Enuresis

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53.1 Definition

Enuresis is a very prevalent condition within children. Five to ten percent of 7-year-olds are affected, and in 7 % of them symptoms continue until adulthood. Enuresis is defined as nocturnal wetting (continuous or intermittent) after completion of the 5th year of age, differentiated into primary and secondary enuresis. The latter describes new-onset nocturnal incontinence in a child with a previous dry period of at least 6 months. Simple nocturnal incontinence is described as monosymptomatic enuresis. If the child shows additional urinary tract symptoms (LUTS), e.g., daytime incontinence, urgency, holding maneuvers, incomplete bladder emptying, increased voiding frequency, etc., one speaks of non-monosymptomatic enuresis. Reasons for enuresis can be increased nighttime urine output, arousal problems, low bladder capacity, or elevated detrusor activity. Furthermore, enuresis can be based on genetical disorders but also might be due to psychological issues.

53.2 Medical History

Doctors should ask about the frequency of wetting, if there has ever been a dry period before, if wetting only occurs at night or also during the day, and whether incontinence episodes correlate to special conditions (psychological aspects). Parents should also be asked about the incidence of urinary tract infections. Questions about the social background of the child and problems within the family or at school are important, just like other illnesses, for example, attention deficit disorder (ADD). It is also interesting to know if other family members were affected

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by the condition in their younger years. The parents should be asked about any daytime symptoms of the child, like urgency, holding maneuvers, etc., and about the bowel function which means frequency of defecation and consistency of the stool. This can be important because preexisting urgency due to low bladder capacity or increased detrusor activity might be triggered by constipation.

53.3 Diagnostics

The intake-and-voiding diary is a pivotal basis for evaluating enuresis. Besides the assessment of time, amount, and type of fluid intake, parents are supposed to help the child with the measurement of each voided portion day and night. The regular fluid intake should be 30 ml/kg body weight per day, and the normal bladder capacity in ml can be calculated by age × 30 + 30. For the measurement of nighttime urine production, the weighing of diapers might be necessary. A nocturnal urine output higher than 130 % of age-related bladder capacity is considered as nocturnal polyuria. Another basic diagnostic means is a urine sample (dipstick) to detect urinary tract infections or diabetes. For monosymptomatic enuresis, these basic instruments are sufficient to start treatment. In the case of non-monosymptomatic enuresis, further examinations are to be carried out like physical examination (anatomical anomalies, spina bifida, etc.) and ultrasound of the kidneys and bladder. The normal value for a children's bladder wall is up to 3 mm for a full bladder and up to 5 mm for an empty bladder. Residual volume is also to be measured. In addition it is useful to induce a uroflowmetry, preferably in combination with pelvic floor EMG, to detect dysfunctional voiding. Invasive diagnostic means like cystoscopy or urodynamic testing is reserved for complicated therapy-resistant cases or when neurologic diseases are known or suspected (Fig. 53.1).

53.4 Differential Diagnosis

Differential diagnosis	Diagnostics
Monosymptomatic enuresis	
Increased nighttime urine output	Bladder diary
Low bladder capacity	Bladder diary
Arousal problems	Anamnesis (parents)
Non-monosymptomatic enuresis	
Low bladder capacity/elevated detrusor activity	Bladder diary, anamnesis (urgency, daytime incontinence)
Dysfunctional voiding	Flow-EMG, ultrasound (residual volume)
"Lazy voider"	Bladder diary, ultrasound (resid. volume)
Urinary tract infection	Dipstick
Obstruction (e.g., urethral valves, strictures)	Medical history (former surgery)
	Ultrasound (bladder wall, hydronephrosis)
	Cystoscopy

Differential diagnosis	Diagnostics
Neurogenic bladder disturbance	Physical examination (e.g., spina bifida), urodynamic, MRI of the spine
Ectopic ureter	Anamnesis (constant incontinence), physical examination, MRI urography
Psychological issues (stress, trauma, etc.)	Psychological assessment
Hormonal disorders (e.g., diabetes)	Dipstick, intake-voiding diary (increased intake)

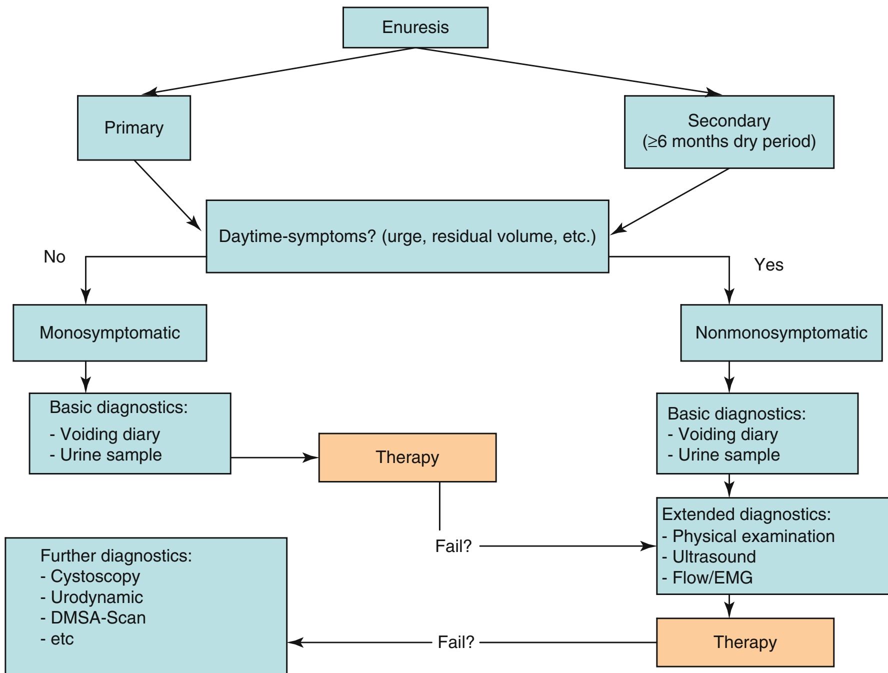

Fig. 53.1 Flow chart for the diagnosis of enuresis