Enuresis in Children

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Passage of feces or urine
- In inappropriate places
- Inappropriate to developmental age and level
Toilet training is affected by:

- IQ
- Social maturity
- Culture
- Child-parent interaction
Developmental coarse:

1. Night fecal continence
2. Day fecal continence
3. Day urine continence
4. Night urine continence
Enuresis

- >5 years of age (or developmentally equivalent)
- At least 2 nights per week for 3 months – or if lower cause significant distress or impairment in functioning
- Urinating into bed or cloths
- Involuntary (most) or voluntary
- Nocturnal (most), diurnal, both
- Not due to GMC or substance effect
GMC:
- Structural abnormalities
- Infections
- Neurological disorders
- DM or DI
- Seizure

Substance:
- Intoxication
- Drug side effects
Prevalence

- Boys more than girls
- Decreases with increasing age
- Remission rate is 15% per year (good prognoses)
- In 5 years old boys: 7%
- In 5 years old girls: 3%
- In adults: 1%
- 82% of 2 years olds have no continence
Etiology

Physiologic factors have major role in enuresis

Normal bladder control is influenced by:

- **Genetic factors:**
  - 75% of enuretic children have history of enuresis in their 1st relatives
  - If one parent has history of enuresis, risk of enuresis in offspring is 44% (5-7 times increase)
  - Prevalence in MZ twins more than DZs
- Neuromuscular development:
  - Maturational delay (2 times more in enuretic children)
  - Functional small bladder
  - Low night ADH

Enuretics: 2 pg/ml ADH & 50 ml/h urinary excretion during night

Normal children: 3 pg/ml ADH & 22 ml/h urinary excretion during night
Socio-emotional factors (20% of enuresis causes):

- Sibling birth
- Hospitalization
- School start
- New domicile
- Family break (divorce, death,…)
- Illness
- Abuse
- Transient regression
- …
- Cognitive development
- Toilet training
- Developmental factors ~ 80% of cases: (causes primary enuresis)
- Emotional factors ~ 20% of cases: (causes secondary enuresis)
- Somatic factors ~ 1% of cases: (causes secondary enuresis)

*In secondary enuresis there is a history of 6-12 month dryness*
Common comorbid disorders:
- Developmental delay
- Encopresis
- Sleep disorders
- **Side effects:**
  - Poor self-image
  - Poor self-esteem
  - High embarrassment
  - High caregiver’s negative response
  - Family conflict
  - High social restriction
  - ...
Assessment

- Primary or secondary
- Rule out somatic factors
- FBS, U/A, U/C, EEG
- Assess comorbidities
Treatment

- Reassurance, support & open discussion
- Ignoring is prohibited!
- Teasing, embarrassing & punishment is prohibited as well!
- Be persistent, treating enuresis may take a long time, don’t lose your hope!
- Review an appropriate toilet training
Treatment of primary enuresis:
- CBT
- Drug therapy

Treatment of secondary enuresis:
- Treating the basic pathology
- CBT
- Drug therapy
Cognitive Behavior Therapy (CBT):

- Late fluid & diuretic restriction
- Urination before going to bed
- Midnight urination using midnight alarm
- Bell & pad (50-80% effective)
- Responsible in changing & washing cloths & bed sheets
- High daytime fluid taking & delayed voiding
- Positive reinforcement & star charts
- Tracking (time, place, precipitating factors, …)
- Encouraging the child to cooperate in tracking
- Positive & functional parent-child relationship is necessary for success
Drug Therapy

- **Imipiramine**
  - 25-125 mg/day (up to 5 mg/kg), single dose HS
  - Begin with 10-25 mg HS
  - If no response: Increase 10-25 mg every 4-7 nights
- Baseline ECG
- Monitor ECG if >3.5 mg/kg is needed
- Lower the symptoms in 85% of cases
- Complete dryness in 30% of cases
- **Desmopressine**
  - 10-40 mcg nasal spray
  - Begin with 1 puff HS
  - If no response: Increase 1 puff every 4-7 nights
Minirin (Vasopressin)

- Begin with 0.1-0.2 mg HS
- If no response: Increase 0.1 mg every 4-7 nights (up to 0.4 mg HS)
- If still no response: Add ACH drugs
- T ½: 8 hrs
- Appropriate for primary nocturnal enuresis (PNE)
- 10-90% dryness
- Hyponatremic seizure (fluid & electrolyte control)
- Fluid intake only to satisfy thirst: From 1 hr before until 8 hr after administration
- Test electrolytes every 6 months
In drug therapy:

- Begin tapering after 3 months of dryness
- If reappear at a lower dose: Increase the dose a little & retry tapering after another 3 month of dryness
Three types of responders:

- True responders
- True non responders
- Transient responders
- Diurnal enuresis due to absorption in play:

1. Returning home every 15-30 minutes & if dry, will be allowed to continue playing
2. Gradually increasing the checking intervals
3. Going to WC frequently & at fixed times at least every 4 hrs
4. Star chart & positive rewards