

## 2 Year old asthmatics can learn to operate a tube spacer by copying their mothers 743

mol distasteful and refused to inhale. Failure to tolerate inhaled salbutamol was as common as failure to learn to operate the tube spacer correctly. It is not clear whether salbutamol, or some other component of the aerosol, is specifically unpalatable to children, or whether young children are simply apprehensive at being asked to inhale an unfamiliar substance. This question merits further investigation.

This study does not set out to show that  $\beta$  adrenergic stimulants inhaled in the manner described will produce bronchodilation in 2 year old asthmatics; this has already been shown, albeit in a slightly older group of children (mean age 3.6 years).<sup>5</sup> The results do suggest, however, that tube spacers can be prescribed for 2 year old asthmatics with a reasonable expectation that they will use them correctly.

### References

- <sup>1</sup> Russell G, Frame M. Terbutaline by nebulizer in young children. *Practitioner* 1986;**230**:1043-6.
- <sup>2</sup> Gleeson JGA, Price JF. Controlled trial of budesonide given by the nebulizer in preschool children with asthma. *Br Med J* 1986;**295**:163-6.
- <sup>3</sup> Warner JO. Treating asthma in preschool children. *Br Med J* 1988;**297**:154-5.
- <sup>4</sup> Gleeson JGA, Price JF. Nebulizer technique. *Br J Dis Chest* 1988;**82**:172-4.
- <sup>5</sup> Pool JB, Greenough A, Gleeson JGA, Price JF. Inhaled bronchodilator treatment via the nebulizer in young asthmatic patients. *Arch Dis Child* 1988;**63**:288-91.

Correspondence and requests for reprints to Dr RD Croft, Chailey Heritage Hospital, North Chailcy, nr Lewes, East Sussex BN8 4EF.

Accepted 23 November 1988

## Reactive arthritis complicating cryptosporidial infection

R C SHEPHERD, P J SMAIL,\* AND G P SINHA

*Royal Alexandra Hospital, Paisley, and \*Royal Aberdeen Children's Hospital*

**SUMMARY** Two cases of reactive arthritis in association with cryptosporidial enteritis in childhood are reported. Oocysts of cryptosporidium should be sought when arthritis complicates diarrhoeal illnesses.

The coccidian parasite cryptosporidium is a common cause of gastrointestinal infection in childhood.<sup>1</sup> In the west of Scotland it is the commonest identified cause of gastroenteritis in children.<sup>2</sup> In immunocompetent subjects the disease is self limiting and there is no satisfactory treatment. The symptoms comprise diarrhoea without bleeding, abdominal pain, vomiting, and sometimes fever. Various complications have been described including prolonged listlessness, lethargy, loss of appetite, and failure to thrive.<sup>2</sup> We know of only one previous report of reactive arthritis, which occurred in an adult.<sup>3</sup> We report here two cases of reactive arthritis associated with cryptosporidial infection in childhood.

### Case reports

#### CASE 1

A 3½ year old girl whose mother ran a riding school was admitted to hospital with a week's history of

vomiting and diarrhoea. She had become lethargic and had developed swollen, cold, blue, painful feet on the day of admission. On admission she was flushed and feverish and had cold swollen feet. The next day she was not keen to bear weight and had developed swollen, warm, tender ankles with similar changes in the wrists, but to a lesser degree. Her haemoglobin concentration was 151 g/l, white cell count  $16 \times 10^9/l$ , and erythrocyte sedimentation rate 27 mm in the first hour. Blood cultures, throat swab, and urine culture grew no pathogens. Stool culture and serology for rotavirus, rheumatoid factor, and campylobacter showed no abnormalities. Oocysts of cryptosporidium were seen on microscopy of the stool. She was treated initially with clear fluids orally followed by a return to a normal diet, but loose stools and fever continued for several days. The warm, tender, swollen ankles and wrists persisted for four days after admission and she was reluctant to bear weight for a total of 10 days; thereafter she made a spontaneous recovery and was discharged home.

#### CASE 2

A 5 year old girl was admitted to hospital with a five day history of severe diarrhoea with mucus but no blood, vomiting, abdominal pain, and fever (maximum temperature 39°C). On the sixth day the index

finger of her left hand became swollen, red, hot and tender at the proximal interphalangeal joint. Her haemoglobin was 148 g/l and white cell count  $125 \times 10^9/l$ . Blood cultures and stool cultures grew no pathogens but oocysts of cryptosporidium were identified in the stools. She was treated with intravenous fluids followed by a return to a normal diet.

While awaiting the results of the cultures she was given chloramphenicol and fusidic acid but this was stopped when the oocysts were identified and no further treatment was given. The joint inflammation and tenderness resolved over six days, but the diarrhoea persisted for 25 days.

### Discussion

Reactive arthritis is an occasional complication of infection by a number of bowel pathogens including salmonella, shigella, *Yersinia enterocolitica*, and *Campylobacter jejunii*.<sup>4</sup> The single previous report in association with cryptosporidium infection was of a 27 year old man who had widespread severe arthralgia and required aspiration of an effusion of his knee and an intra-articular injection of steroid. Mild arthralgia persisted for at least four months. He was stated to have been well before the onset of

infection. He had normal immunoglobulin concentrations and did not seem to have been immunocompromised. Neither of the children reported here were immunocompromised. Compared with the adult case the two children were relatively mildly affected both in severity and duration of the disease. In neither the adult nor the two children were the mucus membranes affected. It is clear from these reports that infection with cryptosporidium must be considered not only in acute gastroenteritis but also in reactive arthritis complicating gastrointestinal symptoms.

### References

- <sup>1</sup> Isaacs D. Cryptosporidium and diarrhoea. *Arch Dis Child* 1985;60:608-9.
- <sup>2</sup> Shepherd RC, Sinha GP, Reed CL, Russell FE. Cryptosporidiosis in the West of Scotland. *Scott Med J* 1988;33:365-8.
- <sup>3</sup> Hay EM, Winfield J, McKendrick MW. Reactive arthritis associated with cryptosporidium enteritis. *Br Med J* 1987;295:248.
- <sup>4</sup> Weatherall DJ, Ledingham JGG, Warrell DA, eds. *Oxford textbook of medicine*. Oxford: Oxford Medical Publications, 1987.

Correspondence and requests for reprints to Dr RC Shepherd, Department of Paediatrics, Royal Alexandra Hospital, Paisley PA2 9PN.

Accepted 25 November 1988