Intussusception in Zambia: A Response to Treatment Recommendations in the Published Literature

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ABSTRACT

Background: Intussusception is the invagination of one portion of the intestine into another and is the commonest cause of intestinal obstruction in infants and children. In North America and Europe the incidence of intussusception is estimated to be between 0.5–2.3 cases per 1000 live births, respectively. In most developing countries and many developed countries accurate estimates of the incidence of intussusception are not available. Intussusception in Zambia and many African countries is not uncommon and characteristically seen late by surgeons causing many management challenges. Literature studies indicate that reduction by use of hydrostatic pressure (using air or enema contrast) is the treatment of choice today and surgery is reserved for cases whose enema contrast has failed. This was not the case in this study. All patients were treated surgically since they all reported very late when complications had already taken place and contrast enema was already contraindicated.

Objective: To respond to the treatment recommendations espoused in the literature and highlight the challenges faced in Zambia and Africa in general. To disseminate the profile of intussusception seen in Zambia in order to enhance awareness, increase diagnostic alertness, and recommend management options for surgeons in developing countries.

Method: This was a 20-year prospective study (continuous audit) of the nature of 231 intussusception cases that were managed at University Teaching Hospital in Zambia. The cases were collected prospectively and analysed systematically in retrospect.

Results: There was an average delay of 72 hours from onset of signs and symptoms presenting to the surgical unit for definitive treatment. Twenty-nine (13%) of cases were initially managed by traditional healers before referral to hospital; 69 (30%) of patients were treated for diarrhea related disorders, abdominal pain, and vomiting, as medical conditions, for nearly 48 hours before referral to a surgical unit. All the cases were managed by surgical operation. One hundred and forty-one (61%) of cases were between 0–1 years and the male-female ratio was 2:1. The commonest presenting clinical features were abdominal pain (83%, n=192), vomiting (72%, n=167), blood per rectum (66%, n=153), and abdominal mass (64%, n=149). Ileo-colic was the commonest type (86%, n=223) and in 75% (n=172) the bowel was found to be gangrenous. Eighty percent of the cases had peritonitis confirmed at operation and 25% (n=59) were not surgically reducible. The latter were managed by bowel resection and appropriate anastomosis.

Conclusion: Even though, reduction by enema contrast (hydrostatic pressure) has been reported to achieve 70-80% successful reduction in developed countries with minimal recurrence rates of 8%, for resource-poor settings, surgery is being recommended as the intervention of choice for intussusception because patients report late to the hospitals.

INTRODUCTION

In infancy, intussusception is the most common cause of intestinal obstruction causing intestinal necrosis, perforation, and ultimately death if not recognized and treated promptly1,2. The wide variety of clinical presentations and the overlap with other conditions makes diagnosis of intussusception a challenge3,4,5. The diagnosis challenge and other factors such as prior visits to traditional healers, and delays of transfer after referral can result in critical loss of opportunity for non-operative options of managing intussusception. In many institutions reduction of intussusception with enema contrast techniques has become the standard1,2. Therapeutic enemas are done with water-soluble contrast, barium contrast or pneumatic with air insufflation6. Variability (<40% to 90%) of success of reduction by hydrostatic method have been widely reported6.
In Zambia, a resource-poor setting, where lack of enough skilled manpower and equipment are the order of the day hydrostatic reduction is largely not employed. Early and accurate diagnosis, availability of paediatric surgeons and radiologists with appropriate expertise, and availability of appropriate equipment are important success determinants for this method. The purpose of this study was to illustrate the ensuing management challenges that the attending surgeon is faced with in a resource-poor setting, in general, and in Zambia specifically. The study also describes the nature of intussusceptions seen, the referral delays and the diagnostic difficulties encountered. The study aims to raise awareness about intussusception and these accompanying factors so that first line physicians are constantly watchful for intussusception.

METHODS

Two hundred and thirty-one cases of intussusception that were admitted to the paediatric surgery section of the University Teaching Hospital (UTH) between 1980 and 2000, and were prospectively collected into the study and careful clinical notes recorded for each case. Demographic, historical, physical examination, laboratory, radiographic, initial diagnosis at admission, duration from admission to final diagnosis and referral, operation notes, operation and/or postmortem outcomes were documented.

The inclusion criteria included: patient admitted to UTH, diagnosis of intussusception made by either a clinical and/or imaging diagnosis, intussusception confirmed at operation, and 0-10 years of age. The study exclude patients that were older than 10 years and all cases that were not confirmed to be intussusception.

RESULTS

Over the 20-year study period 231 patients were identified with a diagnosis of intussusception and were operated. The patients ranged in age from less than 1 year to 10 years (Table 1). Sixty-one percent of the patients were male giving a male to female ratio of 2:1.

Of these 231 patients 83% (n=192) presented with abdominal pain, 72% (n=167) with vomiting, 66% (n=153) with blood per rectum, and 64% (n=149) with an abdominal mass.

The average delay before seeking medical attention was 72 hours with 13% (n=29) reporting antecedent visit to a traditional healer before seeking medical attention. Thirty percent (n=69) of the patients received general medical attention for gastroenteritis for 48 hours before they were referred to a surgical unit with a diagnosis of intussusception. All the cases were surgically treated. At operation bowel resection was found necessary in 74% (n=171) and operative reduction failed in 26% (n=59), see table 2. The commonest type of intussusception seen was ileo-colic (86%, n=223). Other causes included: intestinal ascariasis (5%, n=3), Peyer's patches hyperplasia (3%, n=2), Peutz-Jeghers syndrome (2%, n=1), Henoch-Scholien Purpura (2%, n=1), and Merkel's diverticulum (2%, n=1). There were 23 (10%) postoperative deaths in this series. At surgery peritonitis was identified in 185% (80%) of cases. Strikingly, not a single case fulfilled the criteria for hydrostatic reduction.

DISCUSSION

Intussusception is relatively common in paediatrics with significant delays to definitive diagnosis and treatment. The literature cites enema reduction as the preferred intervention reserving surgery for failed hydrostatic reduction, or where hydrostatic reduction is contraindicated. The challenges that paediatric surgeons working in Zambia, and other resource-poor settings, face in the management of intussusception make this ‘blanket’ recommendation doubtful.

The presence of peritonitis and any evidence of perforation revealed on plain radiographs were reported, in the literature, to be contraindications to nonoperative reduction with therapeutic enema. On the other hand, others contend that long duration of symptoms and small bowel obstruction on plain radiographs are no longer contraindications to an enema reduction attempt.
Further, the literature shows that success with hydrostatic reduction has varied widely (<40% to >90%) and the outcome is influenced by availability of determined and appropriately skilled paediatric surgeons and radiologists, and availability of materials and equipment. Therefore, there is lack of consensus, in the literature, on methodologic issues.

Our paper reports experiences with intussusception management in Zambia. Consistent with published literature, the age group most affected was between 0-1 year; the commonest type was ileocolic; and the commonest causation was idiopathic. Hydrostatic (enema) reductions were not done in Zambia. The postoperative mortality was 10%.

Our study found that generally there was a 72 hour delay between onset of signs and symptoms and seeking medical attention; in 30% there was a 48 hours delay between first attendance by a medical doctor and definitive diagnosis and referral. More importantly, 80% of the cases were found to have peritonitis at operation, 74% of the cases had gangrenous bowel, and 26% could not be reduced at operation.

The authors argue that given the above findings and the possibility of recurrence when hydrostatic pressure is used, operative intervention should be the mainstay of management of intussusception in Zambia, and other resource-poor settings. This recommendation disputes the recommendation in the literature.

There are important limitations to this study. University Teaching Hospital is a tertiary care facility. A study design that can compare outcomes of hydrostatic reductions and operative reductions would, perhaps, better answer the question about which method is appropriate, if ethical justification can be found.

CONCLUSION

There was a significant delay between onset of signs and symptoms and the definitive management for intussusception in the patients reviewed. The majority of cases had peritonitis at operation, and gangrenous bowel was frequently encountered. Therefore, for Zambia, and other resource-poor settings, the authors recommend operative intervention contrary to the recommendations in the literature which favour hydrostatic (enema) reduction.

REFERENCES