Voiding Dysfunction in Childhood

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Introduction

Urologists are often asked to attend a child with wetting or voiding problems. These are the more common paediatric conditions seen in a urology clinic. The child may have enuresis, voiding frequency or incontinence. Although a majority of these cases run a benign course, it is necessary to differentiate them from others that may develop into serious complication, namely upper urinary tract damage.

History taking is an important part of diagnostic evaluation. Data on voiding and drinking habit such as timing and volume of drinking, and any episodes and amount of voiding or incontinence should be collected and reviewed. Abnormal bowel habit like constipation, may be the cause of or associated with voiding disorder. In many cases, voiding disorder can be resolved by treatment of constipation. The child’s medical history like urinary tract infection, neurological abnormalities as well as psychosocial history should also be scrutinised. A thorough history taking exercise often helps to arrive at an accurate diagnosis.

Besides history taking, it is equally important to examine the patient carefully. A detailed abdominal examination may sometimes reveal a distended bladder or constipated bowel. Clinicians should take note of the appearance of the external genitalia, the perineum and the anus. A simple neurological examination as well as back examination may discover undiagnosed myelodysplasia (spina bifida related conditions).

Nocturnal Enuresis

Nocturnal enuresis (NE), or bedwetting is one of the common problems encountered in our clinic. NE could be primary, where there is no dry continuity break of more than 6 months; or secondary, where there is a recurrence after a long interval of dryness. Besides, NE could be mono-symptomatic or non-symptomatic. Children with mono-symptomatic enuresis only wet at night and they do not have any daytime voiding problem. Children with non-monosymptomatic enuresis have voiding problems during both daytime and nighttime. Strictly speaking, non-monosymptomatic enuresis should be managed as voiding dysfunction rather than simple enuresis. Interestingly, nocturnal enuresis is a hereditary disorder. Either or both parents of our patients suffered from enuresis when they were young. Therefore, it is important to explore the family history in the initial management of the case. A lot of stress and anxiety could be eased by the parents’ understanding that their kid’s problem, just like their own problem at young, would eventually be cured without long-term sequelae. In fact, the spontaneous cure rate of NE is about 15% annually between the age of 5 and 19.

The possible etiology of NE could be due to disturbance of vasopressin (anti-diuretic hormone) physiology that leads to nocturnal polyuria, bladder dysfunction during sleep or too deep a sleep. Upper airway obstruction has also been found to be associated in some cases. Majority of these cases, as noted above, run a benign course. These cases could be managed initially by moderate behavioural modification. Regulation of drinking habit and voiding schedule, such as fluid restriction towards the evening, pass urine before going to sleep and encouraging the child to wake up in the middle of the night to pass urine by himself/herself can be a helpful start. Motivating the child with “star chart” and rewards upon satisfactory performance has also been proved very effective in many cases. If the above measures are unsuccessful, it may be necessary to incorporate a urinary alarm (enuresis alarm). Urinary alarm is proved to be the most effective device for mono-symptomatic NE and provides lasting success rate. Drug therapy with desmopressin (DDAVP) may be needed for those who have nocturnal polyuria or who failed the initial treatment. It should be noted that drug therapy is very effective in reducing the number of wet nights, but relatively ineffective in eliminating it altogether. Moreover, the rate of relapse is rather significant upon cessation of therapy. Hence, we usually prescribe DDAVP as a second line therapeutic option. Anticholinergics like oxybutynine may also be useful in some cases with uninhibited contractions of the bladder during sleep, usually presenting with wetting at the beginning of the night.

Secondary enuresis, on the other hand, may have closer relationship with the patient’s psychology and more attention should be paid on this aspect during consultations. It could be attributable to stress or emotional problems like the birth of a younger sibling, family conflict or separation of parents etc. Paediatricians and child psychiatrists who are experts in this field may be in a better position to manage them. It should be remembered that a huge array of childhood disorders might present bed wetting as one of their symptoms.

Voiding dysfunction

For children, voiding dysfunction could originate from neurogenic or non-neurogenic causes. A lot of children with neurogenic voiding dysfunction may already have known aetiology when they were first referred to us. The more commonly seen cases are those with spinal dysraphisms, or pathology affecting the CNS (eg. cerebral palsy). Others like neurogenic bladder caused by spinal cord injury, sequelae of infection of the nervous system (encephalitis, myelitis, TB meningitis etc.) could also result in neurogenic voiding dysfunction. Children with neurogenic voiding dysfunction need very specialised urological care. They need urodynamic
and imaging studies for assessment of urinary tract, especially bladder function and anatomy, continence care with or without clean intermittent catheterisation, anticholinergic drug treatment or even surgical procedures like vesicostomy, augmentation of bladder etc. The cornerstone of management is to protect the renal function and maintain an efficient evacuation of the bladder. A small group of these patients, especially those with dysnergic bladder/sphincter function, may also be at risk of upper urinary tract deterioration. Identification, close monitoring of the urinary tract and early aggressive treatment is essential.

For those patients with voiding dysfunction lacking an anatomic or neurogenic aetiology (non-neurogenic), the commonest cause is an unstable or overactive bladder. These patients may present with frequency, urgency or urgency-incontinence symptoms. A urodynamic study could make definitive diagnosis of an unstable or overactive bladder but it may not be necessary in all cases prior to treatment trial. Generally speaking, bladder training, constipation treatment, drug treatment with anticholinergics or a combination of the three are very effective in treating children with overactive bladder and parents should be reassured that most of the children can grow out of their problem.

Dysfunctional voiding in general refers to the group of children with voiding difficulty with or without bladder instability or incontinence. The pathology could be due to detrusor sphincter dys-coordination, which triggers off a series of secondary events. Problems like urinary tract infection and vesicoureteral reflux could happen as well. Severe dysfunctional voiding could, in rare cases, lead to bladder decompensation and reflux nephropathy with upper tract damage, namely the Hinman Syndrome. The principal management tools for dysfunctional voiding are again regulation of bowel and urinary habit. Voiding should be timed and in a proper position while constipation should be well treated. Biofeedback programmes aimed at relaxing the pelvic floor and urinary sphincter could be very helpful in these cases. Professional counselling with multidisciplinary team approach and close treatment monitoring are undoubtedly most appropriate. If complication due to urinary tract infection arises, treatment should be made promptly. For more severe cases of dysfunctional voiding, drug treatment with anticholinergics or alpha-blockers together with clean intermittent catheterisation (CIC) for bladder evacuation purpose may be required. With proper management, the prognosis is usually good and, to the relief of parents, most of the children get better and eventually will recover.

References: