OBSTRUCTIVE UROPATHY AS A CAUSE OF RECURRENT URINARY TRACT INFECTIONS IN CHILDHOOD*

Report of three illustrative Cases

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Recurrent and persistent urinary tract infections often result from stasis of urine due to obstructive lesions. Unless the basic cause is diagnosed and eliminated, infection cannot be completely eradicated. Other congenital anomalies of the urinary tract may also predispose to infection, even though they do not produce manifest obstruction to the flow of urine. Lesions like calculi damage the mucosa besides producing obstruction and are, therefore, responsible for recurrent and persistent urinary infections.

Three illustrative cases are reported to show that suspicion and later investigations for the presence of an obstructive uropathy leads to the correct diagnosis and effective treatment.

Report of Cases

Case 1. A 4-year-old boy was brought with the complaints of fever off and on, pain in the abdomen and recurrent episodes of retention of urine for a period of 2 years. On each occasion he had been catheterised and given some antibiotics, but the symptoms recurred soon after. On examination, he looked pale, the temperature was 100°F, pulse 140 per minute. Fundus and blood pressure were normal. The bladder was palpable. Other systems were normal. Urine examination showed 6-8 pus cells per high power field. Culture yielded Strep. fecalis and E. coli, with a colony count of over 100,000/ml. of urine. Blood urea was 50 mg%. A plain X-ray of the abdomen was normal. Intravenous pyelography showed bilateral marked hydronephrosis. Cystourethrogram showed a vesicoureteral reflux into ureters which were hugely dilated and almost looked like the colon (Fig. 1). There was an obstruction at the neck of the bladder.

The child was operated on for bladder neck obstruction and the internal meatus was found to be enlarged. The bladder was found to have thick walls with trabeculations. The postoperative period was uneventful and blood urea came down to normal. He was discharged in a fit condition.

Case 2. A 3-year-old male child was admitted with the history of recurrent episodes of fever and pyuria. He had been treated with antibiotics but there

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was no cessation in symptoms. Examination revealed a well-nourished boy, temperature 99°F, pulse 90/min. Blood pressure and fundus were normal. No lump was felt in the abdomen. The stream of urine was normal.

Urine examination showed 15-20 pus cells/HPF. Culture yielded *E. coli*, with a colony count of over 100,000/ml. of urine. Blood urea was normal. Plain X-ray of the abdomen showed a calculus at the pelvi-ureteral junction on the right side. I.V.P. revealed dilated calyces on that side. The child was operated on and recovered completely.

**Case 3.** A 4-year-old boy came with the history of fever off and on and pain in the abdomen for one year. He was diagnosed as a case of urinary tract infection and treated in the outpatients' department with sulpha drugs and an alkaline mixture. He was relieved for some days but the symptoms recurred. He was brought to the emergency department with acute retention of urine and acute pain during micturition. On examination, he had a temperature of 100°F and pulse rate of 120/min., B.P. and the fundus were normal. No lump was felt after catheterisation of the bladder. The urine showed traces of albumin, 10-12 pus cells/HPF. Culture yielded *E. coli* with a colony count, of more than 100,000/ml. of urine. Blood urea was 30 mg%. A plain X-ray of the abdomen showed a calculus in the urinary bladder. The child was operated on and recovered fully.

**Comments**

Although the classical signs and symptoms of urinary infection are well known, each patient presents a problem in definitive diagnosis. Some children with such an infection are completely devoid of symptoms while others have one or more of the following: fever, sudden onset of enuresis, malodorous urine, urgency, dysuria, decreased size and force of stream, hematuria, malaise and anorexia. All children with pyrexia must have a complete urinalysis.

Children with persistent or recurrent urinary tract infections should have a complete examination — biochemical and radiological—to arrive at the basic cause of the illness. Obstruction may be present in the lower urinary tract, in which case there is difficulty in initiation of micturition, and the stream becomes thin and forceless. The bladder dilates and has trabeculations. Diverticula may develop. Residual urine is present. Eventually the ureters also dilate and become long and tortuous. Still later, the kidneys are affected, with progressive hydronephrosis and cortical thinning. The nature of such an obstruction may be, urethral valve, stricture, stenosis, bladder-neck obstruction, phimosis, and neuromuscular dysfunction. Obstruction in the upper urinary tract is often unilateral. Since the bladder is not involved, the act of urination is unaffected till the infection has invaded it. The obstruction may occur at the ureteral level where it passes through the bladder wall or at the pelvi-ureteral junction, from reduplication of the ureter, or through pressure of an aberrant vessel. Calculi can also obstruct the urine, as in one of our cases.

Wharton et al. (1937) by a relatively simple follow-up study of 30 girls who had transient urinary infections found that 10 had mechanical abnormalities. A few had other abnormalities and only