of these valvular defects. However, our patient continues to thrive on a low dose of prednisone and diuretics.

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Severe bronchoconstriction provoked by sodium cromoglycate

The inhalation of sodium cromoglycate (SCG) is an effective and widely used treatment for asthma. Rarely, reactions to this drug, such as pulmonary eosinophilia, allergic granulomatosis, anaphylaxis, angioneurotic oedema, urticaria, and skin eruptions, have been reported.¹ Although mild wheeze may develop in some patients after inhaling SCG, in only one patient has the provocation of severe bronchospasm been fully documented.² A further patient who developed severe bronchoconstriction after inhaling SCG is described in this report. In this patient bronchospasm was prevented by the administration of salbutamol and an antihistamine but not by atropine.

Case report

A man aged 42 years with chronic asthma was treated with SCG, 20 mg four times daily for 12 months, during which time there was clinical improvement. SCG was then replaced by a corticosteroid aerosol. After 15 months SCG was restarted because of recurrence of asthma. A month later he suddenly became very breathless and wheezy immediately after inhaling

SCG. Treatment with this drug was then stopped and oral prednisolone substituted. While this suspected reaction to SCG was being investigated, maintenance treatment consisted of beclomethasone 100 µg four times daily and prednisolone 5 mg once daily.

Prick skin testing showed that the patient was atopic. The serum IgE concentration was, however, normal. The results of patch and prick skin testing with solutions of SCG were negative. The changes in forced expiratory volume in one second (FEV₁) after inhalation of 20 mg of SCG with the lactose base and the lactose base alone via Spinhaler are shown in the figure. Five minutes after inhalation of the active preparation the FEV₁ fell from a pretreatment level of 2.75 l to 0.7 l. At ten minutes the FEV₁ was 0.6 l and since he was in considerable respiratory distress salbutamol by intermittent positive-pressure ventilation (IPPV) was given. There was an immediate improvement and the FEV₁ rose to 2.75 l. After inhalation of the lactose base alone a slight fall in FEV₁ from 2.9 l to 2.3 l was observed. The figure also shows the changes in FEV₁ when salbutamol, chlorpheniramine, and atropine were administered before 20 mg of SCG was inhaled. An aerosol of an 0.5% solution of salbutamol given by IPPV 20 minutes before the SCG prevented a fall in FEV₁, which in fact increased from 2.4 l to 4.0 l. No significant changes in FEV₁ were observed when chlorpheniramine (10 mg) was given intramuscularly 40 minutes before the inhalation of SCG. Nevertheless, atropine (1.2 mg) given intramuscularly 40 minutes before SCG failed to prevent a dramatic fall in FEV₁ from 3.5 l to 0.9 l. Again, severe breathlessness was promptly relieved by the administration of salbutamol by IPPV.

Discussion

A profound fall in FEV₁ associated with distressing breathlessness was observed in this patient after the inhalation of SCG but not after inhalation of the lactose base alone. Similar responses were seen in the patient described by Muller and Kowalski.² In their patient, however, the fall in FEV₁ was prevented by prior intramuscular injection of 1 mg of atropine and it was, therefore, postulated that bronchoconstriction was reflexly mediated through the vagus nerve. In our patient a fall in FEV₁ was not prevented by atropine. Chlorpheniramine, however, prevented the fall in FEV₁, which suggests that histamine release may have been involved in the development of the bronchoconstriction provoked by the inhalation of SCG. If that is so, this observation is surprising because of the widely accepted view that the beneficial effects of SCG in asthma are due to prevention of release of histamine and other substances from mast cells in the bronchial wall.³

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Changes in FEV₁ after inhalation of SCG and lactose base alone, and the effect of prior treatment with salbutamol, chlorpheniramine, and atropine.

Terminal ileitis due to *Yersinia pseudotuberculosis*

Yersinia pseudotuberculosis has been recognised as a cause of mesenteric adenitis and terminal ileitis for many years.¹ Most cases present with a short history suggestive of appendicitis, the true diagnosis being made at laparotomy.²⁻⁴ Our patient, however, had had symptoms for several months that clinically simulated Crohn's disease. It is important to distinguish yersinia ileitis from Crohn's disease as the prognosis is very different.

Case report

A 24-year-old clerical worker was admitted with a three-day history of colicky lower abdominal pain, nausea, and fever. For six months he had

experienced attacks of similar pain occurring once or twice a week with no systemic upset or alteration of bowel habit. His temperature was 38°C, and there was tenderness and guarding in the right iliac fossa. Rectal examination showed normal stools and right-sided tenderness. White cell count was $15 \times 10^9/l$ ($15\,000/mm^3$) with 70% neutrophils, haemoglobin 14.6 g/dl. At laparotomy the same day the terminal ileum was inflamed and oedematous, as was the mesentery, which contained numerous enlarged lymph nodes. The appearances and the history suggested an acute exacerbation of Crohn's disease and ileocaecal resection was performed.

Postoperatively he developed a chest infection, which was treated with ampicillin; there were no other complications. Now, 18 months later, he is asymptomatic and barium follow-through examination shows a normal small intestine.

The terminal ileum was thickened and inflamed and the mucosa showed multiple small ulcers 5-10 mm in diameter, particularly in the region of the ileocaecal valve. The mesenteric nodes were enlarged; the appendix and large bowel were normal. These naked eye appearances were suggestive of Crohn's disease. Sections of the ileum showed inflammation mainly in the mucosa and submucosa (see figure). There were abscess-like aggregates of inflammatory cells near the mucosal surface, and some of these had ruptured producing ulceration. Occasional granulomata with giant cells were seen. The appendix was normal and the mesenteric nodes showed reactive hyperplasia only.

Section from ulcerated area of terminal ileum showing mucosal ulceration with intense submucosal inflammation and microabscess formation (H and E $\times 6$).

Yersinia ileitis was suspected, but there was difficulty in obtaining blood for serological testing until five weeks after operation. At this time antibodies to *Yersinia pseudotuberculosis* type III were demonstrated at a titre of 1/320. For further confirmation a skin test with this antigen was performed 10 weeks postoperatively. After 48 hours a 3-cm zone of erythema was considered positive.

Discussion

Since Knapp and Masshoff¹ first isolated *Y. pseudotuberculosis* from mesenteric lymph nodes this infection has been increasingly recognised.²⁻⁴ At laparotomy the appendix is often normal, the mesenteric nodes are enlarged and may be purulent, and sometimes the terminal ileum is inflamed. It has been recommended^{3,4} that the appendix and enlarged nodes should be excised and examined histologically and bacteriologically. Serological tests for yersinia should be carried out during the acute illness and one month later. If this is done the diagnosis will be established more frequently. In our case yersinia ileitis was not suspected clinically mainly because of the chronic history. Nevertheless, the results of serological tests performed five weeks after operation were considered diagnostic, since Mair² has shown that the antibody titre declines rapidly from a peak two weeks postoperatively to virtually nil after five months.

It is now recognised that acute terminal ileitis rarely progresses to chronic Crohn's disease.⁵ Crohn's disease may present acutely but there is usually some previous history or other evidence of chronicity at laparotomy or on barium meal examination. This case history emphasises the importance of considering a diagnosis of yersinia ileitis even when symptoms have been present for some months, to avoid a mistaken diagnosis of Crohn's disease with its more serious prognosis.

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Nephrotic syndrome in vesicoureteric reflux

The association of vesicoureteric reflux and chronic pyelonephritis is well recognised, and in such cases minimal proteinuria may occur. Nevertheless, when heavy proteinuria (>3 g/24 hours) occurs in association with reflux a glomerular lesion should be suspected. We report a case of such an association and speculate on a possible mechanism.

Case report

A 12-year-old boy first presented in 1967 with a two-month history of recurrent episodes of painful micturition associated with fever and rigors. Investigations included a micturating cystourethrogram, which showed gross, bilateral reflux. He was prescribed antibiotics for recurrent urinary tract infections and was discharged from follow-up in 1969. At that time the blood urea nitrogen was normal.

In 1971 he re-presented with a six-month history of periorbital oedema. The results of relevant investigations at that time were: 24-hour urinary protein excretion 6 g; protein-excretion selectivity index 0.18 (poor selectivity); total serum protein 35 g/l; serum albumin 15 g/l; creatinine clearance 18 ml/min. On renal biopsy, basement membrane thickening, consistent with a diagnosis of membranous glomerulonephritis, was found (see figure). By October 1974 creatinine clearance had decreased to 5 ml/min, and in January 1975 he was admitted to hospital with clinical uraemia and pulmonary oedema precipitated by administration of tetracycline for an upper respiratory tract infection.

He was initially managed with peritoneal dialysis, and, as there was no improvement in renal function, regular haemodialysis therapy was started. Bilateral nephrectomy was performed in July 1975. Tissue histology confirmed the diagnosis of membranous glomerulonephritis and immuno-

Renal biopsy obtained in 1971, showing thickening of glomerular basement membrane (H and E stain).