

Enuresis and Urinary Tract Infection

J. M. STANSFELD

An association of urinary infection and enuresis might well be expected. Both are common disorders, nocturnal enuresis occurring in over ten per cent of school children, and urinary infection in at least one per cent of school girls, although far less often in school boys. With such prevalences one might well expect that the two would, by chance, sometimes affect the same individual. It is also very possible that there may be a more than fortuitous association, and relevant statistics can be collected in two ways. Enuretics can be screened to see how many have urinary tract infections, and, conversely, cases of urinary tract infection can be questioned about enuresis. The first would yield the more helpful information for anybody who needed to treat enuretic children and would like to know how many might be expected to be infected. The paper giving the clearest answer to this is one by Dodge and his colleagues (1970), who reported on the examination of 1436 Texan school children aged between six and ten years, and found that 18 per cent of the girls and 24 per cent of the boys wet their beds. Very few of the boys had any infection in their urinary tracts, but 5.6 per cent of the enuretic girls were infected, compared with only 1.5 per cent of those who were not enuretic. It was also found that the more frequent the bed-wetting the more likely there was to be an infection, so that the incidence was 2.9 per cent in those who had an occasional accident not more often than once a month, and 8.9 per cent in those who wet the bed four or more times a week.

Now consider the other side of the coin—the children with urinary tract infections who also have enuresis. Kuzemko (1967) found enuresis in 17 per cent and Burke (1961) in 13 per cent of children with urinary infections. However, such figures are not as straightforward as they may at first seem, since both series included infants who could hardly be evaluated for enuresis. It would seem better to find out how many children over the age of four years who have urinary infections also wet their beds; Smellie and her colleagues (1964) found that 30 per cent of 66 children aged between five and twelve years did so. Meadow *et al.* (1969) and Savage *et al.* (1969), investigating the prevalence of asymptomatic bacteriuria in school children, found that the majority of those with bacteriuria had either diurnal or nocturnal enuresis, and suggested that the term 'asymptomatic' bacteriuria be replaced by 'undiagnosed' bacteriuria.

We have reviewed our records of 174 children with urinary infections who were over three years old at the time when their histories were taken. Eighty-nine, or about half, had enuresis. As might be expected, enuresis was less frequent in the older children, and indeed there was a progressive fall from 62 per cent in the three-year-olds to 33 per cent in those aged between ten and thirteen years. We must make it clear that the enuresis was often one of many symptoms, and only in 28 of the 89 was it the presenting and most prominent symptom. Nevertheless, it seems an important observation that of urinary tract infections in children who would normally be

continent 16 per cent presented with enuresis. Clearly, enuretics are a good hunting ground for urinary tract infections, and it is our practice to send a mid-stream specimen for bacterial colony count in all cases.

We wondered if there were particular features of enuresis accompanying infection that distinguished it from enuresis in non-infected children. We could not find any diagnostic clues, but, as expected, the enuresis was usually of 'secondary' type, the child having previously been dry. It was nocturnal, although there might also be daytime wetting as well, and four times out of five there was also an increased frequency of micturition.

An important and pertinent question is what happens to the enuresis when the urinary tract infection is treated. Our own records were only clear on this point in 53 of the 89 cases, and we were disappointed to find that, although in 22 the enuresis got better, in 31 it remained in spite of elimination of the infection. This has also been investigated by Jones *et al.* (1972), who found that, of 56 girls with both enuresis and a urinary infection, only 16 were cured of enuresis following cure of the infection; in the other 40 the enuresis persisted. The maximum bladder capacity was measured in three groups of girls: those with enuresis, those with urinary tract infection, and those with both enuresis and urinary tract infection. The capacity was variable in those with urinary tract infection, regardless of the chronicity of the infection; it was reduced in enuretic girls, whether or not there was associated infection. Therefore, the enuresis and small bladder capacity were unlikely to be the result of urinary infection. It was concluded that either enuresis predisposes to the development of urinary infections (perhaps by providing a damp perineal breeding ground for bacteria), or that a common underlying pathology predisposes to both enuresis and urinary infection.

Despite the fact that treatment of urinary infection does not often cure associated enuresis, it is nevertheless important to treat the infection in its own right. Further, it is important to look for urinary tract infection in any child with enuresis.

Summary

A girl who wets the bed has about a 1 in 20 chance that she will also have a urinary infection, and nearly a 1 in 10 chance of this if she wets practically every night. About 16 per cent of children with a urinary tract infection will present with enuresis. Successful treatment of the urinary infection will stop the enuresis in about 30 per cent.

REFERENCES

- Burke, J. B. (1961) 'Pyelonephritis in infancy and childhood.' *Lancet*, **ii**, 1116.
Dodge, W. F., West, E. F., Bridgforth, E. B., Travis, L. B. (1970) 'Nocturnal enuresis in 6-10 year old children: correlation with bacteriuria, proteinuria and pyuria.' *American Journal of Diseases of Children*, **120**, 32.
Jones, B., Gerrard, J. W., Shokeir, M. K., Houston, C. S. (1972) 'Recurrent urinary infections in girls, relation to enuresis.' *Canadian Medical Association Journal*, **106**, 127.
Kuzemko, J. A. (1967) 'Enuresis and urinary tract infection.' *Practitioner*, **198**, 688.
Meadow, S. R., White, R. H. R., Johnston, N. M. (1969) 'Prevalence of symptomless urinary tract disease in Birmingham school children. 1. Pyuria, and bacteriuria.' *British Medical Journal*, **3**, 81.
Savage, D. C. L., Wilson, M. I., Ross, E. M., Fee, W. M. (1969) 'Asymptomatic bacteriuria in girl entrants to Dundee primary schools.' *British Medical Journal*, **3**, 75.
Smellie, J. M., Hodgson, C. J., Edwards, D., Normand, I. C. S. (1964) 'Clinical and radiological features of urinary infections in childhood.' *British Medical Journal*, **2**, 1222.