Colonic Intussusceptions in Children

M. R. Q. DAVIES, S. CYWES

SUMMARY
There is a high incidence of primary colonic intussusceptions in infants and children in Africa. The case histories of 37 patients are reviewed. Of the varieties described, the caecocolic intussusception (16 patients) presents as an intestinal upset, often mild, with symptoms of colic and vomiting. In many of these patients there is known to be an intestinal infestation with *Ascaris lumbricoides*. This often leads to a delay in establishing the correct diagnosis. Colocolic intussusception (13 patients) gives rise to more acute abdominal symptoms. On clinical assessment, signs of intestinal obstruction are found and there is usually an intra-abdominal mass which can be palpated in the left colon. Further confirmatory evidence of intussusception is the finding of occult blood in stools. There is an unusually high incidence of sigmoid intussusceptions in infants (8 patients). The diagnosis of this form of intussusception is often delayed owing to inadequate clinical assessment of prolapsed bowel at the anal orifice. The length of the prolapsed bowel, the curved nature of the prolapse and the possible demonstration of a sulcus between the prolapsed bowel and the anal canal wall, aid in diagnosis.


It has been well established that racial and continental differences influence the incidence of the anatomical type of intussusception encountered in any population group. The classic infantile form of this disorder, the ileocolic intussusception, is seen throughout Africa. However, on the African continent, an increase in the incidence of primary colonic intussusception has been demonstrated in both children and adults. A greatly increased susceptibility to this form of intussusception has been described in adults, with a reversal of the expected child-to-adult incidence ratio in many areas.

The Red Cross War Memorial Children's Hospital in Cape Town is a multiracial institution which admits children from birth to 13 years. On an average, between 20 and 25 infants and children with intussusception are seen yearly. Of 197 patients treated for intussusception over an 8-year period (1968 - 1975), 37 (19%) had colonic intussusceptions. In a previous review of 223 intussusceptions managed at this hospital, 34 (16%) of the lesions were reported to have been colonic.

The purpose of this review is to emphasize the importance of colonic intussusception in children, and to document the characteristic clinical symptoms and findings for each of the anatomical types encountered.

PATIENTS
During the 8-year period 1968 - 1975, 197 patients were managed for intussusception at this hospital. Of this group 37 (19%) who had primary colonic intussusception were analysed. On the basis of anatomical site of the lead point in the colon, they have been subdivided into: presigmoid group — (i) caecocolic type; (ii) colocolic type; and sigmoid group — sigmoidorectal type.

A further subtype encountered, the appendicocaecocolic intussusception, is for practical purposes included under the heading 'caecocolic type'.

FINDINGS
Presigmoid intussusception was the commonest major form seen. Seventy-eight per cent or 29 of the 37 patients treated for primary colonic intussusception had presigmoid lesions.

Caecocolic Intussusception

Caecocolic intussusceptions occurred in 16 (56%) of the 29 patients, 7 in boys and 9 in girls. Their ages ranged from 3 months to 11 years, with an average age of 4 years. One of the patients was White and the rest were Coloured. The duration of symptoms before admission ranged from 6 hours to 30 days (average 9 days). The most prominent complaint was of recurrent attacks of abdominal colic, experienced by 14 of the 16 patients. This was associated with anorexia and vomiting in 13 of them. Three of the patients had no change in bowel habit, while 10 complained of the passage of bloodstained stools. Five patients had diarrhoea. In 2 instances the patient or his parents were aware of an abdominal mass. One patient presented with a 'rectal' prolapse. In no instance was abdominal distension noted as a complaint.

The most significant clinical feature was the palpation of an intra-abdominal mass lying in the topographical line of the colon in 13 of the 16 patients. In 8 patients this mass was detected beneath the liver in the right hypochondrium, while in 5 it was situated in the left colon. In 3 patients no mass could be palpated, and in 2 of them, gross and easily visible bowel peristaltic movements were noted. In only 1 patient was a mild degree of abdominal distension found. Extra-abdominal signs included severe dehydration in 6 of these patients.
Colocolic Intussusception

Of the 29 patients with presigmoid lesions, 13 (44%—7 boys and 9 girls) had colocolic intussusceptions. Their ages ranged from 1½ to 10 years, with a mean of 44 months. No White patients were encountered in this group. The duration of symptoms ranged from 12 to 72 hours, with an average of 30 hours for 11 of the 13 patients. In both the remaining 2 patients, the intussusception had been incorrectly diagnosed for 10 days.

Intestinal colic was experienced by all 13 patients, always associated with vomiting. Abdominal distension, however, was reported by only 2, both of whom were later found to have a complete and well-established intestinal obstruction. One patient noted an intra-abdominal mass. Bowel habit was altered in every case. All patients passed altered blood in their stools; 7 complained of diarrhoea and 1 passed large amounts of mucus. One patient had a history of similar symptoms which indicated a possible self-resolving previous attack.

On clinical examination, these children were all obviously ill. There were significant signs of dehydration in 9 of the 13 patients, which were severe in 5 and mild in 4. Abdominal distension was found in 5 patients, and was gross in 2. The classic bowel mass of intussusception was detected in 11 patients, always in the anatomical position of the left colon, the left hypochondrium being the most common site. Only a single patient was pyrexial on admission.

Radiographs of the abdomen were performed in 8 cases and there was evidence of intestinal obstruction in 4. A diagnostic barium enema study was carried out in 2 of these patients, and an intussusception was identified in both.

All 13 patients with colocolic intussusceptions underwent laparotomy. Manipulative manual reduction of the intussusception proved simple and atraumatic in 10 patients. In the remaining 3 the reduction was incomplete and surgical resection of the bowel was required. The lead point was found in the transverse colon in 6, and in the splenic flexure region in a further 6 patients, and was not recorded in 1. This site was easily localized by the presence of an oedematous intramural caput in the bowel. No intraluminal precipitating lesions could be detected in any of these patients.

The single death was due to bronchopneumonia. This complication developed during the postoperative period in a nutritionally depleted 2-year-old patient after simple surgical reduction of an intussusception. In only 1 of the 13 patients was *A. lumbricoides* infestation demonstrated.

Sigmoidorectal Intussusception

Of the 37 colonic intussusceptions under review, 8, or 22%, originated primarily within the sigmoid colon.

Of the 8 patients with this type of intussusception, 6 were girls. The average age at presentation was 19 months, with an age range of 1 month - 4 years. All were Coloured, except for 1 White baby.

The duration of symptoms before admission ranged between 4 hours and 60 days, with an average of 12 days. The major presenting complaint in 5 patients was that of prolapsed bowel at the anal orifice. One patient complained of severe tenesmus, without prolapse, while only 1 patient experienced bouts of intestinal colic. Vomiting was a significant symptom in 3 patients, and 1 complained of abdominal distension. All were passing loose stools containing blood and mucus. A history of a previous episode of ‘rectal’ prolapse was obtained in 4 patients.

Assessment revealed that 3 were systemically ill. Two patients suffered from mild dehydration, and 1 was pyrexial. There was an obvious transanal bowel prolapse in 5 of the 8 patients. None had clinically detectable abdominal distension, and only 1 patient had an intra-abdominal bowel mass which was palpable in the left iliac fossa. Rectal examination confirmed transanal bowel prolapse in 5 patients. The apex of an intussusception was digitally palpated in the remaining 3. In 1 neglected patient, the prolapsed bowel was found to be frankly gangrenous.

The only barium enema study performed was carried out on a patient who did not have a transanal prolapse, and it proved both diagnostic and therapeutic. Manual reduction was carried out in the remaining 7 cases. Confirmation of complete reduction of the intussusception was obtained in 6, radiologically in 3 and surgically in 3 patients. Resection of the bowel was necessary in 2 of the surgical group. One patient, whose small and large bowels had prolapsed through the anus and become gangrenous, died. Death was due to postoperative sepsis. None of the patients in this group had any parasitic infestation.
DISCUSSION

In a previously reported series of 400 cases of childhood intussusception in Europe, 18 patients (4.5%) had lesions of the colonic type. Similar reviews of patients treated at other Western paediatric surgical centres have confirmed this finding. In Africa, however, the colonic form of intussusception is encountered more frequently both in children and in adults. Indeed, the so-called idiopathic caecal intussusception is one of the main causes of mechanical intestinal obstruction in the adult population of West Africa. An incidence of 19% for this form of intussusception at a Cape Town children's hospital clearly demonstrates that unknown ethnic and environmental factors, possibly common to both West and South African populations, play a role in the aetiology of this intestinal abnormality.

As demonstrated by this series of children, caecocolic intussusception classically presents during early childhood as an intestinal disorder of subacute nature, characterized by intermittent attacks of intestinal colic and emesis. The patient's bowel habit is altered, for the evacuation of abnormal stools containing blood forms a prominent and important complaint. The pertinent clinical findings include the palpation of a tender bowel mass in the region of the transverse or left colon which is easily detectable, since associated abdominal distension is very unusual.

The most valuable positive sign on rectal examination is the presence of altered blood in the stools. A contrast radiological study will confirm the presence of an intussusception and hydrostatic reduction should prove successful, as indicated by the ease of operative reduction in nearly all cases that we analysed. However, in 2 of the 16 patients described, a caecal polyp acted as lead point, and in the 2 patients with appendicocaecocolic intussusceptions, the invaginated appendix could not be manipulatively reduced. The single instance of gangrene of the caecum followed a delay in diagnosis, operation having been carried out only 30 days after the onset of symptoms. The subacute nature of the symptoms in an apparently well individual often leads to a delay in diagnosis, usually until blood is observed in the stools.

Hydrostatic reduction of the intussusception is the preferred treatment. This should be followed by a contrast radiological study or an endoscopic evaluation of the caecum to exclude a precipitating lesion once the secondary oedema has subsided.

Finally, there was infestation with *A. lumbricoides* in nearly 50% of patients with caecocolic intussusception. This parasite probably plays an aetiological role, since it is also commonly encountered in western Africa.

The patients with colocolic intussusceptions were of similar age, race and sex. However, these patients usually presented within 2 days of the onset of symptoms, because the intestinal upset was of a more dramatic and acute nature. As the telescoped bowel led to early and more complete occlusion of the intestinal lumen, the consequences of the intussusception were more marked, and clinical signs of an intestinal obstruction were often present. The palpation of a mass in the left colon and the demonstration of blood in the stools were the major clinical diagnostic signs. Operative reduction of the intussusception proved impossible in only 3 of the 13 patients analysed. In each of these 3 instances, bowel resection was necessary. No precipitating endophytic lesion acting as a lead point was detected at operation. Again, hydrostatic endoscopic reduction is regarded as the procedure of choice in the management of this type of intussusception. This technique might have avoided the single postoperative death in this group of patients.

Sigmoidorectal intussusception, apart from being the least common, was probably the most pernicious form of colonic intussusception seen. This was the consequence of an unnecessary delay in the onset of definitive treatment, associated with mismanagement due to misdiagnosis. The racial distribution was similar, but the patients were much younger. Six of the 8 were girls. On an average, symptoms were present for 12 days before correct diagnosis and treatment. Five patients presented with what was initially thought to be a rectal prolapse. This misdiagnosis was probably the result of inadequate clinical assessment. The gastro-intestinal symptoms and signs of an intussusception were absent in most. This helped to focus the attention of both parent and physician upon the anal region anomaly. A further confusing factor was that 50% of these patients had had previous attacks of what was thought to be 'rectal prolapse'.

The true diagnosis was made in every instance only after thorough digital examination of the anorectal region. In those patients with a bowel prolapse, a sulcus was felt between the intussusceptum and the anal canal. In the rare event of complete anal eversion, the length of the protruding intestine and the sigmoid shape of the prolapse due to the pull of its mesenteric attachments indicated the sigmoid origin of the prolapsed bowel. In 3 patients in whom the apex of the intussusceptum was retained within the rectum, diagnosis followed on a digital rectal examination done to establish the cause of haematochezia. These facts emphasize the importance of this simple clinical investigation, which should be carried out in any infant presenting with a rectal prolapse or the passage of blood in the stools.

Manipulative methods proved successful in partially reducing this form of intussusception in 7 of the 8 patients seen. In the presence of uncompromised bowel, a period of conservative management to reduce the oedema of the intussusceptum, if present, should be followed by digital reduction of the intussusception. This is then followed by sigmoidoscopy to ensure that the intussusception has been completely reduced.

REFERENCES