PEDS: NOCTURNAL ENURESIS IN CHILDREN

Background
1. Definition: urinary incontinence or bed-wetting at night (more than twice a week) in children >5 y/o
2. General Information
   o Monosymptomatic: uncomplicated – does NOT include other Lower Urinary Tract Symptoms (LUTS)
     ▪ Primary: consistent night-time dryness has never occurred
     ▪ Secondary: symptoms occur after previously achieving period of night-time dryness (of at least 6 months)
   o Non-Monosymptomatic: complicated - includes other LUTS or other co-morbidities (eg, diabetes, spina bifida, seizure disorder, other)

Pathophysiology
1. Physiology
   o Possible low AVP (arginine vasopressin) secretion with resultant increased urine production
   o Smaller functional bladder capacity
   o Deep sleep with diminished arousal capacity
   o Detrusor instability
   o Psychosocial stressors
   o Genetics - linkage to chromosome 8q, 12q, 13q, 22q11
2. Incidence, Prevalence
   o Monosymptomatic makes up 85% of cases
   o Age 5 – 7% of boys, 3% of girls
   o Age 10 – 3% of boys, 2% of girls
3. Risk Factors
   o 2:1 ratio, boys to girls
   o Genetics - strong familial component
     ▪ 44% of kids with one positive parental FHx (family history), 77% with both parents positive FHx
     ▪ Twin concordance - 68% of monozygotic, 36% dizygotic
   o Maturational delay
   o Lower socioeconomic groups
   o Larger families
   o Institutionalized children
4. Morbidity / Mortality
   o Mainly psychological morbidity
   o 1% remain enuretic until adulthood

Diagnostics
1. History
   o Onset, duration, severity
   o Fluid intake habits
   o Voiding habits
o Voiding symptoms (dysuria, frequency, urgency, nocturia, wetting/incontinence)
o Bowel habits and frequency
o ROS to include constitutional (fatigue, weight loss), snoring, polydipsia
o Past medical history
o Family history of enuresis
2. Physical Examination
   o Constitutional
   o Ear, Nose and Throat – assess tonsils and adenoids
   o Abdominal exam – assess for distended bladder, enlarged kidneys or fecal masses
   o Genitourinary exam - inspect urethra for discharge, perineum for irritation or signs of trauma, anus for signs of pinworm
   o Neurologic – gait, tone, strength, reflexes, evaluate perineal sensation and rectal tone
3. Diagnostic Testing – point of care
   o Urinalysis
   o Urine culture
4. Further Diagnostic Testing - rarely needed - reserved for complicated cases.
   o Laboratory evaluation
     ▪ Basic metabolic profile to include kidney function and glucose
     ▪ Thyroid Stimulating Hormone
   o Diagnostic imaging
     ▪ Renal ultrasound
     ▪ VCUG (voiding cystourethrogram)
     ▪ Lumbar sacral MRI
   o Other studies
     ▪ Urodynamics

Differential Diagnosis
1. Key Differential Diagnoses
   o Bladder Dysfunction
   o Urinary tract infection
   o Constipation/Obstipation/Encopresis
2. Extensive Differential Diagnoses
   o Obstructive Sleep Apnea
   o Psychological Stress
   o Pinworm Infection
   o Diabetes Mellitus
   o Hyperthyroidism
   o Chronic Renal Failure
   o Diabetes Insipidus
   o Seizure disorder
   o Sickle cell disease
**Therapeutics**

1. **Acute Treatment**: not indicated in absence of co-morbidities
2. **Long-Term Care**
   - Hold treatment until after 7 y/o unless significant distress about symptoms or negative affect on self-esteem – (SOR:B).4
   - Record voiding patterns and volumes, rule out daytime symptoms.4
   - Reassurance with elimination of guilt, shame and specifically punishment. Minimize emotional impact. Avoid rewards for dry nights. – (SOR:C).4
   - Behavioral plan – avoid caffeine and excessive fluids before bedtime; void before bed; include the child in morning clean-up (non-punitively); preserve self-esteem.4
   - Enuresis alarm reduces wet nights by almost 4 per week (NNT 2)5 – (SOR:A).
   - Dry-bed training (awakening child at night to void) and bladder training alone are not recommended – (SOR:B).2
   - Dry-bed training can be used in combination with alarms for improved number of dry nights – (SOR:A).5
   - Second line treatment with tricyclics (imipramine and desipramine) not recommended due to side effects.3 They do reduce wet nights by 1-2 per weeks during treatment (NNT 6) – (SOR:A).5
   - Second line treatment with anticholinergics in children with urgency – (SOR:B).
   - ddAVP most effective with normal bladder capacity only while treatment continues (NNT 7) – (SOR:A).
   - ddAVP safe to use long term with occasional attempts to wean – (SOR:B).6
   - Alternative treatments including acupuncture, chiropractic or spinal manipulative, reflexology or natural supplements – all Grade C (unclear or conflicting scientific evidence).7

**Follow-Up**

1. **Return to Office**
   - Acutely with treatment initiation or yearly if following.
   - New or worsening symptoms
2. **Refer to Specialist**
   - Indicated if refractory to treatment
3. **Admit to Hospital**
   - Not indicated unless there are co-morbidities

**Prognosis** - Spontaneous resolution occurs in about 15% per year2,5

**Prevention** – none.

**Patient Education**

References


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