intermittent rhinitis while 25 (39.2%) had persistent rhinitis. Having rhinitis in the past 4 weeks presented association with enuresis (p=0.030). 13 of the 63 children (20.6%) woke up at night due to nasal symptoms, 2 of which had LUTD (p=0.744), 4 (30.8%) enuresis (p=0.028) and 8 (61.5%) constipation (p=0.015). Moderate to severe persistent rhinitis (symptoms >4 days/week and abnormal sleep) showed association with enuresis (p=0.002) and constipation (p=0.022). There was no significant association with LUTD (p=0.22).

INTERPRETATION OF RESULTS

Moderate to severe persistent rhinitis was associated with enuresis and constipation. The sleep disturbance caused by respiratory symptoms may impact on arousal threshold and also cause an imbalance in the ANS which controls the bladder, bowel and pelvic floor.

CONCLUSIONS

The present study shows association between moderate to severe persistent rhinitis and enuresis as well as constipation.

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67 - SCREENING FOR SLEEP-DISORDERED BREATHING IN CHILDREN WITH NOCTURNAL ENURESIS: KEY TO SUCCESSFUL MANAGEMENT?

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INTRODUCTION AND AIM OF THE STUDY

The implication of sleep disordered breathing (SDB) in the etiology of monosymptomatic NE (MNE) is not entirely clear. We aimed to study how the presence of SDB affected NE treatment outcome.

MATERIALS AND METHODS

A retrospective chart review was conducted on all children 5 to 16 years of age who were seen in a pediatric urology clinic for MNE between January 2015 and February 2016. Patients were categorized into two groups (with and without SDB) based on their total score (cut-off of 0.33) on the Pediatric Sleep Questionnaire. Demographics, BMI, NE severity, and response to enuresis treatment were compared between the groups by chi square and independent t-test.

RESULTS

	No SDB Responders	No SDB Nonresponders	SDB Responders	SDB Nonresponders
Behavioral	5 (62.5%)	3 (37.5%)	2 (13.3%)	13 (86.7%)*
Alarm	10 (71.4%)	4 (28.6%)	0	1 (100%)
1 medication	9 (75%)	3 (25%)	3 (23.1%)	10 (76.9%)*
2 medications	4 (57.1%)	3 (42.9%)	1 (9.1%)	10 (90.1%)**
Total	28 (68.3%)	13 (31.7%)	6 (15%)	34 (85%)***

***P=0.01; **P=0.04; ***P<0.001**

INTERPRETATION OF RESULTS

53 of 115 enuretic children (46.1%) met criteria for SDB. Children with SDB were predominantly African-Americans (P=0.004) and had a higher body mass index (P=0.024) compared to those without SDB. Only 6/40 (15%) children with SDB compared to 28/41 (68.3%) children without SDB were dry at the last follow-up (P<0.001)(Table). In multivariate regression, race and BMI did not alter this result.

CONCLUSIONS

SDB was found in nearly half of the children with MNE. Standard therapy for NE was significantly less successful in children with SDB than in those without. Early screening and treatment of SDB may improve outcomes in the management of MNE.

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68 - BLADDER VOLUMES AT THE TIME OF ENURESIS

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INTRODUCTION AND AIM OF THE STUDY

Enuretic children wet their beds either because of nocturnal polyuria or nocturnal detrusor overactivity. Polyuric children often respond to desmopressin, whereas children with nocturnal detrusor overactivity are often therapy-resistant and may have low daytime voided volumes. It is logical to assume that the enuretic event in children with nocturnal polyuria occurs with a full bladder, i.e. with the enuretic voided volume (EVV) close to the child's expected bladder capacity (EBC) for his/her age. However, the EVV has only rarely been studied and little is known about how it relates to case history, polyuria or daytime bladder function.
The aim of our study was to look at EVV and relate it to voiding chart data and treatment response.

MATERIALS AND METHODS

We reviewed voiding charts, including measurement of nocturnal urine production and EVV, in 181 enuretic children (age 5-24, median 9), 34 of whom were girls. Most of the children (88.2%) were desmopressin non-responders. All children were dry during daytime, but 41.7% had a history of previous daytime incontinence and 48.8% sometimes experienced urgency. The enuresis was monosymptomatic in 51.8% of the cases.

RESULTS

The average EVV was 49.3 ± 34.9% of EBC. EVV correlated highly significantly to nocturnal urine production ($p<0.01$), and children with nocturnal polyuria (n=36) had higher EVV than other children (n=112); 86.2 ± 43.5 vs 38.3 ± 21.7, p = 0.001. Still, in only 11 children was EVV ≥ EBC. EVV had no significant correlation to either daytime voided volumes or daytime micturition frequency. There were no significant EVV differ-ences between the sexes, children with and without urgency symptoms, and children responding or not responding to antidiuretic or anticholinergic therapy.

INTERPRETATION OF RESULTS

Case history and daytime voiding chart data give very little information about nocturnal bladder function. The EVV is strongly influenced by nocturnal urine production but only rarely reaches upp to a level close to or exceeding the EBC.

CONCLUSIONS

The enuretic event only very rarely represents the emptying of a full bladder. Thus, a component of nocturnal detrusor overactivity can be assumed to be present in almost all enuretic children, even desmopressin responders and children with nocturnal polyuria.

69 - NEUROMOTOR SKILLS IN CHILDREN WITH NOCTURNAL ENURESIS AND INCONTINENCE BEFORE AND AFTER THERAPY

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INTRODUCTION AND AIM OF THE STUDY

Developmental coordination disorder is characterized by impaired motor skills (1). Children with nocturnal enuresis (NE) and daytime urinary incontinence (DUI) are more often affected by neuromotor coordination problems than continent children (2). As bladder and central nervous system functions are closely connected, maturational deficits may impair both, continence and motor skills. As it is not known, if motor skills improve with incontinence treatment, the aim was to examine neuromotor skills in children with urinary incontinence before and after therapy.

MATERIALS AND METHODS

61 consecutively presented children with NE or DUI (40 boys, mean age=8.4 years), diagnosed according to ICCS standards, as well as 46 matched continent controls (32 boys, mean age=9.3 years) were examined by a neurological examination and a one-dimensional intelligence test (SPM). Child psychiatric diagnoses and symptoms were assessed by a structured psychiatric interview (Kinder-DIPS) and the Child Behavior Checklist (CBCL). The 'Parental Questionnaire: Enuresis/Urinary Incontinence' was completed before (T1) and after 4 months of therapy (T2). Motor development was tested with the Movement Assessment Battery for Children (M-ABC-2) at T1 and T2, including tests of balance, aiming/catching, and manual dexterity.

RESULTS

Patients showed significantly poorer neuromotor skills in the M-ABC-2 total score than controls (53. vs. 63. percentile). Motor skills improved significantly in both groups at T2 (63. percentile in patients vs. 75. in controls). The 'balance scale' improved especially in children with incontinence, so that at T2, both groups did not differ regarding balance. Neuromotor skills did not differ between groups with or without psychological symptoms, nor within groups with different treatment success outcomes.

INTERPRETATION OF RESULTS

Urinary incontinence in children is associated with neuromotor deficits, which improve after therapy. These results support the neurobiological association of continence and motor development.

CONCLUSIONS

Professionals should pay attention to neuromotor deficits in children with incontinence when starting their treatment.

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70 - ASSOCIATION BETWEEN THE FREQUENCY OF BEDWETTING AND LATE PRETERM BIRTH IN SCHOOL-AGED CHILDREN

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INTRODUCTION AND AIM OF THE STUDY

Previous studies have reported a relationship between birth weight and/or gestational age and nocturnal enuresis (NE); however, the association between NE and late preterm (LP) birth, between 34(0/0) and 36(6/7) weeks of gestation, is unclear (Ref. 1). Meanwhile, some potential adverse sequelae of LP birth persist later in life, including attention problems (e.g. ADHD), and behavioural problems (Ref. 2, 3). Therefore, our study aimed to compare bedwetting frequency (times of wetting per month) between (1) term birth with low birth weight (TB + LBW) and LP (late preterm; LP birth with LBW (LPB + LBW) and (2) LP birth with normal birth weight (LPB + NBW) and LP birth with LBW (LPB + LBW).

MATERIALS AND METHODS

We evaluated 544 school-aged patients with NE who underwent assessments at the three Juntendo university hospitals from January 2014 to December 2016. Of these, 77 had a LBW, of which 16 were LP, and 41 were preterm, of which 30 were LP. Outcome measures were frequency of bedwetting per month at initial visit.

RESULTS

Frequency of bedwetting per month in the LPB + LBW group was higher than in the TB + LBW group (28 vs. 22.5, $p < 0.05$) at the initial visit. However, the frequency between the LPB + NBW group and the LPB + LBW group was not significantly different (28 vs. 28, $p = 1.00$). In the present study, the coexistence rate of intellectual disability and/or ADHD was not significantly different between all groups.

INTERPRETATION OF RESULTS

It is important to check the number of gestational age when examining patients with severe NE. Furthermore, on the basis of the results of this study, neonatologists and paediatric neurologists who follow-up LP birth children should pay attention to the coexistence of NE. Increased knowledge of the risk factors of frequent bedwetting is needed to identify LP birth children at risk of future problems attaining and maintaining continence.

CONCLUSIONS

LP birth is a predictive factor for frequent bedwetting in children at initial visit. The clinical assessment of the frequency of bedwetting in LP birth children is important because some potential adverse sequelae in later life associated with NE severity.

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71 - THE VALUE OF URGENCY AND THE VOIDING CHART IN ENURESIS EVALUATION

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INTRODUCTION AND AIM OF THE STUDY

Detrusor overactivity (DO) is one of three fundamental pathogenetic mechanisms in nocturnal enuresis. DO can only be diagnosed via cystometry, an investigation much to invasive to be motivated in enuretic children. The urgency symptom is, however, taken as an indirect evidence of DO, and the finding of high voiding frequency and/or low voided volumes are also taken as indicators of this underlying condition. Still, clinical relevance of these assumptions in the enuretic population is unclear. We wanted to see whether voiding chart data differed between enuretic children with and without urgency.

MATERIALS AND METHODS

The voiding charts and case history of 251 enuretic children (51 girls) aged 5-24 (median 9) were reviewed.

RESULTS

Urgency was present in 52.3%, whereas 45.8% had a history of previous daytime incontinence. The association of these two symptoms was, as expected, highly correlated ($p < 0.001$). Neither urgency nor previous daytime incontinence differed between sexes ($p > 0.05$). The voiding chart data are summarized in the Table below. Volume data are expressed as percentages of expected bladder capacity for age.

variable	urgency	no urgency	p-value
Micturition frequency	6.1 ± 1.7	5.5 ± 1.5	0.008
AVVm	40.3 ± 15.9	43.6 ± 14.1	0.102
AVV	38.8 ± 15.9	41.1 ± 14.5	0.270
MVVm	73.5 ± 27.6	78.6 ± 30.0	0.181
MVV	64.2 ± 23.8	69.1 ± 26.3	0.147

AVVm = average voided volumes, 1st morning void included; AVV = average voided volumes, 1st morning void excluded; MVVm = maximum voided volumes, 1st morning void included; MVV = maximum voided volumes, 1st morning void excluded

INTERPRETATION OF RESULTS

Although the voiding chart trends were in the expected direction, only the daytime micturition frequency reached statistical significance; i.e. children with urgency symptoms voided more often than children without this symptom. Thus, in this group, daytime voiding chart data give little help in the evaluation of bladder function in enuretic children. It may be speculated that the voiding chart gives more information regarding bahavior than bladder function.

CONCLUSIONS

Daytime voiding chart data give little guidance in the evaluation of possible detrusor overactivity in enuretic children. This does not mean that cystometry is advocated.

72 - THE ASSOCIATION BETWEEN ENURESIS AND ALLERGIC RHINITIS: A PILOT STUDY

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INTRODUCTION AND AIM OF THE STUDY

Evidence has emerged that sleep-disordered breathing, a condition ranging from snoring to sleep apnoea, increases the odds of having enuresis. (1) One of the causes of sleep-disordered breathing is allergic rhinitis. Therefore, having allergic rhinitis could increase the odds that a child wets the bed, and hypothetically, treating the complaints might help these children become dry. This is especially relevant for children who do not respond to first-line treatment options. This pilot study aimed to determine the prevalence of allergic rhinitis among enuretic children and the reverse.

MATERIALS AND METHODS

Over a period of 16 weeks, children who visited one of three Dutch hospitals with enuresis were given a validated questionnaire on allergic rhinitis. Patients with allergic rhinitis received a questionnaire on enuresis. Prevalence was compared to known population prevalence by either a binomial test or a goodness-of-fit Chi square analysis.

RESULTS

Response rate was 38,7% for enuretic patients and 30,0% for allergic rhinitis patients. 26 enuretic and 19 allergic rhinitis patients were included. 44,0% of enuretic children had allergic rhinitis, which was higher than the expected 28,3% ($\chi2(df = 1) = 4,084$, $p = .043$). (2) The proportion of allergic rhinitis children with enuresis at some point in life was .29, where the expected proportion was .15 (p=0.147, 1-sided). (3)

CONCLUSIONS

This pilot study showed that the prevalence of allergic rhinitis among enuretic children was higher than the expected prevalence. Therefore, this study provides a good basis for further research on the prevalence of allergic rhinitis complaints among enuretic children and on enuresis among children with allergic rhinitis.
The results show a possible relation between allergic rhinitis and enuresis, and are therefore promising enough to continue this study in future years.

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73 - MULTIMODAL TREATMENT OF NOCTURNAL ENURESIS – EFFICACY AND SAFETY OF POLYPHARMACY.

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INTRODUCTION AND AIM OF THE STUDY

Most treatments of nocturnal enuresis (NE) is targeting one or both of the main pathogenic mechanisms, i.e. nocturnal urine volume and bladder capacity. Although many patients can be effectively treated with only one treatment modality there is a significant number of treatment refractory cases to monotherapy. We have experienced an increasing tendency to combine several treatment modalities in such patients. However, there is almost no evidence regarding efficacy or safety of such a strategy.

MATERIALS AND METHODS

We reviewed files from all NE children seen in our outpatient clinic between 01. January and 31. December 2017 and identified patients receiving at least two treatment modalities simultaneously. Demographics, type of NE, current simultaneous treatments, and response as well as registered side effects during treatment was noted. The same treatment strategy was applied to all patients, using home recordings of nocturnal urine output and bladder capacity during treatment to select and monitor the effects of additional treatments.

RESULTS

We identified 59 children (13 girls) aged 6-15 yrs (mean 9.6 yrs). 37 were MNE and 22 were non-MNE. They all had at least three wet nights/week before treatment was started. In total, alarm was used in 47.5%, desmopressin in 96.6%, imipramine in 76.3%, solifenacin in 72.9%, mirabegron in 37.3%, and a.m. furosemide in 1.7%. 18 patients (30.5%) were dry on two treatment modalities, 16 (27.1%) on three modalities, and 2 (3.4%) on four modalities. 9 patients had partial response and 3 had no response despite 4-modality combination therapy. Only 17 patients (28.8%) reported side effects to one or more of the modalities used. None of the side effects were serious.

CONCLUSIONS

We hereby report the first evidence of the efficacy and safety of multimodal combination therapy for NE in children refractory to monotherapy. We found that of the 59 children receiving combination therapy 76,71 % obtained either full or partial response using up to four different treatments. The side effects even during 4 drug treatment were mild and uncommon. Future RCT trials should be performed to provide further evidence for the role of multimodal therapy.

74 - IMPROVED SLEEP QUALITY FOLLOWING ADENOTONSILLECTOMY IS ASSOCIATED WITH ENURESIS RESOLUTION IN CHILDREN WITH SLEEP-DISORDERED BREATHING

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BACKGROUND

We have previously reported that adenotonsillectomy (TA) leads to complete resolution of nocturnal enuresis (NE) in about 50% of children with sleep-disordered breathing (SDB), but the mechanism is not entirely clear. In this study we assessed the effect of TA on sleep quality, night-time urinary volume (NUV) and secretion of antidiuretic hormone (ADH) and brain natriuretic peptide (BNP) in children with NE and SDB.

METHODS

Prospective pilot study of 41 children 5-18 years of age diagnosed with SDB on polysomnography, and monosymptomatic primary NE requiring TA for upper airway obstruction release. Arousal score, nocturia, NUV, and plasma levels of ADH and BNP were measured pre- and 1 month post-surgery.

RESULTS

Decrease in arousal score and plasma BNP level, and increase in plasma ADH level were seen in all patients post-surgery. However, mixed ANOVA showed that responders (dry) had significantly more improvement than non-responders (wet) in the quality of sleep (Table). Following TA, nearly all dry children reported nocturia and significant decrease in BNP levels (P=0.017) without significant change in their NUV.

	Dry (N=20)		Wet (N=21)		P-value
	Pre-T&A	Post-T&A	Pre-T&A	Post-T&A	
Nocturia Yes (%)	7 (35%)	15 (75%)	5 (23%)	2 (9%)	0.020
Snoring Yes (%)	20 (100%)	3 (15.8%)	20 (95%)	7 (33.3%)	0.001
Arousal score	4.92 ± 0.35	2.38 ± 0.29	4.92 ± 0.34	3.57 ± 0.28	0.015
NUV (ml)	279.56 ± 128.83	340.13 ±190.36	385.05 ± 151.56	352.65 ± 161.26	0.072
ADH (pg/ml)	7.28 ± 6.51	8.00 ± 8.48	4.55 ± 6.36	6.59 ± 6.30	0.297
BNP (ng/ml)	26.49 ± 28.83	16.48 ± 30.87	38.89 ± 32.49	28.33 ± 26.11	0.017

CONCLUSIONS

Change in children's quality of sleep and arousal score was associated with NE resolution post-TA. Improvement in sleep quality appears to be responsible for the effect of TA on NE in children with SDB.

75 - QUICKER THERAPEUTIC RESPONSE TO NOCTURNAL ENURESIS THAN DAYTIME INCONTINENCE RECOGNIZED IN CHILDREN WITH DEVELOPMENTAL DISORDERS

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INTRODUCTION AND AIM OF THE STUDY

To clarify the characteristics of non-monosymptomatic nocturnal enuresis (NMNE) with developmental disorders (DD).

MATERIALS AND METHODS

We divided NMNE children into two groups, Group-A with DD and -B without DD, and compared time duration in each group to the point when their daytime incontinence (DI) and nocturnal enuresis (NE) had achieved partial response (PR).
Standard urotherapy and bowel therapy if necessary were started. Then medication for DI was administered. The treatment for NE was started after their DI improved.

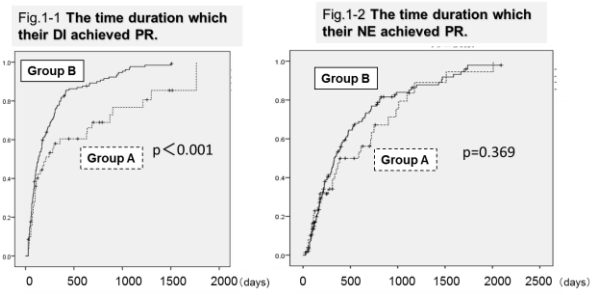
RESULTS

Of the 203 NMNE patients (147 boys, mean age 7.7±1.8 year), there were 50 patients with DD. 189 patients achieved PR, including 42 patients in Group-A.
Of these 189, 29 patients showed quicker response of NE than DI, consisting of 11 patients of group A (26%) and 18 of group B (12%), which is statistically different (P=0.049)
Figure 1 illustrates that DI in the Group-A was significantly more refractory than the DI in the Group-B but there were no differences in NE between the 2 groups

CONCLUSIONS

For NMNE children with DD, NE can be efficaciously treated even in the situation with no therapeutic response to DI. For this patient population, the treatment order recommended by ICCS may need some modification.

Figure 1. The time duration which their DI or NE achieved PR



76 - THE IMPACT OF PSYCHOLOGICAL FACTORS ON THE OUTCOME OF MONOSYMPTOMATIC ENURESIS TREATMENT.

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OBJECTIVES

To prove the impact of psychological factors on the outcome of monosymptomatic enuresis treatment.

MATERIAL AND METHODS

The research was carried out in the 2014–2017 period, during which 99 patients with monosymptomatic enuresis were observed. The patients' average age was 7.8 +/- 2.6 SD, out of whom 72 (72.7%) were boys and 27 (27.3%) were girls. After being diagnosed with nocturnal polyuria, all the patients were prescribed Desmopressin in the same dose of 0.2 mg, over a three-month period. After the Desmopressin treatment was completed, all the patients were compared for the effect of drug therapy in relation to the existence of associated psychological disorders. In terms of psychological evaluation, two questionnaires were used – Screen for Child Anxiety Related Emotional Disorders (SCARED) for the analysis of anxious disorders, as well as the Mood and Feelings Questionnaire (MFQ) for the evaluation of moods and feelings.

RESULTS

After applying Spearman's rank correlation coefficient, we found out that there is a negative, prominent, highly statistically important correlation between anxiety and the effects of Desmopressin drug therapy (r= -0.733; p<0.001). The higher the score in the SCARED questionnaire speaking in favour of the confirmation of anxious disorders, the weaker the impact of Desmopressin therapy on the nocturnal enuresis abatement. There is also a negative, prominent, highly statistically important correlation between mood and feelings disorder and the impact of Desmopressin drug therapy (r=-0.740; p<0.001). The higher the score in the MFQ questionnaire speaking in favour of confirmed mood and feelings disorder, the weaker the impact of Desmopressin therapy on the nocturnal enuresis abatement.

CONCLUSION

Psychological factors considerably influence the outcome of monosymptomatic enuresis treatment. For that very reason it is mandatory to include psychologists into the very process of monosymptomatic enuresis treatment, both for diagnosing and adequately treating the associated psychological issues.

77 - COMPARISON OF DESMOPRESSIN, ALARM, DESMOPRESSIN PLUS ALARM, AND DESMOPRESSIN PLUS ANTICHOLINERGIC AGENT FOR PEDIATRICS MONOSYMPTOMATIC NOCTURNAL ENURESIS: A NETWORK META-ANALYSIS

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INTRODUCTION AND AIM OF THE STUDY

To assess the efficacy of desmopressin (D), alarm (A), desmopressin plus alarm (DA), and desmopressin plus anticholinergic agent (DAA) in management of pediatrics monosymptomatic nocturnal enuresis (MNE) by network meta-analysis (NMA).

MATERIALS AND METHODS

We searched the electronic databases including PubMed, Cochrance Library, Embase and web of science. The randomized controlled trials (RCTs) which compared D, A ,DA, DAA were identified. The network meta-analysis was conducted with software R 3.3.2 and STATA 14.0.

RESULTS

17 RCTs with 1649 participants were included. From NMA, we could find that, (1) The complete response rate and success rate of DAA were higher than those of D or A monotherapy. There was no significant difference in DA and DAA, same as that in D and A. (2) Compared to A, DA had a higher success rate and a similar complete response rate. (3) DA was comparable to D in complete response rate and success rate. (4) DAA was the best intervention for complete response rate and success rate according to the ranking plot results. (5) As for the outcome of mean wet night per week during the treatment, the results did not show significant differences in D, A, DA, DAA. The rank plot revealed that DA was the best intervention in reducing wet night. (6) A had a lower relapse rate than D, and ranked 1st in relapse rate among four interventions. (7) DAA seemed not to increase the adverse events than D. And the adverse events seemed to be tolerable.

CONCLUSIONS

D had a comparable efficacy but a higher relapse rate than A. DAA was associated with a better efficacy and a similar relapse rate than those of D or A. DA was comparable with D or A both in efficacy and relapse rate.

78 - PK/PD STUDIES IN PIGS LEADING TO OPTIMIZATION OF TREATMENT DOSE IN MNE?

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INTRODUCTION AND AIM OF THE STUDY

Desmopressin is used to treat primary nocturnal enuresis in children. Over the years, various formulations of desmopressin were commercialized of which the sublingual melt tablet is preferred in the pediatric population, despite the lack of full PK studies in this population.

MATERIALS AND METHODS

A full PK study was performed in growing conventional piglets to evaluate if this juvenile animal model can provide supplementary information to complement the information gap in the pediatric population. A desmopressin sublingual melt tablet (120 µg) was administered to 32 male piglets aged 8 days, 4 weeks, 7 weeks, and 6 months (each group n = 8). Population PK (pop-PK) analysis was performed to derive the PK parameters, the between- and within-subject variabilities and the effects of covariates.

RESULTS

Desmopressin demonstrated two-compartmental PK, with a dual, sequential absorption process, and linear elimination. Body weight was the only significant covariate on clearance and on apparent volume of distribution of the central compartment.

INTERPRETATION OF RESULTS

In human pediatric trials, a one-compartmental model with first-order absorption was fitted to the data and no double peaks were observed in the curves, likely due to the sparse sampling strategy applied in those studies.

CONCLUSIONS

Therefore, it is recommended that additional studies in children, based on the sampling protocol in the current study, are performed to determine the PK parameters in children based on a full documentation of the plasma concentration-time profile

79 - SIZE DEPENDENT PK/PD CHARACTERISTICS OF DESMOPRESSIN ORAL LYOPHILISATE FORMULATION IN SMALLER CHILDREN.

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INTRODUCTION AND AIM OF THE STUDY

Desmopressin (dDAVP) is indicated for central diabetes insipidus and primary enuresis. Patients suffering from nocturnal polyuria, all start with a size independent dose of 120 micrograms melt, a dose extrapolated from bioequivalence studies from the melt with tablet and spray in adults. But bioequivalence of formulation in adults might not be extrapolated to bioequivalence in children, especially because of the lack of PK/PD data in children in the age group <8y.

MATERIALS AND METHODS

An open label, non-randomized, PK/PD study. 22 children were recruited (age 6 months – 8 years, mean age 4.8 years). All needed a urinary concentration test or had nocturnal polyuria with treatment failure on tablet. Maximal diluting capacity (urinary osmolality < 200 mosm/l) was achieved after a 15 ml/kg water load. dDAVP was provided sublingual as one-time age-adapted dose (60 (6 months - 2 years), 120 (2- 4 years), or 240 micrograms (4- 8 years)). Subsequently, all urinary voids were compensated. Plasma and urinary concentration of dDAVP were measured every 15 minutes during the first hour, and at 1h, 2h, 3h, 5h, 6h and 7h post-dosing. Non-compartmental analysis was performed, with assessment of covariates (age, sex, body weight) on PK and PD model parameters.

RESULTS

PK-parameters in this younger age-group were comparable with those reported. No significant correlation (Spearman's rank correlation coefficient) was shown between plasma concentrations of dDAVP and dose corrected by age, sex and body weight. When dose was corrected by distribution volume, a significant correlation ($p < 0,01$) for weight, length and age was found, not for body-mass index. It suggests that distribution volume is lower or bioavailability is higher. On PD-level, a prolonged duration (> 7h) of antidiuretic effect was found.

INTERPRETATION OF RESULTS

First PK/PD data with desmopressin melt in children in the age group < 8 years, demonstrating that appropriate PK/PD studies are necessary to prescribe correct dosing and labelling, and can not be extrapolated from adult bioequivalence studies.

80 - RESPONSE TO ANTIDIURETIC HORMONE TREATMENT IN PATIENTS WITH NOCTURNAL ENURESIS SHOWING CONCENTRATED FIRST MORNING URINE

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INTRODUCTION AND AIM OF THE STUDY

In Japan, use of 1-desamino-8-D-arginine vasopressin (DDAVP) is only recommended for nocturnal enuresis (NE) showing unconcentrated first morning urine, which suggests relative deficiency of antidiuretic hormone(ADH) secretion during sleep [1]. However, no such limitations have been described in a standardization document of the International Children's Continence Society (ICCS) [2]. We aimed to determine whether DDAVP treatment induces any response in NE patients with concentrated first morning urine.

MATERIALS AND METHODS

Outpatients aged 5–15 years who exhibited monosymptomatic NE were examined. Data were obtained from 36 patients (median age: 9.8 years) with no previous treatment for NE. Patients were administered DDAVP treatment as their first treatment for the disease.

The patients were divided into those showing unconcentrated first morning urine [osmolality (actual measured value or predicted value) < 800 mOsm/L or specific gravity < 1.022: Group A] and those showing concentrated first morning urine [osmolality ≥ 800 mOsm/L or specific gravity ≥ 1.022: Group B]. We then compared the response to DDAVP treatment between the two groups. Response was evaluated at 3 months after the administration of DDAVP, and cases with partial or complete response according to ICCS standards were defined as response. For data analyses, Mann–Whitney U test or Fisher's exact test was used, and $p < 0.05$ was considered significant.

RESULTS

(1) There were 12 patients in Group A (median age: 9.6 years) and 24 patients in Group B (median age: 9.8 years). We observed no significant differences regarding age ($p = 0.69$). (2) The ratio of response to DDAVP treatment was 66.7% for patients in Group A and 66.7% for patients in Group B, indicating no significant differences ($p = 1.00$).

CONCLUSIONS

DDAVP treatment can be an option even for NE patients suggesting sufficient ADH secretion during sleep hours.

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81 - DESMOPRESSIN RESPONSE IN MNE WITH NOCTURNAL POLYURIA COINCIDES WITH DECREASED SODIUM EXCRETION

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INTRODUCTION AND AIM OF THE STUDY

The anti-enuretic effect of desmopressin in monosymptomatic enuresis with nocturnal polyuria (MNE+NP) is related to the antidiuretic effect to its concentrating activity, and does fit with the abnormal circadian rhythm of vasopressin theory (Rittig). Pathogenesis of increased diuresis volume overnight is not only vasopressin related, but involves mechanisms such as solute handling, GFR, sleep and several vaso-actives. Recent findings have shown that desmopressin response coincides with amelioration of sleep and cognitive functioning. The question raises if the direct V2 antidiuretic effect, might have additional beneficial effect on circadian rhythm of other renal functions

MATERIALS AND METHODS

Secondary analysis of a prospective study in 28 MNE +NP patients >5/7 days wet, with clinical history according to the ICCS, bladder diary, Timed 24 hours urine sampling for osmol, creat, Na, Cl, K, creatinine, volume with 24 hours sleep registration (PLMS, arousability, arousal index, FUSp). Patients were tested prior to and 6 months after initiation of desmopressin monotherapy.

RESULTS

Desmopressin therapy resulted in a significant antidiuretic effect, increased concentrating capacity and anti-enuretic effect. 24/28 had disrupted sleeppattern with a PLMS >5. During treatment mean PLMS decreased significantly from 11 to 6. De timed urine sampling showed a significant decrease in solute, Na, K and CK excretion, effect on UK/UNa+K-ratio and decreased creatinine clearance.

INTERPRETATION OF RESULTS

Long term desmopressin therapy results not only in an anti-enuretic effect related to antidiuresis, but coincides with decreased renal sodium and osmotic excretion in the first 6h of the night (decreased FUSP and amelioration of sleep characteristics?). This observation suggests that pathophysiology is more complex than just waterhandling. We suggest that the decreased filling rate of the bladder leads to longer uninterrupted sleep time before void (FUSP), what results in less restless legs and disturbed sleep, and thereby regain of normal circadian rhythm of renal glomerular and tubular functions.

82 - EFFECTS OF DAILY SALT INTAKE ON THERAPEUTIC RESPONSIVENESS OF NOCTURNAL ENURESIS

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INTRODUCTION AND AIM OF THE STUDY

Although daily salt intake may affect nocturnal urine volume, no reports have investigated daily salt intake in children with nocturnal enuresis (NE). Here we investigated whether estimated daily salt intake influences treatment responsiveness in NE.

MATERIALS AND METHODS

A total of 106 patients (70 boys; median age 9.6 years) with monosymptomatic NE seen at our institution in 2006–2017 were included. Urinary Na concentrations were measured using spot urine samples at treatment initiation.
Daily salt intake was estimated using a previously reported equation (Ohta Y, et al. Hypertens Res. 2016) evaluating urinary Na concentration in spot urine, age, height, and weight. Based on the estimate amount of daily salt intake, patients were divided into two groups: a normal salt intake group of 75 children with an estimated daily salt intake of under 7g and an excessive salt intake group of 31 children with an estimated salt intake of over 7g. Treatment responsiveness to either fluid restriction or combination of fluid restriction and antidiuretic hormone therapy was compared between the groups 3 months post treatment initiation by estimating the reduction rate of wet nights and efficacy ratio (sum of ratios of complete response and response). Statistical analysis was performed using Mann–Whitney U and chi-square tests.

RESULTS

The excessive salt intake group had a higher nocturnal urine volume (314 ml vs. 280 ml; $p = 0.19$) and showed significantly poor treatment responsiveness than the normal salt intake group (reduction rate and efficacy ratio: 39% and 29.0%, respectively in excessive salt intake group; 81% and 56.0%, respectively in normal salt intake group; $p < 0.001$ and $p = 0.012$, respectively).

CONCLUSIONS

Fluid restriction or antidiuretic hormone therapy poorly controls nocturnal enuresis in children with a high daily salt intake. Such children require daily salt intake evaluation.

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83 - IS THERE ANY EFFECT OF TERMINATION TYPE OF DESMOPRESSIN TREATMENT AT RELAPSE RATES IN MONOSYMPTOMATIC ENURESIS TREATMENT?

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PURPOSE

We investigated the effect of withdrawal type of desmopressin, which plays major role in the treatment of Monosymptomatic Enuresis (MNE), whether there was an effect on high relapse rates, which is the most important problem in the management of the disease, with a high number of patients.

MATERIAL AND METHODS

Gaziantep region has huge population of children due to its crowded population and the war in Syria and its neighborhood. It is also an endemic city in terms of enuresis. Since it is the only pediatric urology clinic in the city, all enuretic children are referred to our policlinic. Between October 2016 and April 2018, 1013 patients were admitted with bedwetting. The age range of the patients was 5-17 (mean: 8,56). After exclusion of patients who did not respond to treatment and had other exclusion criteria (NMNE, non-follow-up), 447 MNE patient was treated with oral desmopressinlyophilisate (MELT) at 120 mcg / day for three months. After 3 months the treatment was terminated in two ways: Direct cessation of desmopressin (Group 1 n: 209) and structured withdrawal group (Group 2 n: 238). In group 2, patients took the desmopressin every other day for 15 days. All patients were called up for control one month after the drug was withdrawn and the relapse rates were revealed.

		Grup 1 (n:209)	Grup 2 (n:238)
Gender	Male	127	126
	Female	82	112
Age	5-7	83	95
	8-10	79	85
	11-14	43	53
	>14	4	5
Nationality	Turkey	178	201
	Syria	31	37

RESULTS

253 male and 194 female patients; after one month of treatment with MELT, relaps rates in Group 1 were 42.5% (89/209) and in Group 2 were 41.1% (98/238) (p>0.05)

CONCLUSIONS

In this study with the highest number of patients in the literature, showed that the method of terminating desmopressin treatment has no statistical significance in MNE management.

84 - TELEMEDICINE UTILIZATION FOR FOLLOW-UP TREATMENT OF ENURESIS

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INTRODUCTION AND AIM OF THE STUDY

Telemedicine allows for health care professionals to diagnose and treat patients remotely. Enuresis is one of the most common chronic problems in childhood, and access to specialized care can be limited. Utilization of telemedicine in this setting has not been previously analysed.

MATERIALS AND METHODS

The aim of this study is to evaluate the feasibility and effectiveness of treatment of enuresis as compared to traditional in-person evaluation for follow-up patients at our institution. A retrospective review of established patients treated for nocturnal enuresis with either telemedicine (Group 1) or traditional (Group 2) follow-up care was conducted. All established patients ages 5-18 years of age treated for enuresis between July 2016 to December 2017 were included. Patients with secondary enuresis, polyuria, or neurologic disease were excluded. Resolution of enuresis was the primary outcome studied with patients categorized with a total response, partial response, or no response as defined by the ICCS1. Other variables extracted include age, treatment methodology, total number of visits, and patient satisfaction questionnaires for telemedicine patients.

RESULTS

77 patients met inclusion criteria with 23 patients in Group 1 and 54 patients in Group 2. 47.6% (13/21 - 7 partial and 6 total) in Group 1 and 48.1% (25/52 - 8 partial and 17 total) in Group 2 responded to treatment with 2 patients in each group without completion of follow-up. The average age for both groups was 9.2 years. Of patients treated in Group 1, 20/23 (87%) reported that they would use telemedicine again.

INTERPRETATION OF RESULTS

This study indicates a potential role for telemedicine in enuresis management.

CONCLUSIONS

Telemedicine appears to be a feasible tool for follow-up care of patients with enuresis. The majority of patient families demonstrate a favorable opinion of potentially using telemedicine again for this problem. Further research to understand the efficacy and potential benefits of telemedicine in this setting is needed.

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85 - INCONTINENCE AND SLEEP DISTURBANCES IN PRESCHOOL CHILDREN – A POPULATION-BASED STUDY

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INTRODUCTION AND AIM OF THE STUDY

25-40% of (pre-)school children are affected by chronic sleep disturbances (SD), such as sleep-onset problems, sleep-maintenance problems and parasomnias (1). SD are associated with psychological symptoms and incontinence, (especially nocturnal enuresis (NE) and other parasomnias) in school children (2). The aim of the study was to examine associations of SD, psychological symptoms and incontinence (NE, DUI and fecal incontinence (FI)) in a representative, population-based sample of younger preschool children.

MATERIALS AND METHODS

All preschool children of a defined geographical area examined before school-entry were included. Parents were asked to complete an abbreviated version of the Children's Sleep Habits Questionnaire (CSHQ; 30 items), 8 questions referring to incontinence and 25 items of the Strength and Difficulties questionnaire (SDQ). Preliminary data of 327 children (mean age=5.8 years; 53.2% males) are presented.

RESULTS

Rates of incontinence overall were 19.3% (17.2% NE; 4.7% DUI, 2.5% FI). Psychological symptoms were significantly higher in children with DUI (20%), FI (25%), but not in NE (9.7%) vs. continent children (6.6%). SD were reported for 20.1% of children. Compared to continent children (19.1%), rates of SD were significantly higher in children with DUI (42.9%), FI (62.5%), but not NE (24.5%). Children with FI had a significantly higher score in the CSHQ total and the 'going to bed problems' scale. The scale 'other parasomnias' (including talking during sleep, restlessness, sleepwalking, pavor nocturnus, nightmares and bruxism) was not higher in any incontinence subgroup.

INTERPRETATION OF RESULTS

These preliminary results show that SD are common in preschool children, especially in those with DUI and FI. Contrary to other studies, the association between NE and other parasomnias has not been replicated.

CONCLUSIONS

Psychological problems may influence both, SD and incontinence. SD and associated behavioral problems need to be diagnosed and treated in children with incontinence, as they can negatively affect psychological well-being and treatment outcome.

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86 - BLADDER AND BOWEL DYSFUNCTION (BBD) AMONG MOTHERS AND CHILDREN: A POPULATION-BASED STUDY

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INTRODUCTION
Recently it was shown that urinary symptoms in the mothers are associated with urinary symptoms in their children. However, the role of constipation in this association has not been evaluated.

OBJECTIVE
To evaluate BBD between mothers and children.

METHODS
A population-based cross-sectional study was conducted. Mothers and children were invited to respond a self-administrated questionnaire with Roma IV criteria, ICIQ-OAB, DVSS and demographic questions. Individuals with neurological, urinary and gastrointestinal disorders or who refused to sign the informed consent/assent form were excluded. Constipation was defined as ≥ 2 Rome IV positive criteria. LUTS were present when urinary symptoms occurred at least 1 or 2 times/week.

RESULTS
441 mother-child pairs were interviewed. The mean age of children was 9.1 ± 2.7 years, with 249 (56.5%) female. Mean age of mothers was 35.7 ± 6.1 years. Constipation without LUTS was shown at 35 (7.9%) children and 152 (34.5%) mothers. LUTS without constipation was observed in 139 (31.5%) children and 92 (20.9%) mothers. The concomitance of constipation and LUTS, known as BBD, occurred in 51 (11.6%) children and 78 (17.7%) mothers. There was no association between LUTS without constipation in children and LUTS without constipation in mothers (p = 0.18). A marginal association occurred between constipation without LUTS in children and constipation without LUTS in mothers (p = 0.052). However, an association between BBD in the children and BBD in mothers was shown (p =0.000). In the univariate analysis, mothers with constipation and without LUTS (OR = 3.45 IC 1.88-6.29) and mother with BBD (OR = 2.68 CI 5.0-9.3) were factors associated with BBD in children. In the multivariate, analysis mother with BBD was the only factor associated with BBD in children (OR = 3.6 CI 1.46-8.66). Conclusion: BBD in the mothers was associated with BBD in their children.

87 - PREVALENCE OF INCONTINENCE AND CONSTIPATION IN A GERMAN MULTICENTER STUDY OF CHILD AND ADOLESCENT INPATIENTS WITH ANOREXIA NERVOSA

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INTRODUCTION AND AIM OF THE STUDY
Anorexia nervosa (AN) is a severe eating disorder characterized by food restriction, fear of gaining weight and abnormal body perception. It affects the function of many organ systems and is known to be associated with functional gastrointestinal disorders (FGID), especially constipation (1). First studies have reported a higher prevalence of daytime urinary incontinence (DUI), nocturnal enuresis (NE) (2) and fecal incontinence (FI) (3) in patients with AN. The aim of the current study, therefore, was to analyze the prevalence of incontinence and constipation within a German nation-wide registry of AN of 14 tertiary child psychiatry centers. Another aim was to analyze the associations between constipation, incontinence, weight and medication.

MATERIALS AND METHODS
A sample of 378 inpatients (96.6% female, mean age 15.1 years) with AN were included. AN subtype, incontinence, constipation, BMI/BMI-percentiles, weight loss since onset of AN, weight change at discharge, as well as medication intake were analyzed.

RESULTS
1.6% (n=6) of the patients had NE and 1.6% (n=6) DUI. None of the participants reported nocturnal FI. 25.7% (n=97) were constipated. 25.1% (n=95) participants received medication during the inpatient treatment, in 12.2% of cases antidepressants, in 10.3% neuroleptics, in 0.5% stimulants and in 1.9% tranquilizers. Incontinence was not associated with any weight measures in this sample. Mean weight loss prior to treatment differed significantly between patients with (12.95kg) and without constipation (11.14kg) (p=.032). Current medication had no effect on constipation or weight measures.

INTERPRETATION OF RESULTS
Constipation is highly prevalent in AN and is further associated with a greater weight loss since onset of AN. As constipation was independent of current medication, the high prevalence cannot be due to possible side effects.

CONCLUSIONS
It is recommended that constipation should be diagnosed and treated in all patients with AN. Contrary to previous reports, incontinence was not a major problem in patients with AN.

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88 - RISK FACTORS FOR CONSTIPATION AND SOILING IN PRIMARY SCHOOL-AGE CHILDREN

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INTRODUCTION AND AIMS

There are few prospective studies examining risk factors for childhood constipation and soiling. This study prospectively examined whether risk factors in early childhood are associated with constipation and soiling at school age.

MATERIALS AND METHODS

We used repeated data on constipation and soiling at 4 – 10 years (n= 8,435) from the Avon Longitudinal Study of Parents and Children (ALSPAC: http://www.bristol.ac.uk/alspac) to extract latent classes of constipation and soiling. We used multinomial logistic regression to examine whether the latent classes are differentially associated with early childhood risk factors including stool consistency, breastfeeding, socioeconomic background, gestation, birthweight, developmental level, age at initiation of toilet training, psychological problems, and stressful events.

RESULTS

We extracted four latent classes of childhood constipation and soiling: normative (74·5%: very low probability of constipation and soiling), constipation alone (13·2%), soiling alone (7·5%) and constipation with soiling (4·8%). Early hard stools were associated with increased odds of constipation alone (1·90 [1·40, 2·60], reference= normative class). Developmental delay was associated soiling alone (1·44 [1·28, 1·62]) and constipation with soiling (1·31 [1·13, 1·51]). Associations with behaviour problems were generally strongest for 'constipation with soiling' e.g. temper tantrums: 1.89 (1.34-2.65); lack of a regular sleep routine 2.09 (1.35-3.25). Stressful events were associated with constipation alone (1.23 [1.12-1.36]) and constipation with soiling (1.32 [1.14-1.52]). There was little evidence of associations with the other risk factors.

INTERPRETATION

We find evidence that risk factors in early life are differentially associated with different patterns of childhood constipation and soiling.

CONCLUSIONS

Increased understanding of early risk factors for constipation and soiling could aid the identification of children who require treatment. Further research is needed to examine factors in the child's wider environment that could maintain constipation and soiling at school age.

89 - PSYCHOPATHOLOGY, TEMPERAMENT AND PARENTAL STRESS IN PRESCHOOL CHILDREN WITH INCONTINENCE

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INTRODUCTION AND AIM OF THE STUDY

Incontinence is common in young children and associated with increased emotional distress and demands on family functioning. Children with incontinence also have higher rates of comorbid behavioral problems and a more difficult temperament than typically developing children (1, 2). A difficult temperament is characterized by impulsive behavior, being difficult to soothe and showing withdrawal to unfamiliar situations/people. The aim of the study was to assess parental stress and its association with incontinence, behavior and temperament.

MATERIALS AND METHODS

A total of 39 children with incontinence (43.6% females, mean age of 5.5 years), as well as 44 healthy controls (43.2% females, mean age of 5.4 years) were included in the study. 12 children had daytime urinary (DUI), 22 had nocturnal enuresis (NE) and 22 had fecal incontinence (FI). Parents underwent a standardized interview about children's psychiatric disorder (DIPS) and completed the Child Behavior Checklist (CBCL), the Preschool-Feeling-Checklist (PFC) and the Parenting-Stress-Index (PSI). The PSI measures parental stress factors (parenting competence) and child stress factors (temperament).

RESULTS

More patients than controls had a clinically relevant CBCL score (>90. percentile) regarding externalizing problems (24.2%vs.0.0%, p=.001) and total problems (18.2%vs.2.4%, p=.020). Parents of patients reported higher PSI-scores regarding child stress factors than controls (55.3vs.51.8, p=.044). Patients and controls did not differ regarding comorbid psychiatric disorders or depressive scores (PFC). Parental stress was not increased in children with incontinence or with psychiatric disorders.

INTERPRETATION OF RESULTS

Psychological symptoms and difficult temperament are more common in children with incontinence. However, incontinence in younger children does not seem to impact on parental stress.

CONCLUSIONS

Parents appear to cope well with associated emotional and behavioral difficulties in young children with incontinence.

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90 - EVALUATION OF THE 'ENCOPRESIS QUESTIONNAIRE – LONG VERSION'

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INTRODUCTION AND AIM OF THE STUDY
The German version of the 'Encopresis Questionnaire – long version' (EQ-L; (1)) is an assessment tool used in clinical practice for fecal incontinence (FI) and constipation. It consists of 85 items regarding FI, constipation, relapses, stool habits, behavioral reactions and associated urinary incontinence. The aim of the study was to assess validity of the EQ-L items in a sample of patients with incontinence.

MATERIALS AND METHODS
242 patients aged 2-18 years (mean age=7.5 years, 64.9% male) presented in a tertiary outpatient incontinence clinic were diagnosed according to ICCS guidelines. Before first visit, parents completed the EQ-L and the Child Behaviour Checklist (CBCL). Diagnoses of FI and constipation according to the EQ-L were tested in discriminant analyses if they can separate between groups of clinical diagnoses. EQ-L items related to CBCL sores were tested using regression analysis.

RESULTS
80.6% of the sample were diagnosed with FI, 73.1% with constipation. Of the children with FI, 74.9% had FI with constipation and 25.1% had non-retentive FI. 48.4% had a clinically relevant CBCL total score (>90.percentile). Based on EQ-L items, 84% of cases were correctly classified the group of FI, and 49.8% were correctly classified in the group with constipation. In the regression analysis, psychological symptoms were significantly predicted by four items (soiling during stressful situations, rejection by others, punishment by parents, parents must send child to the toilet).

INTERPRETATION OF RESULTS
The EQ-L questionnaire is a reliable tool to differentiate between children with and without FI and between children with and without constipation. The EQ-L includes items that significantly predict psychological symptoms in children.

CONCLUSIONS
As psychological comorbidities in children with FI are a major problem, the EQ-L can provide information regarding these important associated issues. A short (EQ-K) and a screening version (EQ-S) are available, as well (1, 2).

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92 - A NEW EVALUATION METHOD FOR CHILDREN WITH BLADDER BOWEL DYSFUNCTION: PELVIC FLOOR MUSCLE ACTIVITY (PFMA)

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INTRODUCTION
Besides bladder and rectum dynamics, pelvic floor and external sphincter activity have role in the pathophysiology of bladder bowel dysfunction (BBD) in children. We
measured pelvic floor muscle activity (PFMA) in children with different subtypes of BBD. After treatment, we observed the changes in PFMA.

METHOD
A total of 113 children with syptoms of BBD were admitted to our clinic. PFMA, measured via surface electromyographic (EMG) electrodes, was recorded during the execution of a pelvic floor muscle contraction and relaxation by each subject before and after treatment. During PFMA measurement, contraction for 5 seconds and relaxation for 5 seconds were applied consecutively and the average value in 50 seconds was recorded (Figure 1).

RESULTS
Average PFMA values during contraction and relaxation periods are seen in the table. In general, the contraction value of PFMA increased and relaxation value of PFMA decreased after treatment. While the contraction and relaxation values of PFMA were different based on subtypes of BBD before treatment, the respective values were normalized and come to similar levels after treatment (Figure 2).

CONCLUSION
The measurement of PFMA provides information on pathophysiology of BBD. It is a non-invasive diagnostic method for the follow up of children with BBD.

NON DISCUSSED POSTERS

93 - BLADDER AND BOWEL TRAINING – PROSPECTIVE EVALUATION OF A TRAINING PROGRAM FOR CHILDREN AND ADOLESCENTS WITH TREATMENT-RESISTANT INCONTINENCE

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INTRODUCTION AND AIM OF THE STUDY

Daytime urinary incontinence (DUI) and fecal incontinence (FI) are common disorders in childhood. Whereas standard urotherapy remains the first-line-treatment with a high success rate, not all children respond adequately (1). For these treatment-resistant cases, a bladder and bowel training program was developed (2). The aim of the study was to evaluate effectiveness after treatment and at follow-up.

MATERIALS AND METHODS

The training was conducted either in groups of 2-6 children matched for age and sex (7-9 sessions) or as an individual training (2-4 sessions). The program includes sessions on anatomy and pathophysiology, stress and emotion management and instruction of adequate fluid intake and micturition habits. 32 children (27 with DUI and 15 with FI) participated in a group (n=14) or in an individual training (n=18). In a prospective design, the frequency of soiling and wetting, treatment success according to ICCS criteria and behavioral problems (CBCL) were examined before training (t1), immediately afterwards (t2) and 6 months later (t3).

RESULTS

The mean wetting frequency decreased significantly from 4.7 episodes/week (t1) to 4.2 (t2) to 2.0 (t3) (p=.001). The mean soiling frequency decreased significantly from 2.5 episodes/week (t1) to 1.5 (t2) (p=.041), but increased again to 2.6 (t3). 11.1% (t2) and 47.5% (t3) of the children achieved full treatment success regarding DUI, and 33.3% (t2) and 25.0% (t3), regarding FI, respectively. In addition, behavioral problems decreased significantly from t1 to t3 (p<.001).

Pelvic floor muscle activity (µV)			
Before treatment		After treatment	
Contraction	Relaxation	Contraction	Relaxation
9.2	3.3	19.3	2.0

INTERPRETATION OF RESULTS

This training program is an effective treatment for therapy-resistant DUI/FI, as it reduces wetting in the long-term and soiling in the short-term. Additionally, there is a sleeper-effect regarding DUI between t2 and t3, suggesting that treatment benefit is on-going.

CONCLUSIONS

This training program effectively increases treatment success for therapy-resistant cases and furthermore reduces behavioral problems, indicating positive transfer effects from incontinence training to general behavior.

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94 - LOWER URINARY TRACT SYMPTOMS REFERRALS TO A PEDIATRIC UROLOGY CLINIC

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INTRODUCTION

Lower urinary tract symptoms (LUTS) encompass a broad range of urologic concerns, such as, urinary incontinence, nocturnal enuresis, urgency of urination, frequency of urination and urinary hesitancy. It is commonly accepted that many of the referrals made to pediatric urology specialists are for these symptoms. The last study to investigate how frequently referrals are made to a pediatric urology specialists for these concerns was in 1995, and at that time it was estimated that 47% of all new referrals were for LUTS.[1] In order to better understand how to improve patient care, clinic flow and provider time we seek to determine the number of new patient referrals received by a academic pediatric urology practice for LUTS in the United States.

METHODS

We prospectively tracked all new patient referrals to our pediatric urology academic center for a 3 month period of time. All referrals submitted were included and we recorded the gender, age at time of referral and primary and secondary diagnosis for each referral as sent by the referring provider. Descriptive statistics were carried out.

RESULTS

A total of 383 new patient referrals were received during a 90 days period. 77% of these referrals were for male patients. Of the full 383 referrals, 20% were for LUTS (urine incontinence, urinary hesitancy, dysuria, frequency of urination, urgency of urination and/or nocturnal enuresis). 53.3% of the LUTS referrals were for nocturnal enuresis with a mean age of 9.7 tear (range 5-19 years).

INTERPRETATION OF RESULTS

Twenty percent of all new referrals were for LUTS. This is significantly smaller than the previously reported value of 47%. [1] This may be due to the short time frame of value collection or the increased identification of prenatal hydronephrosis, or increased hypospadias diagnoses since the 1995 publication was produced.

CONCLUSION

Clinic design for pediatric urology specialists should consider the frequency of referrals for LUTS. This knowledge may improve utilization of urotherapy nurses or advanced practice practitioners in some cases.

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95 - INTRAVESICAL PRESSURES OF THE NEUROGENIC BLADDER AND THEIR IMPACT ON THE UPPER URINARY TRACT

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INTRODUCTION AND AIM OF THE STUDY

Most children store urine safely at a pressure of about 20 cmH2O and that when the pressure is above 40 cmH2O, there is high risk of upper urinary tract deterioration.

The aim of the present study was to evaluate the upper urinary tract status considering compliance in bladder dysfunctions.

MATERIALS AND METHODS

A total of 244 of urodynamic studies of children with bladder dysfunctions were randomly selected and grouped into two categories: group A: with pelvis dilation, and group B: without dilation. The exclusion criteria included were: vesicoureteral reflux, bladder and upper urinary tract surgery, obstructive hydronephrosis, megaureter. Urodynamic variables and renal pelvis diameters were recorded.

RESULTS

The mean age was 9.5 years. The predominant etiology of bladder dysfunction was myelomeningocele (57.3%). The frequency of dilated renal pelvis was greater in the range 6 to 21 mm of anteroposterior diameter. The mean compliance in groups A and B was 22.1 and 18.2 ml/cmH2O, respectively (non significant). Although there is a tendency to have a greater number of cases of pelvis dilation in compliance area lower than 20 ml/cmH2O, the relationship was not significant (R2: 0.001-CI 95%)

INTERPRETATION OF RESULTS

It is probable that the isolated measurement does not represent the real status and impact of the lower urinary tract on the pyelocaliceal system. This leads us to presume that the direct relationship between intravesical pressures and their impact on the upper urinary tract could be more clearly seen when repeated measurements are taken along the time.

CONCLUSIONS

No linear relationship between “isolated” measurements of end-filling pressures/compliance and pelvic dilation was observed in our series.

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96 - KIDNEY AND BLADDER FUNCTION OF CHILDREN WITH MYELOMENINGOCELE

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INTRODUCTION AND AIM OF THE STUDY

Chronic kidney disease (CKD) is sometimes associated with patients myelomeningocele (MMC). Once the CKD begin, it is irreversible and carries high cost in health and quality of life. Objectives: To determine the frequency of CKD in the MMC population, to evaluate possible risk factors for CKD and the impact of the multidisciplinary approach.

MATERIALS AND METHODS

Descriptive and retrospective study. Inclusion criteria: patients with MMC, up to 18 years of age in multidisciplinary follow-up. They were evaluated with: blood creatinine, renal ultrasound, Urovideo and renal DMSA. Variables analyzed: vesicoureteral reflux (VUR), renal function compromise and multidisciplinary admission treatment. Population: n: 137 cases.

RESULTS

At the time of admission to the multidisciplinary group, only 8.7% had complete "prior" evaluation. Nearly 40% with CKD were identify on admission. In children under 1 year: 54% had some degree of CKD. In 30 cases was detect VUR, of which 34.7% had CKD. The correlation between normal renal ultrasound and pathological DMSA was identify in 18 cases with CKD. On admission, it was detect no clean intermittent catheterization and without anticholinergics at almost 80%.

INTERPRETATION OF RESULTS

One third of MMC presented CKD at 6 years of age and children under 1 year old, half had CKD. One third of patients with MMC and CKD had VUR. Prior to the entry of the multidisciplinary group, a high percentage was without adequate treatment.

CONCLUSIONS

Although almost 40% of patients with MMC at 6 years had CKD, about half of those under 1 already had stage I CKD. The admission to the interdisciplinary group was late and the previous approach was insufficient.

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97 - IMPROVE THE QUALITY OF LIFE OF CHILDREN WITH A NEUROGENIC BLADDER. WITH THE SUPPORT OF GRANT RSCF N.16-06-00482

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OBJECTIVE
In children with a neurogenic bladder(NB), the quality of life (QoL) is reduced because of their dependence on the care of others and frequent relapses of pyelonephritis, which requires long-term treatment at home or in the hospital. This violates the QoL family. Improve QoL can be through the rehabilitation of the bladder.

METHODS
Rehabilitation of children with NB is developed on a stationary and outpatient basis. The clinic and QoL analysis was performed among 7-15-year-olds of both sexes. Group 1 spina bifida and NB - 30 people, group 2 OAB - 20. Comparison group - the children, who were on a prophylactic examination for pyeloectasia - 20 people. QoL was carried out in five sections: physical activity, level of independence, psychological possibilities, social life, access to medical and social assistance.

RESULTS
Two additional factors were identified by written questionnaire that reduce the QoL of the interviewed patients in groups 1 and 2: a small prediction of incontinence and forced disability of one parent associated with additional childcare. The maximum positive QoL was 7 points. At children of 1-st group initially QoL 2, 4 + 1,0. With the formation CIC, QoL increased to 4.4 + 1.0, and after rehabilitation and interruption of pyelonephritis - up to 5.2 ± 1.0. In group 2, QoL was initially higher: 4.3 + 1.0, but QoL also increased to 5.2 + 0.5 after a course of rehabilitation and interruption of exacerbations of pyelonephritis. Reducing the number of incontinence episodes in group 2 in the range from 4.4 + 0.5 to 1.6 + 0.5 per day helped to increase QoL to 6.4 + 0.5.

CONCLUSION
The formation of controlled urination and the completion of pyelonephritis can increase the level of QoL by 50% in both groups of patients regardless of the cause of bladder dysfunction.

98 - LONG TERM UROLOGICAL AND QUALITY OF LIFE OUTCOMES OF HIGH TYPE ANORECTAL MALFORMATION

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INTRODUCTION AND AIM OF THE STUDY
Most published studies focus on defecatory function. We aim to investigate the long term urological and quality of life outcomes of patients with high type anorectal malformation (ARM).

MATERIALS AND METHODS
This prospective study was conducted from February 2018 to March 2018. Patients with high type ARM who underwent Posterior-sagittal-anorectoplasty (PSARP) / Laparoscopic-assisted-anorectal-pull-through (LAARP) in our center since 1996 were identified. Patient demographics, level of fistulas, presence of genitourinary / vertebra-spinal anomalies, type of operations were reviewed. Urine flowmetry study with measurement of residual urine by bladder scan were performed. Quality of life and urological outcomes were assessed by validated questionnaires: Pediatric-Quality-of-Life-Inventory™ (PedsQL™) and International-Prostate-Symptom-Score (IPSS).

RESULTS
Twenty patients (18 males, 2 females) with a median age of 12 years (range 3 – 36 years) with high type anorectal malformation participated in our prospective study. Level of fistulas were: 5 rectovesical, 11 rectourethral, 1 rectovaginal and 3 rectal atresia. The median IPSS score was 1 (range 1 – 20). More than 90% of our patients did not experience lower urinary tract symptoms most of the time. Uroflowmetry patterns observed were 16 (80%) bell-shaped and 4 (20%) staccato-shaped curves. Mean maximal flow rate was 11 ± 4.8 ml/s, voided volume was 134 ± 114 ml. Post void residual was less than 20ml in 85% of the patients. Mean PedsQL™ scores were 98.9 ± 3.9, 99.6 ± 1.3 and 98.4 ± 5.3 for total, physical and psychosocial health summary scores respectively. Median follow up duration was 10 years (range 2 – 36 years).

INTERPRETATION OF RESULTS
Uroflowmetry, IPSS and PedsQL™ scores were satisfactory overall.

CONCLUSIONS
Our study demonstrated satisfactory long term urological and quality of life outcomes in patients with high type ARM.

99 - ROBOTIC-ASSISTED "KEEL" BLADDER NECK CONSTRUCTION IN AN OBESE PATIENT WITH URO-GENITAL SINUS

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INTRODUCTION AND AIM OF THE STUDY

In the last years the use of robotic technology has gained popularity, allowing performance of the most difficult reconstructive procedures. We report its application performing a "keel" bladder neck construction in the treatment of an incontinent obese adolescent girl with a complex urogenital congenital malformation.

MATERIALS AND METHODS

A 13 year-old-girl (BMI 28) already treated elsewhere for a uro-genital sinus (Total Urogenital Mobilization and VUR endoscopic correction) has been evaluated for persistent total urinary incontinence. Preliminary evaluation under anesthesia and cisto-colposcopy revealed a mild meatal vaginal stenosis and an extremely short and tortuous urethra. Bladder neck was wide open and patulous. MCU and Urodynamic evaluation showed a bladder with a capacity of 280 ml without developing high voiding pressures (14-16 cm H20) with continuous and persistent urinary leakage from 100ml. No evidence of VUR. Normal renal function was confirmed with a MAG3 renal scan. Thus, the girl underwent a laparoscopic robotic-assisted "keel" bladder neck construction.

RESULTS

The patient was discharged on 5th post-operative day without complications. Follow-up cistoscopy has been performed with bulking agent injection in the neo-bladder neck with improvement of her continence after 4 months. After 29 months she is voiding spontaneously (volume 230cc) without post-void residuals. She still presents minor leakages well responding to anticholinergic therapy.

CONCLUSIONS

The surgery of the bladder neck region is often very difficult to reach and uncomfortable with open access. The robotic access to that area is an excellent option with ideal anatomical exposure compared to conventional open surgery. It provides an outstanding advantage, especially for obese patients.

100 - MITROFANOFF APPENDICOVESICOSTOMY WITH ROBOTIC TECHNIQUE: AN ACTRACTIVE SOLUTION IN PEDIATRIC PATIENT WITH PREVIOUSLY REPAIRED BLADDER EXSTROPHY

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INTRODUCTION AND AIM OF THE STUDY

The Robotic Mitrofanoff appendicovesicostomy (RMA) is limited to only initial case reports and a few small case series. Moreover, the RMA in pediatric patient with previously repaired bladder exstrophy remains an extremely rare procedure.
The authors report their experience regarding the RMA in a 15 old boy previously submitted to correction of bladder exstrophy.

MATERIALS AND METHODS

A.B. was submitted to complete primary repair of bladder exstrophy with Mitchell-Caione reconstruction of external genitalia. At 10 years of age, for urinary incontinence evidence, a Young-Dees-Leadbetter bladder neck reconstruction and following Marshall-Marchetti-Krantz pexy were carried out. 4 years later the patient presented relapse of incontinence and recurrent urinary infections. After urodynamic evaluation and considering urethral catheterization difficulties, the RMA was performed at 15 years of age in order to carry out intermittent catheterization.

SURGICAL TECHNIQUE AND RESULTS

The appendix was mobilized from the cecum with one trocar laparoscopic technique. After the docking of Da Vinci SI" Robotic System (3 robotic trocars and 1 accessory laparoscopic trocar) the detrusorotomy of approximately 4 cm in length was performed, without entering the mucosa, along the midline posterior wall of the bladder. After the incision (about 1 cm in length) of the bladder mucosa, the anastomosis between bladder and appendix was completed. The appendix was next placed in the trough, and the detrusor imbricated over it with an interrupted absorbable suture. Finally, the appendix was put into the umbilicus as stoma, with open technique, over a 12 fr catheter removed after 4 weeks. Overall operative time was 320 minutes.
The postoperative pain was controlled by intravenous injection of paracetamolo. Hospital stay was 5 days.
No complication was observed. At 3 months follow-up the patient was free from symptoms with a 3 time daily intermittent catheterization.

CONCLUSIONS

The RMA appear to be a feasible, safe and mininvasive procedure, even in patients with previously repaired bladder exstrophy; however, it remains a high cost surgery.

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101 - PARTICIPATORY CO-DESIGN OF A SMARTPHONE APP FOR YOUNG PEOPLE WITH DAYTIME WETTING

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INTRODUCTION AND AIMS

Conservative treatment for daytime wetting involves retraining the bladder by establishing a schedule of regular fluid intake and bladder emptying. Compliance with bladder training is often challenging for young people, depending on maturational level, self-motivation, and clinician support. Our aim was to co-design an app with young people and clinicians to aid compliance with bladder training.

MATERIALS AND METHODS

We conducted three participatory design workshops with young people aged 10-17 with daytime wetting. The workshops were co-facilitated by a health psychologist and a participatory design expert and comprised a range of co-design activities (e.g. mapping a typical day, sketching, graffiti walls, and card sorting). We sought regular feedback on the app design from expert clinicians and members of the Paediatric Continence Forum and the charity ERIC. We used an online prototyping tool (UXPin) to produce mock-ups of app pages to regularly share with the research team and had regular meetings with the app developers to discuss the feasibility of the design elements.

RESULTS

The first workshop identifed the specific user requirements of the app (e.g. discreet reminders, easy to use, age appropriate), defined the desired behaviour changes (e.g. promotion of regular drinking and toileting) and identified processes/beliefs that influence these behaviours (e.g. access to toilets during class time). Workshop 2 identified optimal ways of delivering behaviour change techniques via the app (e.g. progress charts, reward system, streaks). The usabilty and acceptability of the online prototype was evaluated in the third workshop and the app developers used this to create the prototype app.

INTERPRETATION & CONCLUSION

Further work will be undertaken to evaluate the acceptability and usability of the app. We plan to evaluate the app in paediatric continence clinics to test whether it is effective in improving compliance with bladder training and, therefore, reducing daytime wetting.

102 - THE EFFICACY OF OXYBUTYNIN TRANSDERMAL PATCH FOR MANAGEMENT OF SYMPTOMS RELATED TO OVERACTIVE BLADDER IN CHILDREN

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INTRODUCTION AND AIM OF THE STUDY

Oxybutynin is the current standard drug for management of overactive bladder (OAB) in children, but can have significant side effects or be difficult to oral administer in multiple daily doses (Ref. 1, 2). We herein assess the efficacy of transdermal oxybutynin hydrochloride patch (OXY-TDP) for daytime incontinence (DI) with OAB in children.

MATERIALS AND METHODS

Subjects were eight children (mean age 8 years, 7 males) who were diagnosed with paediatric OAB at Juntendo University Shizuoka Hospital between June 2013 and February 2015. OXY-TDP (Hisamitsu Pharmaceuticals Co Inc, Tokyo, Japan) was administered for the average period of 3.8 months. OXY-TDP (36.75 mg) was patched on their lower abdomen per a day after bathing. We compare the frequency of DI, their functional bladder capacity, and the frequency of nocturnal enuresis (NE), which was counted in five children, before and after patching. Paediatric OAB was defined as having DI more than once a month and replying that they had either urinary urgency or urge urinary incontinence on interview for OAB.

RESULTS

The average frequency of DI decreased significantly after the bathing from 16.6 to 9.6 times ($p = 0.0027$), whereas there was no significant increases in the average bladder capacity, which was 107.5 mL before and 135.0 mL after the bathing ($p = 0.12$), nor in the decrease of NE ($p = 0.13$). There were no side effects or violations of patching compliance during the observation period.

INTERPRETATION OF RESULTS

Notably, in the questionnaire after the observation, eight of 4 respondents (50%) felt the consciousness to go to the toilet increased because the OXY-TDP entered sight. We guess that children are easy to conscious because they are patch OXY-TDP on their abdomen, there is a possibility that the habit of going to the toilet has been established.

CONCLUSIONS

These findings highlight the potential benefit of transdermal drug delivery in the paediatric setting.

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103 - ASSESSING HEALTH-RELATED QUALITY OF LIFE AFTER TREATMENT FOR DAYTIME URINARY INCONTINENCE IN CHILDREN: A PROSPECTIVE STUDY

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INTRODUCTION AND AIM OF THE STUDY

Daytime urinary incontinence (DUI) is defined as involuntary urine leakage in any situation during the day in children older than 5 years. Although several studies have shown that daytime urinary incontinence (DUI) significantly impact the health-related quality of life (HRQOL) of children, the extent of improvement in HRQOL after treatment for DUI is not well understood. The objective of this study was to evaluate the improvement in HRQOL of children with DUI after complete response (CR) to treatment compared with that before the treatment.

MATERIALS AND METHODS

We prospectively collected data using HRQOL questionnaire (Pediatric Quality of Life Inventory 4.0 Generic Core Scales [PedsQL]) before initiating the treatment and after achieving CR to the treatment. Children with a complaint of DUI who could be followed up for at least 12 weeks after treatment initiation were enrolled in the study. To compare the results, patients were divided into two groups based on the duration required to achieve CR. Group A comprised of patients who achieved CR within 12 months after initiating the treatment, and Group B comprised of those who achieved CR after 12 months.

RESULTS

The total score significantly improved after CR as compared with those before treatment. Regarding the duration required to achieve CR, the mean total score in Group A significantly improved after CR as compared with those before the treatment. However, no significant improvement was observed in the total score after achievement of CR in Group B.

CONCLUSIONS

To the best of our knowledge, this is the first study to demonstrate that a longer duration for achieving CR does not contribute to an improvement in the HRQOL in patients with DUI. Based on our results, it is important to select optimal DUI treatments with the shortest possible duration for CR achievement

104 - TRANSPERINEAL ULTRASOUND FOR STATIC AND DYNAMIC IMAGING OF THE PELVIC FLOOR

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INTRODUCTION AND AIM OF THE STUDY

Daytime urinary incontinence occurs in 15% and 5% of the 4-years and 9.5-years-olds respectively. Defining the cause of incontinence remains a challenging task. A novel diagnostic tool to determine the reasons for incontinence needs to be evaluated. After all, only the right diagnosis can lead to the optimal therapy.

MATERIAL AND METHODS

Literature search on PUBMED combined with experience from our daily practice.

RESULTS

Transperineal ultrasound is useful in addition to basic physical examination. Imaging of the lower urinary tract it is patient friendly. It is non invasive and well tolerated, not expensive and widely available (especially since the recently introduced portable machines). Compared to transabdominal ultrasound, transperineal ultrasound is less often used. Transperineal ultrasound can accurately visualise the urethra, bladder neck, rectum and vagina. Besides static also dynamic information can be obtained (table 1).

CONCLUSIONS

Transperineal ultrasound is a promising imaging tool that can visualize the main anatomic urinary incontinence parameters in a static and dynamic mode. This has the potential to improve the diagnostic process of urinary incontinence in children. Standardisation of the parameters should lead to quantification of measurements.

105 - URINARY FLOW CHANGES IN BOYS WITH PATHOLOGICAL PHIMOSIS AFTER CIRCUMCISION: THE ROLE OF UROFLOWMETRY ANALYSIS AND A NOVEL INDEX AS PREDICTOR FOR OBSTRUCTION

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INTRODUCTION AND AIM OF THE STUDY

It is unclear what kind of pathological phimosis is obstructive and how UFM findings are related to severe phimosis, especially lichen sclerosis (=LS), although physiological phimosis has a subtle yet obstructive nature1). The aim of the present study was to characterize the obstructive nature of redundant penile foreskins using UFM parameters, with newly-defined index as a possibe predictor for obstruction.

MATERIALS AND METHODS

The 31 patients underwent circumcision because of pathological phimosis as well as UFM pre- and post-operatively. The obstruction was estimated using the inequality originated in the ICCS equation2): Qmax2 < Vv. We defined the Qmax/SQRT(Vv) as a 'power index(=PI)', so that the inequality was described that PI value less than 1.

RESULTS

Regarding improvement in the PI value, preoperative PI value of 1.00 was the best cut-off (p=0.007), and a better cut-off to resolve obstruction was preoperative PI value of 1.30 (p=0.012). The preoperative PI values of 21 patients (71%) were less than this limit. The impact of foreskin ballooning and LS was unclear owing to the small number of patients in this study.

INTERPRETATION OF RESULTS

In this study, we characterized the obstructive nature of redundant penile foreskins and estimated the impact of surgery on relieving the obstruction using UFM parameters. Although a precise equation using a multi-regression analysis was reported3), present PI value is simple and easy to use and suited for clinical situations.

CONCLUSIONS

Newly defined index, i.e. PI, is useful value as a predictor for the marginal obstruction that resolved after circumcision.

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106 - THE EFFECTS OF PELVIC FLOOR MUSCLE REHABILITATION (PFMR) ON SYMPTOMS, VOIDING AND PEVIC FLOOR MUSCLE PARAMETERS IN CHILDREN WITH OVERACTIVE BLADDER

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INTRODUCTION

Perineal-detrusor inhibitory reflex (P-DIR), which is activated by tension receptors in the striated muscle of the pelvic floor, causes a tonic inhibitory influence on the sacral micturation center. Therefore, parasympathetic pathway of micturation and pelvic nerve activation are supressed. Pelvic floor muscle rehabilitation (PFMR) induces P-DIR and provides detrusor relaxation. Although antimuscarinic drugs are the first choice for the treatment of overactive bladder (OAB), they have many side effects which leads poor complience. Recent studies in adults with OAB showed that PFMR significantly improves OAB symptoms. In this study, we aimed to investigate the efficacy of PFMR in children with OAB.

MATERIALS AND METHODS

A total of 19 children with OAB were included in the study. Children were evaluated with voiding diary, uroflowmetry-EMG, urinalysis, ultrasonography and pelvic floor muscle activity (PFMA) before and after treatment. During PFMA measurement, contraction for 5 seconds and relaxation for 5 seconds were applied consecutively and the average value in 50 seconds was recorded. All patients were treated with PFMR program.

RESULTS

Urgency improved in 16 of 19 children and 10 of 12 children with urge incontinence were dry after treatment. Mean voided volume (VV) increased from 84,5 ml to 145,5 ml (VV/Expected bladder capacity increased from %34,3 to %60,1) (p<0,001). Mean contraction value of PFMA increased from 7,8 µV to 11,9 µV and mean relaxation value of PFMA decreased from 2,5 µV
to 1,5 µV (both p<0,001) (Table). Endurance of pelvic floor muscle improved after treatment (Figure).

CONCLUSION

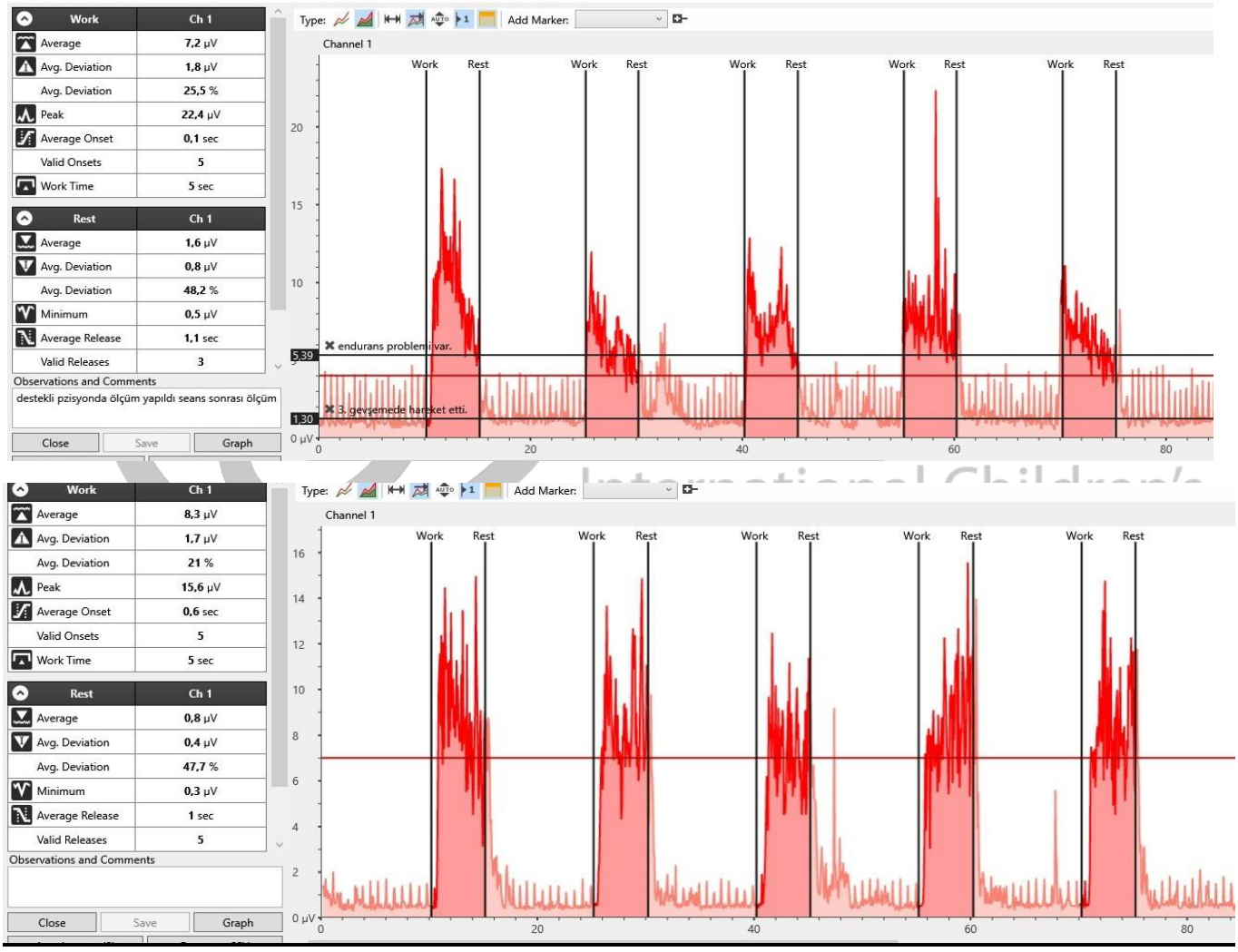
In children with OAB, PFMR provides symptomatic improvement and increases functional bladder capacity. Furthermore, being a noninvasive technique free from side effects of antimuscarinic drugs, it shows up to be an efficient treatment modality.

TABLE

Mean pelvic floor muscle activity of children with overactive bladder before and after treatment

Parameters		**Mean Pelvic Floor Muscle Activity (µV)**
Before treatment	Contraction (Work)	**7,8**
	Relaxation (Rest)	**2,5**
After treatment	Contraction (Work)	**11,9**
	Relaxation (Rest)	**1,5**

Figure: Pelvic floor muscle activity of children with overactive bladder



107 - TREATMENT OUTCOMES IN A SECONDARY-SETTING PAEDIATRIC CONTINENCE SERVICE, A RETROSPECTIVE ANALYSIS

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INTRODUCTION AND AIM OF THE STUDY

Paediatric continence disorders are common1 and cause significant distress2 to affected patients and their families. This study assessed a paediatric continence clinic conducted in a secondary-setting. It determined the number of patients seen, conditions treated, patient outcomes and patient factors associated with differing outcomes.

MATERIALS AND METHODS

A retrospective analysis was undertaken of the first 2.5 years of our clinic's operation (November 2015 – April 2018). Data was collected regarding demographics, condition/s, duration in service, management and outcome. Descriptive statistics and chi-square calculations were used.

RESULTS

Demographics: 118 patients seen, 60 Male (50.8%). Age: median 6.3 years, (IQR 5.0 – 9.1 years), mean 7.2 years. Conditions present: Constipation 97 (82.2%), faecal incontinence (FI) 50 (42.3%), lower urinary tract symptoms (LUTS) 52 (44.1%), and enuresis 78 (66.1%). 28 patients had only 1 condition, 20 had all 4 conditions. More males had FI (30/50) (p=0.09) and more females had LUTS (31/52) (p=0.04). Outcome at last contact: Minimal or no improvement in symptoms (group 1) – 26 (24.3%); Mild – moderate improvement (group 2) – 36 (33.6%); Marked improvement or full resolution (group 3) – 45 (42.1%); Only had 1 appointment – 11. There was no difference between outcome groups for gender (p=0.6) or comorbid neurodevelopmental conditions (p=0.5). Children with only one condition did better than those with 2 or more (61% vs 37% in group 3, p=0.04).

INTERPRETATION OF RESULTS

Our secondary-setting clinic treated patients with a variety of conditions with reasonable symptom improvement. Patients with greater complexity had inferior outcomes, reflecting the challenges in treating children with interdependent and compounding continence disorders3.

CONCLUSIONS

Our analysis has identified one factor associated with better patient outcome. Future research will involve multiple regression analysis to identify additional factors predictive of outcome.

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108 - AN ONLINE SURVEY TO UNDERSTAND PARENTS' KNOWLEDGE OF BEDWETTING IN CHILDREN AND TO EVALUATE THE EFFECTIVENESS OF THE 'JUG AND WATER BALLOON' CONCEPT

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INTRODUCTION AND AIM OF THE STUDY

Nocturnal Enuresis (NE) is a common problem in children. Parents often have a limited understanding of the pathogenesis of NE, which at times can lead to negative feelings towards their children. We developed a leaflet with an innovative 'jug and water balloon' analogy to help explain the main causes of bedwetting. The jug with water represents a child's nocturnal urine volume and the water balloon signifies their bladder. A large jug is nocturnal polyuria, while a small and shaky water balloon is an overactive bladder. The study aims to ascertain parents' knowledge of what causes bedwetting and to evaluate the effectiveness of the 'jug and water balloon' concept in enhancing their understanding of NE.

MATERIALS AND METHODS

An online survey for parents was developed where participants were asked about their baseline knowledge of NE, and to provide their views about the 'jug and water balloon' concept.

RESULTS

27 parents completed the survey. 16 parents (59.3%) said they were unaware of the main causes of NE. Only 6 (22.2%) knew about an overactive bladder and even fewer (7.4%) knew about vasopressin. After reading the leaflet, 25 (92.6%) parents stated the 'jug and water balloon' concept was simple, easy to understand and was explained with user-friendly illustrations.19 parents (70.4%) thought the leaflet was also easy for their child to understand and 25 (92.6%) agreed to explain NE using the 'jug and water' concept to their child. 26 parents (96.3%) also agreed understanding NE helped to avoid any negative feelings towards their child.

INTERPRETATION OF RESULTS

Most parents were unaware of the causes of bedwetting in children. The leaflet with the jug and water balloon concept is user-friendly and improved the parents' knowledge base.

CONCLUSIONS

Our leaflet with the 'jug and water balloon' concept is a useful tool to educate both parents and children about NE.

109 - THE INFLUENCE OF SOCIOECONOMIC STATUS IN ENURESIS

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INTRODUCTION

Multiple studies have been conducted on the correlation between a socioeconomic status and overall health. This study investigates on the specific relation between a socioeconomic status and enuresis, which has, to our knowledge, not been investigated before.

METHODOLOGY

For the literature study, databases “Pubmed”, “Web of Science” and “Google Scholar” have been examined. In order to find other possible explanations that are not presented in the literature, the expertise of various specialists in the field of pediatric nephrology, pediatric psychology, ... was called upon.

RESULTS

Existing literature indicates that a low socioeconomic status causes a higher prevalence of enuresis. Moreover, it has been proven that a lower socioeconomic status has a negative impact on the vision on enuresis, on the degree of which the parents take this disease for serious, on the therapy compliance and on the effectiveness of treatment. Vice versa, enuresis has a strong negative impact on the patient’s socioeconomic status. Mainly due to higher direct and indirect costs and cost related to a lower quality of life. Furthermore, enuresis negatively impacts a patient’s relationship with family and friends. Moreover, a correlation between enuresis, socioeconomic status, toilet training, sleeping problems, school problems and behavioral problems have been shown.

DISCUSSION

To indicate how a low socioeconomic status impacts enuresis, a hypothetical model has been established. It is proven that a lower socioeconomic status leads to obesity, smoking, obstructive sleep apnea syndrome and teenage pregnancy, which all increase the risk for enuresis. Besides, etiological aspects such as the influence of an irregular lifestyle, a higher consumption of cheap food containing more salt and proteins, a higher consumption of soft drinks and other drinks containing high concentrations of caffeine and carbon acid gas and the mechanisms behind these and enuresis have been studied. Moreover, existing research indicates that a lower consumption of fibers and fluids leads to constipation which on its turn negatively impacts the treatment. In addition, parents who do not consider enuresis as pathology postpone treatments and use more punishment methods, which has a negative impact on the outcome of the therapy. Finally, lower financial strength leads to a therapy selection based on costs, instead of selecting the best therapy for the patient.
Furthermore, a basic cost estimation has been made for the potential costs related to enuresis, which indicates the current lack of validated financial numbers in this area of research.

CONCLUSION

This literature study concludes that socioeconomic status and enuresis are correlated in both directions. This study is a good starting point. However, to gain a deeper understanding on the influence of lifestyle and food patterns on enuresis, as well as the financial impact of enuresis, the impact on the daily life of the parents and the child and to map further relations and the weight of these relations, more extensive research is recommended.

110 - PROSPECTIVE, RANDOMIZED, CONTROLLED AND MULTI-CENTER CLINICAL STUDY ON THE RELIABILITY AND SENSITIVITY OF VOIDING DIARY IN DIAGNOSIS, CLASSIFICATION AND TREATMENT OF MONOSYMPTOMATIC NOCTURNAL ENURESIS

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INTRODUCTION AND AIM OF THE STUDY

The voiding diary (VD) is critically important tool for the diagnosis of monosymptomatic nocturnal enuresis (MNE)1. The current ICCS standardized VD should comprise 7-day recording of incontinence episodes and nighttime urinary volume measurements which is time-consuming and tedious. For that reason, optimization a new VD is necessary and worthy further evaluation.

MATERIALS AND METHODS

A new voiding diary was developed with 2.5-day recording and standard liquid intake (25-30ml/kg/day) on weekend. Then, 800 consecutive MNE patients were randomly recruited from 13 medical centers of China from September 1, 2017 to Aug 31, 2018 to testify the reliability and sensitivity of this newly developed VD. After that, the data of VD with MNE children, such as daytime and nighttime mean volume per void, voiding frequency, diuresis, mean interval between voids, total excreta of urine, etc, will be collected, verified and analyzed, to compare with the classical VD issued by ICCS.

RESULTS

To date, approximately 380 consecutive children with MNE from different centers of China have been recruited in present study. To our knowledge, this would be the first sttempt to optimize the ICCS standard VD in China on a large scale.

INTERPRETATION OF RESULTS

The information from gathered voiding diary would be collected, verified and analyzed to compare the reliability and sensitivity in diagnosis and classification of MNE between our newly developed VD and current ICCS standardized VD.

CONCLUSIONS

After confirmation and evaluation, this simple and curtailed VD, as 2.5-day recording and standard liquid intake (25-30ml/kg/day) on weekend, could be used extensively in primary health care and community clinics in China further.

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111 - CLAIMING THERAPEUTIC EQUIVALENCE IN CHILDREN REQUIRES PEDIATRIC DATA ON DESMOPRESSIN

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INTRODUCTION AND AIM OF THE STUDY

For a new formulation of a drug, only pharmacokinetic bioequivalence with the original formulation has to be demonstrated in healthy, young adults. However, "children are not small adults," and to guarantee a safe and effective treatment, age-adapted drug development is required. Desmopressin, a vasopressin analogue prescribed for nocturnal enuresis in children, was studied as an example formulation first developed in adults and then extrapolated to a pediatric indication.

MATERIALS AND METHODS

Population pharmacokinetic and pharmacodynamic modeling was used to analyze previously published desmopressin data of 18 children suffering from nocturnal enuresis. The main objective was the comparison of the therapeutic equivalence of two desmopressin formulations: tablet and lyophilisate. The measurements for pharmacokinetics and pharmacodynamics were respectively plasma desmopressin concentration and urine osmolality and diuresis.

RESULTS

The half maximal inhibitory concentration for inhibition of urine production was 0.7 pg/mL lower for the lyophilisate than for the tablet. The effect of formulation on the half maximal inhibitory concentration seems to suggest that the 120-µg lyophilisate has a more pronounced effect on the urine volume and osmolality than the 200-µg tablet, even when the same exposure is achieved.

CONCLUSIONS

A new indirect response model for desmopressin was constructed and validated, using a previously built pharmacokinetic model and additional pharmacodynamic data. In order to draw solid conclusions regarding the efficacy and safety of desmopressin in children, pharmacokinetics and pharmacodynamics data should be analyzed together. This study adds proof to potential differences in pediatric and adult pharmacokinetic and pharmacodynamic properties of desmopressin and exemplifies the need for pediatric clinical trials, not only for every new drug but also for every new formulation

112 - ALARM THERAPY: THE SUBJECTIVE BURDENIN CHILDREN WITH NOCTURNAL ENURESIS

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INTRODUCTION AND AIM OF THE STUDY

Nocturnal enuresis (MNE) is a frequent disorder in children Not treating children with MNE can cause significant psychological comorbidity. Primary care treatments consist of lifestyle adjustments, desmopressin and alarm, as first line therapy. Alarm is often considered as a burden by parents and caregivers.

AIM

To investigate the psychosocial impact of alarm treatment on the child and parents and if patient/parent characteristics can predict the impact.

MATERIALS AND METHODS

Between April-september 2017 all children who started with alarm were asked to participate. 40 children and their parents were included. One month after initiation, parents completed a questionnaire by telephone, evaluating the impact and the burden of the alarm. The questionnaire was developed for this study and based on existing questionnaires (PinQ, PedsQL, ESvO) and clinical expertise.

RESULTS

40 children did participate in the study. Most relevant questions to detect changes since the start of the alarm treatment were: a child feeling irritated, have pity on your child, worry about your child's future. Possible associations between changes in the child characteristics since the start of the alarm treatment were also investigated. The study was not able to show a significant association.

INTERPRETATION OF RESULTS

This study indicates that the burden for children and parents in the overall population is not significant. However to finetune in specific subpopulations, a new and shorter questionnaire should be developed to evaluate the impact of alarm treatment in larger unselected patient groups, and the tool should be validated. This questionnaire could be developed into a tool for the physician to determine whether alarm treatment is the right option for the patient and to anticipate possible stressful factors associated with alarm treatment. The questionnaire could be especially helpful in children where there is no nocturnal polyuria nor reduced functional bladder capacity and desmopressin and alarm treatment seem equal therapy strategies.

113 - FEATURES OF TREATMENT OF CHILDREN WITH OVERACTIVE BLADDER AND NOCTURNAL POLYURIA.

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BACKGROUND

The main method of OAB in children includes a standard treatment oxybutynin. But OAB in 45% of cases consists day incontinence and enuresis. In this regard, for the selection of effective therapy should take into account plasma concentration of adiuretic hormone (ADH).

OBJECTIVE

Out of 150 children aged 5-17 years with OAB, 60 children were with nocturnal polyuria. Group I (20) nocturnal diuresis 40-49% of daily volume; In group II (15) nocturnal diuresis is 50-59%; and III (5)-more than 60%. Treatment with oxybutynin in a dose of 5 mg 2 times a day stopped imperative syndrome, but enuresis remained.

METHODS

With physiological intake of water, the density of urine was in groups I and II 1010-1012. Everyone determined the nighttime level of ADH in plasma: 256 mOsm + 56 mOsm. In group III, the density of urine was 1006-1008, ADH = 187 + 12 mOsm. A direct correlation was obtained for the weak force of density and ADH (r = 0.45, p> 0.05).

Decreased the concentration of ADH at night, in groups I and II, using desmopressin therapy 120 mkg before sleep. (Minirin MELT). Treatment with oxybutynin 5 mg after breakfast and lunch. Duration of treatment - 3 months.

RESULTS

The efficacy of the proposed method of treatment was higher in 46 of 55 children with oxybutynin and minirin than oxybutynin alone. This is reflected in an increase in life expectancy without episodes of day and night incontinence and an increase in the volume voiding during treatment in 4-6 weeks. In group III, there was a deficiency of ADH in the plasma, which is a contraindication to the treatment with desmopressin.

CONCLUSIONS

By determining the urine density, it is easier for pediatricians to determine the indications for minirin treatment of children with OAB in addition to therapy with oxybutynin.

114 - BRIGHT LIGHT THERAPY AS A NEW NON-PHARMACOLOGICAL TREATMENT FOR REFRACTORY MONOSYMPTOMATIC NOCTURNAL ENURESIS

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INTRODUCTION AND AIM OF THE STUDY

The International Children' Continence Society proposed the recommendation on the treatment for monosymtomatic nocturnal enuresis in 2010 (Ref 1); desmopressin and enuresis alarm device as the 1st choice, anti-cholinergic drugs as the 2nd choice, and imipramine as the 3rd choice. However, we see nearly 5% of refractory patients who are on all those treatments. Recent reports including the one by Yeung CK et al. (Ref 2) showed that the altered sleep conditions may be the important factor(s) in the pathogenesis of nocturnal enuresis.

Bright light therapy has recently been performed for the sleep-related disorders. We applied this treatment for our refractory case of monosymptomatic nocturnal enuresis.

MATERIALS AND METHODS

Case: 8-year-old girl with primary, monosymptomatic nocturnal enuresis.

She had been treated with oral desmopressin (240 microgram), enuresis alarm, anti-cholinergic drug (solifenacin 5mg) and imipramine 25mg. This combination therapy was unsuccessful and no dry nights in 4 weeks.

She started bright light therapy in addition to desmopressin (enuresis alarm, solifenacin and imipramine were stopped).

By using the device, Valkee 2 (Valkee Inc., Oulu, FInland), transcranial light was given via ear canals for 4 weeks at 12-min daily dose of photic energy of 4 lumens/2.881 mW/cm2.

RESULTS

With this treatment, the enuresis episodes reduced to 7 nights in 4 weeks, and the effect remained after the termination of the bright light therapy. The patient's sleep state evaluated by Actigraphy (ActiGraph; Pensacola, FL) showed that periodic limb movement during sleep reduced 23 to 12 per night after the bright light therapy. No adverse events were found during the treatment.

CONCLUSIONS

Although this is the single case experience, the bright light therapy may have anti-enuretic effect by modulating the patient sleep stage.

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115 - REVIEW OF CHILDREN WITH CONSTIPATION AND INCONTINENCE AT A HOSPITAL CLINIC FOR THE 10 YEAR PERIOD 2006-2015.

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INTRODUCTION

We have a special clinic for children with constipation and incontinence and did a review of the patients seen in the period 2006 – 2015. We compared the clinical features, demographics, treatment regimens and outcome of the patients. Ethical approval from University and hospital was obtained.

METHODS

This is a descriptive retrospective study using the Out Patient file notes and summaries from the department of Paediatric Surgery. The data of patients are recorded electronically on a data sheet and identity of individual patients are not displayed. The outcome of treatment, adherence to the program and recurrence of symptoms are recorded.

RESULTS

In this report, 260 patients were included and 238 with faecal incontinence used in statistical analysis. Male to female ratio was 3.3:1. Age ranged from 4 – 15 years with an average of 8y 2m. Only 59.2% of patients reported constipation, but 96.6% had faecal loading on AXR. In 82.8% of patients the treatment was recorded as successful but 22.3% had a relapse of symptoms. In 81.1% of patients an enema was prescribed as part of initial treatment. Average length of clinic visits were 10 months and only 26% recorded as not attending regularly.

CONCLUSION

In this audit of historical data it is clear that the treatment regimen used is effective. The age and sex distribution correlates with other studies. Recording of data is on-going and will be analysed to review results every 2 to 5 years.

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116 - THE INFLUENCE OF STRESS AND LIFE EVENTS IN CHILDREN WITH FECAL INCONTINENCE AND THEIR PARENTS

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INTRODUCTION AND AIM OF THE STUDY

Emotional stress is known to be associated with functional gastrointestinal disorders. The aim of this study was to assess stressful life events, stress load/coping mechanisms in children with with fecal incontinence (FI) as well as in their parents compared to continent controls. Stress was measured not only with questionnaires, but by a novel day-by-day diary.

MATERIALS AND METHODS

Data of 13 (46.7% boys, mean age = 9.5 years) consecutively presented children with FI, diagnosed according to ICCS standards and 15 (61.5% boys, mean age = 10.4 years) matched continent controls are presented. All children received a physical examination and an intelligence test (RIAS). Child psychopathology was assessed with the Child Behavior Checklist (CBCL) and a structured psychiatric interview (Kinder-DIPS). Parental stress was measured with the Parental Stress Questionnaire (ESF). Stress load/coping in children were assessed by a stress questionnaire for children (SSKJ) and a self-composed, novel stress and FI diary. Both parents and children completed the CASE life events questionnaire.

RESULTS

Children with FI showed a significant higher CBCL Total Score (p=0.01) than continent controls. Parental stress was significantly higher in parents of children with FI (p=0.16), and they experienced a significant higher number of negative life events (mean 3.45 vs. 2.0, p=0.51). There was no difference in stress load/coping nor in the number of negative life events between incontinent children and controls. The stress diary showed no difference in the total amount of stress (e.g. number of days with stressful events, intensity of stress/day). The number of episodes of FI per day had no influence on the experience of stress in incontinent children.

INTERPRETATION OF RESULTS

Based on these preliminary results, stress is not a major issue in children with FI, but in their parents. The novel approach of measuring stress day by day with a diary was feasible.

CONCLUSIONS

Screening for stress and possible psychological symptoms is not only recommended in children with FI, but also in their parents to identify barriers to counselling and treatment.

117 - TRANSCUTANEOUS POSTERIOR TIBIAL NERVE STIMULATION IN THE TREATMENT OF URINARY TRACT AND BOWEL DYSFUNCTIONS

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INTRODUCTION AND AIM OF THE STUDY

The aim of our study is to evaluate the use and effectiveness of transcutaneous posterior tibial nerve stimulation (PTNS) for the treatment of low urinary tract dysfunction (LUTD) and bowel dysfunction in children resistant to pharmacological therapies.

MATERIALS AND METHODS

Since 2015 to 2017, 16 patients (5 patients with overactive bladder, 2 with neurogenic bladder, 3 with non-neurogenic bladder retention, 3 with anorectal malformation, 1 with Hirschsprung disease, 1 with functional constipation, 1 with bowel and bladder dysfunction) underwent transcoutaneous PTNS. Range of age: 3-16 yrs (12 M, 4F). Patients with LUTD underwent uroflowmetry with Elettromiography. Patients with bowel dysfunction responded to the Jorge - Wexner questionnaire and two performed the anorectal manometry.

RESULTS

None patients referred pain. Follow up 6 – 12 months. The resolution of the symptoms was in the 80% of patients with overactive bladder; in the 67% of non - neurogenic urynary retention and 1 patient with neurologic bladder with the use of anticholinergic and alfa – blocker drugs. All patients had a regular uroflowmetry at control. The 66% of patients with bowel dysfunction had an improvement of questionnaire while the remaing 33% of patients needed of colonic irrigation.

INTERPRETATION OF RESULTS

Our results are statistically significant respect to the standard uroterapy and farmacological therapies.

CONCLUSIONS

The transcutaneous PTEN is a non invasive, tolerate, safe and effective in the treatment of LUTDS. It is a good help in the bowel dysfunction.

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