Enuresis

41

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Enuresis Is Very Common!

- 15% to 20% of five-year-old children experience nocturnal enuresis which usually goes away as they grow older
- Still, about 2–5% of young adults experience nocturnal enuresis at times of stress.

41.1 Introduction

- Normal variation.
  - Children have daytime bladder control by 2 years with night-time control by 3 years.
  - 85% will be dry by day and night by age 5.
- Nocturnal enuresis[1] is more common than diurnal enuresis.
- *Primary enuresis* (75%) (International Childrens Continence Society—ICCC, definitions).
  - When a child has never had urinary control.
- *Secondary enuresis* (25%).
  - There has been a 6 months preceding period of dryness.

[1] Enuresis (Greek ἐνούρησις) - "to void urine." The implication is that this is involuntary.

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41.2 Physiology

Urine is stored in the bladder because of sympathetic and pudendal nerve mediated inhibition of detrusor contraction. Voiding occurs with reflex bladder contraction and relaxation of the sphincter.

- *Average bladder capacity is (age+2) x 30 in mL.*

41.3 Causes of Enuresis

- Constipation.
  - Most common cause for enuresis especially if nocturnal.
  - Restricts bladder capacity with colonic movement at night triggering uninhibited detrusor contraction.
- Bladder outlet obstruction and overflow incontinence.
  - For example, posterior urethral valves, trauma, infection.
- Urological infection.
  - UTI, cystitis.
- Polyuria.
  - Chronic kidney disease.
  - Diabetes Insipidus.
  - Diabetes Mellitus.
  - Electrolyte imbalance.
  - Reduced ADH at night.
- Bladder capacity issues.
  - Detrusor instability.
  - Neurogenic bladder.
  - Overactive bladder.
- Central nervous system control issues.
  - Developmental delay.
  - Seizures.
  - Sleep disorders, commonly secondary to adenotonsillar hypertrophy.
- Hyperthyroidism.
- Social Issues, major life events.
  - New baby.
  - Moving house, bereavement, parental disharmony, child abuse etc.

41.4 Clinical Features

- History of birth trauma or cerebral palsy. Failure to pass developmental milestones.
- New-onset frequency and urgency as seen in cystitis and UTI.
- Evidence of sleep disorder or snoring.
- Voiding diary for diurnal variation.

41.4.1 Examination

- General physical examination including BMI, abdominal and genitourinary examination.
- Neurology and spine examination for possible malformation (sacral abnormalities, spina bifida occulta).
- Rectal examination for constipation and sphincter weakness.
- ENT examination to look for obstructive sleep disorder secondary to adenotonsillar hypertrophy.

41.4.2 Investigations

- Blood sugar.
- Electrolytes, including Na, Cl, K, Ca.
- Renal function (urea and creatinine) to look for evidence of acute and chronic renal impairment.
- Serum and urine osmolality.
- Urine for blood, protein, cells and infection.
- Ultrasound and KUB.
  - Bladder capacity, emptying and residual urine.
- Spinal MR scan.
  - For abnormal neurological examination.
- Voiding cystourethrogram.
  - If posterior urethral valves are suspected.
- Urodynamics studies.
  - Will identify urethral obstruction, neurogenic bladder, dysfunctional voiding.

41.5 Management

- General measures.
  - Children often drink less fluid at the daytime and school, and at the same time, they are very active during this period. They are hungry, thirsty and dehydrated when they are home and drink a large amount of fluid in the evening. They should be encouraged to do the reverse, more fluids during the day and less late evening.
  - Avoid caffeine that has a diuretic effect.
  - Bladder training for regular voiding with alarm warnings.
  - Empty bladder at bedtime.
  - Food with high fiber to avoid constipation, laxatives.
  - Monitor urine output, especially looking for diurnal variation.
- Psychological support.
  - Reassurance and education for under 5 years.
- Behavioral Therapy.
  - Induced waking at night to void, using enuresis alarm.

- *Drugs.*
  - After 7 years of age.
  - *Desmopressin.*
    Vasopressin analog that enhances reabsorption of water by distal tubules and collecting ducts of kidney and inhibits the secretion of aldosterone. Oral tablet or sublingual dose is taken at bedtime decreases nocturnal urine output.
  - *Anticholinergics—e.g., Oxybutanin, Tolteridine.*
    These bind to choline receptors and produce antagonistic activity against acetylcholine and relieve detrusor overactivity. They are useful in children with bladder spasm, detrusor overactivity, decreased functional bladder capacity, urgency and frequency, which are more common daytime symptoms.
  - *Anticholinergic Tricyclic Antidepressant - e.g., Imipramine.*
    Now usually avoided because of side effects (e.g., cardiac).