AMERICAN ACADEMY OF PEDIATRICS

Committee on Radiology

Excretory Urography for Evaluation of Enuresis

Enuresis is the involuntary discharge of urine occurring beyond the age when control of the urinary bladder should have been acquired. Eighty percent of children with enuresis have problems staying dry at night, 5% in the day, and 15% both day and night. The age at which children can be expected to stay dry at night is not well established and is often cause for extreme concern for parents and children alike. Most children are still not dry at night by age 2 years. In a study of 315 children, Klackenberg reported 87% dry by 3 years and 96% dry by 6 years. Essen and Peckham, reviewing the records of 12,000 children, found enuresis more prevalent in older ages. More than 10% of their patients were enuretic between ages 5 and 7 years and almost 5% were still having problems at 11 years of age.

The etiology of enuresis is also difficult to define, and many different theories have been advanced. Bindelglass grouped these into five major categories: (1) organo-urogenic, including urologic malformations; (2) psychogenic; (3) developmental; (4) genetic; (5) environmental. The first of these categories must be of primary concern to the physician when confronted with an enuretic child, ie, could the symptoms possibly reflect a surgically correctable urologic abnormality? Radiologic procedures such as excretory urography and micturition cystourethrography are the studies usually relied on to exclude an underlying anatomic lesion. Because of the potential risk and expense of any radiologic procedure as well as the possible low yield in this condition, the Committee on Radiology examined the utility of these studies in the routine evaluation of enuresis.

Conflicting reports are found in the medical literature regarding the role of urinary tract pathology as a cause for enuresis. Arnold and Ginsberg have reported a high incidence of obstructive urethral lesions in the enuretic male. They found that relief of obstructions resulted in symptomatic improvement. Mahoney found urethral obstruction in 96% of enuretic males; 44% had posterior urethral valves. More recently, Lennert and Mowad, in a retrospective study of 182 enuretic children found a 10.4% incidence of vesicoureteral reflux, 58% of whom had positive urine cultures. They concluded that, “In view of the absence of significant complications, we believe our method of study (urinalysis, urine culture, voiding and static cystograms, IVP, cystoscopy, and urethral calibration) is justified.”

Other authors have questioned the role of urinary tract obstruction in the etiology of enuresis. Kunin et al and Campbell et al suggested a low incidence of obstructive lesions in both male and female patients with enuresis. Forsythe and Redmond, in a study of 1,360 children with excretory urography and micturition cystography, found an organic cause for the complaint in less than 1%. McKendry and Stewart found no significant radiographic abnormalities in 200 patients with enuresis. In a more recent study, Redman and Seibert found that all of their patients who were evaluated for enuresis and demonstrated a significant radiographic abnormality had another indication for the study, most often symptoms of obstruction or infection. Contrary to the reports of others, Redman and Seibert found that no greater yield could be expected from the radiologic investigation of patients with diurnal compared to nocturnal enuresis.

Although it might appear that there is extensive debate on the subject, it is the Committee’s opinion that a critical review of the available data supports the position that routine radiologic studies are not indicated for enuretic children with normal urine examinations and cultures; normal physical examinations, including the external genitalia; and no evidence of neurologic disease. The relationship between enuresis and urinary tract infection, particularly in girls, is well documented. Enuresis is a clear indication for examination and culture of the urine and, if infection is documented, the pursuit of underlying urinary tract pathology with radiographic imaging is reasonable.

The problem of diurnal enuresis is less clear-cut. When confronted with this problem, the physician
must decide whether the child is truly enuretic or incontinent. If the pattern of abnormal voiding suggests that the child can, for the most part, remain dry and that wetting occurs infrequently and under unusual circumstances, the same considerations set forth for nocturnal enuresis apply, and radiologic evaluation is likely to be unrewarding. When the history suggests true incontinence, further dynamic urinary tract studies, excretory urography, and voiding cystourethrography are indicated. Obviously, a careful history and expert clinical judgment will have to be exercised in separating these patients. The incidence of occult neurogenic bladder and the importance of this entity in daytime wetting is as yet unclear and must await further investigation.

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