INTUSSUSCEPTION WITH A PATHOLOGICAL LEAD POINT: PNEUMATIC REDUCTION OR SURGICAL INTERVENTION?

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Abstract

We wish to report a potential new ultrasound sign to guide management in paediatric intussusceptions. A 10-month-old infant presented with 4 days history of recurrent bilious vomiting, intermittent screaming episodes with a tendency to pull his legs, malena and distended abdomen without any palpable mass. Ultrasound scan confirmed intussusception and showed signs of a possible pathological lead point (PLP). He underwent resection and primary ileocolic anastomosis for an irreducible gangrenous intussusception uneventfully. Pneumatic air enema reduction remains a gold standard in a case of intussusception in an infant with a success rate over 80%, however, there are certain contraindications including gangrene, perforation and we feel that if an ultrasound shows a lead point, a surgical or laparoscopic approach is more suitable and time saving rather than increasing risk of perforation during attempted pneumatic reduction in such cases.

Keywords: intussusception, laparoscopy, laparotomy, lead point, pathological, pediatric, pneumatic reduction, ultrasound

Introduction

Intussusception occurs when a portion of proximal intestine invaginates into a distal section, usually originating in the region of the ileocecal valve. This often results in bowel obstruction and gangrene leading to a classic presentation of “red-currant jelly” stool. Diagnosis is led by ultrasonography [1], which has a sensitivity of 98-100% and a specificity of 88% [2]. Pneumatic reduction is successful in 80% of cases and is the current gold standard in the treatment of uncomplicated intussusception.

Case Report

A 10-month old male presented with a 4-day history suggestive of intussusceptions; of recurrent vomiting immediately following feeding, that became bilious over the 24 hours preceding admission. His parents also reported increased restlessness, and irritability, and a tendency to pull his legs up when crying. He had opened his bowels once in the previous 4 days, passing a malaena black, offensive smelling stool. Examination revealed a distended abdomen, with scanty bowel sounds. An urgent ultrasound scan demonstrated the “doughnut sign”, classical of intussusception. Ultrasound revealed a large complex intussusceptum with thickening of the bowel wall of the intussuscipiens, suggesting a pathological lead point (PLP) associated with vascular compromise of the bowel. Laparotomy revealed an ileo-colic intussusception with a Meckel’s Diverticulum as a PLP (Fig. 1). Resection and primary ileocolic anastomosis was performed following which the child made an uneventful recovery. Resected specimen showed Meckel’s diverticulum as lead point in an irreducible ischaemic intussusception (Fig. 2).
**Figure 1:** Abdominal ultrasound scans showing intussusception with typical findings of a pathological lead point.

**Figure 2:** Operative findings with resected specimen showing Meckel’s diverticulum as lead point in an irreducible ischaemic intussusception.

**Discussion**

Hirschsprung was the first physician to diagnose and reduce by barium enema reduction technique with similar rates of reduction, perforation and recurrence rates [3]. The mortality of intussusception is currently 1%, with pneumatic reduction under ultrasound guidance being successful in up to 80% of cases [1-11]. However, there is an associated bowel perforation rate of 0.14-2.8% [1], as well as various contraindications to the technique, including perforation, peritonitis, and fluid-resistant shock [2].

This finding of PLP demonstrated in our case can be verified by the expected intra-operative findings of an ileocolic intussusception. Samad et al. [4] have recently showed that less than 24% of confirmed cases have signs on a plain radiograph. Ultrasonography has a sensitivity of 98-100% and specificity of 88%. Ultrasound scan showing a large complex intussusception with significant amounts of fluid trapped at both ends and if it surrounded a complex internal intussusceptum with thickening of the bowel wall of the intussusciens, suggests a pathological lead point associated with vascular compromise of the bowel — this is a novel sign a good paediatric radiologist may be able to pick up. This helps in taking a decision not to proceed with air enema reduction due to high perforation and peritonitis rates.

With such classical ultrasound findings of an intussusception with its associated pathological lead-point - often a Meckel’s diverticulum - surgical resolution of the pathology should be considered for first line management. Pneumatic reduction has a success rate of approximately 80%, with 10% suffering recurrence - usually due to the presence of a PLP. Combined with the risk of bowel perforation - approximately 1% - there is reason to believe that surgical intervention should be considered as...
first line therapy. Although quality of ultrasound scan is operator dependent, a well-trained paediatric radiologist in paediatric centres of excellence may allow detection of lead point. This may allow selective cases for pneumatic reduction thus leading to decreased perforation rate and improved patient care. We do not recommend surgery in all cases but in cases where there is contraindication either laparoscopy or surgical exploration should be considered to reduce mortality and morbidity.

REFERENCES