contaminated wounds or ulcers of the skin. Nevertheless, it has been postulated that the toxin could gain entrance via the respiratory or gastrointestinal tracts.¹ Many patients at this hospital, and at others, have shown no apparent injury to the skin.²⁻⁴

Tetanus after the inhalation of a foreign body should be very unlikely for several reasons. Firstly, *Clostridium tetani* is an anaerobic organism; secondly, bronchial foreign bodies are usually food or small household articles, unlikely to be carrying the spores of tetanus; thirdly, because of the early appearance of signs and symptom, the objects inhaled are usually removed without delay. In this case, however, the object was almost certainly picked up from the earth floor of a back yard. It did not produce the usual symptoms because it had a lumen, thus delaying removal and probably allowing the formation of microabscesses around it, giving rise to localised anaerobic conditions. Tetanus was diagnosed on clinical grounds. Bacteriological confirmation was not obtained, which is common in our experience and that of others.⁵

In conclusion, then, probably a foreign body in the bronchus was the most likely cause of tetanus in this child.

We are grateful to Dr S Sivapragasam for advice in the preparation of this article, and to Professor C Miller and Dr R McNeil for permission to report this case.

¹ Price's *Textbook of the Practice of Medicine*, ed Sir Ronald Bodley Scott, 11th edn, p 102. London, Oxford University Press, 1973.

² Ayim, E M, *East African Medical Journal*, 1973, **50**, 720.

³ Saady, A, and Torda, T A, *Anaesthesia and Intensive Care*, 1973, **1**, 226.

⁴ Back, E H, *West Indian Medical Journal*, 1971, **20**, 111.

⁵ Weinstein, L, *New England Journal of Medicine*, 1973, **289**, 1293.

(Accepted 22 June 1977)

University Hospital of the West Indies, Mona, Kingston 7, Jamaica

W G NOTCUTT, FRCGS, resident in anaesthetics and intensive care
D ASHLEY, MB, DCH, resident in paediatrics

Colonic diverticulosis in a child

In a 9-year-old boy with diverticulitis a colovesical fistula developed. We believe that this is the youngest patient in which this complication has been described.

Case report

A boy born on 11 February 1965 at full term after a normal delivery, weighing 8 lb (3.6 kg), developed osteomyelitis of the upper left humerus and a urinary tract infection at 6 weeks of age; he was treated with antibiotics. Thereafter he had intermittent urinary tract infections and at 13 months an intravenous pyelogram and micturating cystogram showed bilateral hydronephrosis, and hydroureters with gross reflux on the left side and a lesser degree on the right. At 15 months of age with a blood urea concentration of 14.6 mmol/l (88 mg/100 ml) both ureters were reimplanted. He remained generally unwell: the blood urea concentration rose to 16.9 mmol/l (102 mg/100 ml) and the pyelogram showed no improvement. At 2 years of age the ureters were again reimplanted and after this procedure he was healthy but continued to have intermittent urinary tract infections.

In September 1970 he was admitted for further investigation. The urine culture grew coliform organisms, blood urea was 7.6 mmol/l (46 mg/100 ml), a pyelogram showed scarring of both kidneys, and a micturating cystogram showed persistent bilateral reflux. To control his urinary tract infections, he was treated with long-term antibiotics. In September 1974 it was thought that he might have passed urine per rectum, but cystoscopy showed no evidence of a fistula. Nevertheless, in December 1975 (when he was aged 9 years and 9 months) after left-sided abdominal pain he passed faecal stained urine. He was tender in both loins and there was faecal material at the urethral orifice. As expected, a urine culture grew a mixed faecal organism. A micturating cystogram showed definite reflux up the left ureter with two small elongated diverticula of the bladder but no evidence of a fistula. Cystoscopy showed an oedematous area on the right posterior wall with slough; histological examination of a biopsy specimen of this area showed an inflammatory exudate with vegetable fibres, and hence established the presence of a colovesical fistula. A barium enema showed diverticular disease of the type seen in adults.

In March 1976 he was again admitted because of two days' abdominal pain, anorexia, and difficulty in micturition. It was decided that a defunc-

tioning colostomy was necessary in the management of the colovesical fistula. After this his urinary symptoms improved and with antibiotics his urine became sterile. When he had completely recovered in January 1977, a repeat barium enema (see figure) showed an increased severity of the diverticular disease. At present he is awaiting a sigmoid colectomy with closure of the fistula.

Diverticular disease of the sigmoid colon in a 9-year-old boy.

Comment

Diverticular disease is recognised as a common disease seen more usually with increasing age. Though the current vogue is to incriminate the increasingly refined modern diet in its aetiology, there have been sporadic reports of diverticulosis in young people.^{1 2} Some of these cases have shown features unlike diverticular disease in adults—for example, solitary diverticulum or diverticula associated with infectious disease.³ Nevertheless, true diverticular disease in young patients can hardly be attributed to the prolonged effect of our bland diet on a congenitally normal colon.

Intrinsic weakness of the colonic musculature as seen in diverticulosis in Marfan's syndrome⁴ and Ehler's Danlos syndrome, may cause diverticula to develop at a younger age. Possibly our patient has some intrinsic abnormality, whether neurogenic or muscular, as he also has abnormalities in his urinary system. Another feature here was that this boy developed a colovesical fistula secondary to his diverticulitis. This complication of diverticulitis is said to occur in 6-23% of adult cases.⁵ We were unable to find this complication of diverticulitis described in such a young patient.

We thank Mr D B E Foster and Mr R A Mogg for allowing us to describe this patient.

¹ Barse, C, *Journal of the American Medical Association*, 1939, **113**, 1720.

² Barse, C, *Journal of the American Medical Association*, 1946, **132**, 371.

³ Hartwell, J A, and Cecil, R L, *American Journal of Medical Science*, 1910, **140**, 174.

⁴ Clunie, G J A, and Mason, J M, *British Journal of Surgery*, 1962, **49**, 51.

⁵ Berman, P M, and Kirsner, J B, *American Journal of Digestive Disease*, 1972, **17**, 741.

(Accepted 22 June 1977)

Department of Surgery, University Hospital of Wales, Cardiff

B I REES, MA, FRCS, senior registrar in surgery

P J A GRIFFIN, FRCS, registrar in surgery