Intussusception in older children

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SUMMARY In a retrospective series of 37 cases of intussusception in children over 2 years of age, it was found that a subacute or chronic presentation was more common than in infancy, that few of them had rectal bleeding, and only a minority had a palpable intussusception. Diagnosis was often difficult but was helped by plain abdominal x-rays. Although the majority of children underwent surgery, with a 22% incidence of lead points, it is concluded that attempted hydrostatic reduction in these older children is not contraindicated, provided x-rays do not show small bowel obstruction.

Intussusception mainly affects infants in whom it generally presents with a short history of colic, vomiting, and passage of blood per rectum, and the lesion is generally palpable abdominally or rectally. Rarely is an underlying anatomical cause found.¹⁻⁵ Less than one-quarter of cases of intussusception are in children over age 2 years, but these older children have a less consistent mode of presentation, offer a greater diagnostic challenge, and are more likely to have an underlying cause.⁶⁻⁸ As such children had not hitherto been considered separately, we now review our experience of intussusception with them.

Case material and findings

The series comprised 37 consecutive cases of intussusception in children aged at least 2 years. Each child had been seen either at the Sheffield Children's Hospital or the Alder Hey Children's Hospital, Liverpool, between 1973 and 1978. The children's ages are shown in Fig. 1. 22 (59%) of them were boys. Two had Schönlein-Henoch purpura and 2 a history suggesting a recent viral illness. Most were underweight at presentation: 7 were below the 3rd centile, 11 between the 3rd and 25th centiles, and only 4 above the 50th centile for weight. Three patients in whom symptoms had been present for longer than 2 weeks had pronounced weight losses. In Fig. 2 the principal clinical features in these children are compared with those of a composite series of 1386 patients derived from two series published from Glasgow²⁻³ and two from North America.⁴⁻⁵ As 77% of the patients in the latter series were under age 2 years, the composite series largely reflects the spectrum of the disease as it affects infants.

The older children tended to present with a longer history; in 6 patients the duration of symptoms was between 7 and 14 days, and in 4 it exceeded 14 days. The general condition of the children was not related to the length of history, but rather to the severity of vomiting; this was not the case in the series containing a large proportion of infants.² Although the number of patients with vomiting and abdominal pain was comparable between the series, 3 children in our series had atypical, continuous pain, and 16 patients had mild or intermittent colic. The proportion of older children with rectal bleeding was markedly smaller, and there were fewer with

Fig. 1 Age distribution of patients

Fig. 2 Principal clinical features in our series compared with those in a composite series of infants and older children.

palpable intussusceptions than in the composite series. There were 4 patients in whom the intussusception was not initially palpable, although during repeated examinations between 24 and 48 hours after admission to hospital it became so.

Only 3 children exhibited all four of the principal features of intussusception, and 22 (59%) only one or two. The features most likely to lead to a diagnosis of intussusception are bleeding per rectum and a palpable mass; and one of these (or both) was found in 22 (59%) patients. In 20 children in whom the intussusception was not palpable, 11 had other abdominal signs (6 tenderness, and 5 tenderness and guarding over the site of the intussusception), while 9 had no abdominal signs, of whom only 1 had passed blood per rectum. Other clinical features included a change of bowel habit in 24 children (17 with loose motions or passage of mucus, 7 with constipation) and these included all but one of the children with a history of more than 7 days. 26 children were pyrexial. There were 13 children with normal total and differential white blood cell counts, and 15 with abnormal counts (3 $<10.0 \times 10^9/l$ with lymphocytosis, 12 $>10.0 \times 10^9/l$ with leucocytosis).

As the mode of presentation was so often atypical, it was not surprising that in 5 children the diagnosis was not established until between 48 hours and 1 week after admission to hospital. It was in the atypical case in particular that a plain abdominal x-ray proved helpful (Table) and this was the principal diagnostic clue in each of 8 children with no abdominal signs. Two barium enema examinations were performed purely for diagnostic purposes, and the other enemas were given in the hope of achieving hydrostatic reduction of the intussusception. From this small sample, it would not seem that the chance of success is related to the duration of symptoms (Table).

Table X-ray findings

Plain x-rays of abdomen (erect and supine) n = 32	
Principal radiological feature	
Soft tissue mass	17
Small bowel obstruction	6
Fluid levels right iliac fossa	5
Absence of gas right iliac fossa	2
No abnormal features	2
Barium enema, n = 18	
Diagnostic only	2
Attempted hydrostatic reduction	16
Failed	9 (4 history > 24 hours)
Successful	7 (3 history > 24 hours) (2 recurred)

30 children had operations for their first episode of intussusception. In 18 the lesion originated at or near the ileocaecal junction (ileocolic), and 12 more proximally (10 ileoileal, 2 jejunojejunal). The 8 examples of lead points (6 Meckel's diverticula, 2 Peutz-Jehger polyps) were found only in the more proximal lesions. There was an incidence of 22% of lead points compared with 4% in the composite series. If the x-rays are compared with the operative findings, 5 of 6 children with x-rays showing complete bowel obstructions had proximal lesions, and all except one contained lead points. The ease of reduction was not related to the length of history. Four intussusceptions were irreducible, 3 with lead points and 1 with Schönlein-Henoch purpura; these required resection and primary anastomosis. Two children with recurrent lesions had a limited right hemicolectomy in the mistaken belief that the caecum contained a polyp. There was no mortality or major morbidity in the series.

Discussion

With the exception of children with lead points or Schönlein-Henoch purpura, the cause of intussusception in older children was unknown. Unlike intussusceptions in infants, a change of diet cannot be implicated and only seldom is there any clinical or haematological evidence of a viral aetiology. It is not clear why so many children were underweight. Intussusception is rare in older children and, especially in those with atypical presentations, can easily be missed. The major diagnostic clues, rectal bleeding and a palpable lesion, were absent in nearly half the cases. Other features, such as a change in bowel habit, are inconstant, while a pyrexia or an abnormal white cell count serve only to indicate that the symptoms have some organic basis. The condition in older children may readily be confused with gastroenteritis, mesenteric adenitis, acute appendicitis, or even nonspecific abdominal pain. The majority of patients with prolonged histories, the

subacute and chronic intussusceptions, are older children,⁹⁻¹¹ and although they usually seek medical advice at an early stage in their illness, the diagnosis of intussusception is seldom entertained. We agree with Middlemiss¹² that plain abdominal x-ray is a most useful investigation, especially in the atypical case, and we recommend it if there is the least suspicion of an intussusception. Although some of the x-ray signs may be subtle, they should not escape the attention of an experienced radiologist.

We suggest that the altered spectrum of the disease in older children is largely a reflection of the greater diameter of the bowel wall in relation to its thickness, especially in the ileocaecal region where the quantity of lymphoid tissue decreases greatly in the first 2 years of life.¹ This results in an intussusception which is 'looser', is less likely to bleed or to be obstructive, but is more difficult to feel.

In managing such children we would not regard the age of the child and length of history as being in themselves a contraindication to an attempt at hydrostatic reduction of the lesion. At any age, shock or signs of peritonitis preclude this procedure. In older children we suggest two further contraindications: firstly, in the exceptional case if there is clinical reason to suspect the existence of a lead point—for example a patient with Peutz-Jehgers's syndrome—and secondly, if a plain x-ray shows small bowel obstruction. A child with the latter is likely to have an ileoileal or an even more proximal lesion, inherently less amenable to hydrostatic reduction,^{8,13} and in addition generally contains a lead point. Our success rate with hydrostatic reduction in older children has been rather low, but we feel that this was mainly due to the inadequate sedation that was given in many cases.

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