

W29 (ICS 2019) Hand-out



W29: ICS Institute - School of Paediatric Voiding Dysfunction and Transitional Urology: Bladder dysfunction and enuresis in children and adolescent- Diagnosis and treatment

Workshop Chair: Jian Guo Wen, China

05 September 2019 09:30 - 11:00

Start	End	Topic	Speakers
09:30	09:35	Introduction of the workshop and speakers	Jian Guo Wen
09:35	09:50	Bladder function development and voiding dysfunction in children and adolescent	Jian Guo Wen
09:50	10:05	Urodynamic evaluation of bladder dysfunction in children and adolescent	Stuart Bauer
10:05	10:20	Diagnosis and treatment of Nocturnal Enuresis in children and adolescent.	Soren Rittig
10:20	10:35	Enuresis and incontinence in children and adolescent: what adult urologists should know about?	Stephen Yang (Presented by Giovanni Mosiello on behalf of Stephen)
10:35	10:50	Noninvasive treatment of voiding dysfunction in children and adolescent	Giovanni Mosiello
10:50	11:00	Discussion	Jian Guo Wen

Aims of Workshop

Bladder dysfunction such as frequency, urgency and nocturnal enuresis is common in children and adolescent. The aim of this workshop is to provide basic and advanced knowledge on bladder development and voiding dysfunction, especially on diagnosis and treatment of nocturnal enuresis in children and adolescent, for paediatrician, paediatric surgeon, nurses and adult urologists. The gold standard of diagnostic tool, paediatric urodynamic studies, for evaluation of bladder dysfunction, the advanced noninvasive procedures for treatment of enuresis and incontinence including the biofeedback and electronic stimulation in children and adolescent will be introduced.

Learning Objectives

To know the knowledge of bladder function development and common reasons of voiding dysfunction as well as their treatment in children and adolescent.

Target Audience

Urologist, paediatrician, nurse, Physiotherapist

Advanced/Basic

Advanced

9:35 Lecture 1

Bladder function development and voiding dysfunction in children and adolescent

Jian Guo Wen, MD, PhD, Professor

The paediatric urodynamic center, First Affiliated Hospital of Zhengzhou University, Zhengzhou, China
Bladder dysfunctions are common in children and adolescent. Nocturnal enuresis (NE) is a special type of voiding dysfunction or incontinence. The underlying mechanism involved in these abnormalities has not been fully established. Their diagnoses and treatment are sometime difficult; often need help from urodynamic studies. Many doctors including adult urologist and nurse need to know the basic knowledge of how to diagnose and treat the bladder dysfunction and NE in children and adolescent. To know the normal bladder function development is important for us to understand the mechanism of voiding dysfunction in children and adolescent. Since neonates do not have voluntary control of urination, it was believed that a local sacral reflex was responsible for emptying the bladder without involving the brain. However, electroencephalography suggests that most neonates experience cortical arousal and awaken before voiding, so the brain is always involved with voiding. Functional or organic lesions of muscles and/or nerves related to voiding control is common causes of voiding dysfunction A significant difference of normal voiding pattern of children from adult requires unique procedure and standards to diagnose the voiding dysfunction. The literature on bladder function development and voiding dysfunction in children and adolescent will be reviewed and introduced.

9:50 Lecture 2

Urodynamic evaluation of bladder dysfunction in children and adolescent

Stuart B Bauer, MD, Professor

Department of Urology, Boston Children's Hospital, Boston, USA.

Urodynamic studies (UDS) in children have now become of paramount importance and have been used extensively in assessing and managing children with lower urinary tract disorders. Learning to ask the correct questions so that appropriate functional testing can be undertaken in an efficient manner is now standard practice in busy pediatric urologic services in the US and worldwide. It helps understand why children with neurogenic bladder dysfunction are incontinent and /or why their upper urinary tract may be at risk for deterioration. Consequently, it helps guide both preventive and reactive therapy to preserve kidney function and continence. For children with anatomic defects such as exstrophy and posterior urethral valves, UDS provides a means for understanding why urinary incontinence persists in the former and why upper urinary tract dilation may not have resolved in the latter. In children with functional disorders and persistent incontinence and/or recurrent urinary infection, knowing how efficient and effective bladder function is, provides clues as to why these symptoms are present and what can be done to improve them. As a result, UDS is as important and in some cases even more important than radiologic imaging in understanding the underlying pathophysiology of lower urinary tract dysfunction.

The aims of this workshop lecture are to provide the attendee with an understanding of how to ask appropriate questions so urodynamic studies can be undertaken efficiently with a minimum of invasiveness and a maximum of knowledge gained in order to initiate the most efficacious treatment. There will be an emphasis on learning what can be gleaned from various components of urodynamic testing, and how best to avoid pitfalls in the testing process that may lead to false interpretations and inappropriate treatment. For children with neurogenic bladder dysfunction, there will be a discussion about how to determine the extent and progression of this disease process, and when and why it may be appropriate to consider primary and/or secondary untethering of the spinal cord to preserve lower urinary tract function. For those with an anatomic abnormality, differentiating between bladder or urethral sphincter causes for the dysfunction on UDS testing then allows the practitioner to focus on effectively managing the root cause for the incontinence. For children with functional causes, UDS can allow the practitioner to hone in on a variety of non-invasive measures that should improve outcomes. In other words, having a full knowledge what UDS testing in children can achieve increases the armamentarium available the treating physician for children and adolescents with lower urinary tract dysfunction.

10:05 Lecture 3

Diagnosis and treatment of nocturnal enuresis in children and adolescent

Soren Rittig

Department of Pediatrics, Aarhus University Hospital, Denmark

The nocturnal enuresis (NE) is common in school aged children, and not disappeared even in adult. Despite the high prevalence of enuresis, the professional training of doctors in the management of this condition is often insufficient

and routinely not evidence based, additionally, in many instances these guidelines are inadequately followed. It is a pervasive and disturbing problem for many children and their families. This is a worldwide problem where in some cultures the problem can lead to major issues for the child that is beyond their control. NE originally was thought to be a psychiatric/psychological problem, and the pendulum then swung heavily to it being a somatic problem with issues in excessive urine production at night. Arousal and/or nocturnal overproduction of urine appear to be the main factors in NE. In non-monosymptomatic nocturnal enuresis (NMNE), we are aware that the bladder is playing a role as well. The pathophysiology of NE and its diagnosis and treatment will be introduced with emphasis of NE on the cases of adolescent.

10:05 Lecture 4

Enuresis and incontinence in children and adolescent: what adult urologists should know about?

Stephen Shei-Dei Yang, MD, PhD, EMBA

Professor of Urology, Taipei Tzu Chi Hospital, and Buddhist Tzu Chi University, Taiwan.

Not all nocturnal enuresis (NE) goes away with age! Adults suffering from NE are not uncommon. About 0.5-1.0% young adults have NE. The followings are some more points that all adult urologists need to know about NE in children and adolescents.

The key aetiologies of NE in children can be simply classified into three categories: nocturnal polyuria, bladder dysfunction and brain arousal problems. Each category can have specific trigger factors need to be clarified. Nocturnal polyuria may be secondary to drinking too much all day or just before sleep, loss of diurnal change of anti-diuretic hormone, or even renal tubular dysfunction that can't concentrate urine in the night. Bladder dysfunction includes detrusor overactivity, dysfunctional voiding and some uncommon anatomical bladder outlet obstruction such as posterior urethral membrane. More importantly, bowel dysfunction such as constipation has been regarded as a key trigger of bladder dysfunction. Hence the terminology "bladder bowel dysfunction (BBD)" is highlighted in the diagnosis and treatment of paediatric urinary incontinence including NE. Poor sleep quality, instead of deep sleeper, has been approved in NE. Treat BBD may change sleep quality. Sleep apnea can be a cause of poor sleep quality. ADHD and other neurodevelopmental dysfunction may have an impact on sleep quality too. Psychological factor inducing NE is less, and usually is the secondary result of NE.

Unlike most children with NE, these adolescents will continue to suffer from NE if no adequate diagnosis and treatment are provided. More bladder dysfunction has been noted in adolescents and invasive examination such as videourodynamics may be necessary to clarify the underlying pathophysiology of bladder dysfunction. Then, adequate medical or surgical treatment can be used to resolve NE. hyponatremia should be monitored carefully. Bladder dysfunction can be diagnosed by bladder diary, uroflowmetry and PVR. Treat associated lower urinary tract dysfunction can improve NE. Based on the status of cognition and motor function, one may set a reasonable target in the management of NE.

In conclusion, NE is multifactorial and psychological impact on children's life is significant. Knowing the potential causes of NE can bring better care to them.

10:05 Lecture 5

Noninvasive treatment of voiding dysfunction

Giovanni Mosiello

Department of Urology, Bambino Gesù Children's Hospital, Rome, Italy.

In children and adolescents bladder and bowel symptoms are often associated. Furthermore symptoms are often refractory to standard therapy : correct hydration, bowel management, timed voiding , voiding education. Intervention requires a combination therapy, time consuming for a long period for optimising bladder emptying with relaxation of the urinary sphincter or pelvic floor prior to and during voiding. Strategies to achieve these goals include pelvic floor muscle exercises timing training, biofeedback for pelvic floor activity and re-laxation, clean intermittent self-catheterisation. Pharmacotherapy can be useful as antimuscarinic drug therapy if detrusor overactivity is present, or if bladder neck is implicated alpha-blocker drugs may be introduced in males. Recurrent urinary infections and constipation should be treated and prevented during the treatment period. PTNS, TENS or SNM can be useful in selected cases as well as botulinum toxin an injection.