

Original Article

Routine surgical intervention for childhood intussusception in a developing country

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Abstract

Objective/Purpose: We aim to determine the basis for the routine surgical treatment of intussusception in southeast Nigeria.

Methods: We analyzed 71 children operated for intussusception between June 1998 and May 2006 at the University of Nigeria Teaching Hospital Enugu, southeastern Nigeria.

Results: The median age at presentation was 6 months (range 3 months to 7 years), and the average duration from onset to presentation 3.2 days (range 4 hours to 7 days). Forty-six (64.8%) had ileocolic intussusception, 7 (9.9%) colocolic, and 5 (7.0%) ileoileal. In 31 (43.7%), there was no identifiable cause, while mesenteric lymphadenopathy and inflamed Peyer's patches were noted in 37 (52.1%), and polyp in 3 (4.2%). Manual reduction was successful in 39 (55%), while 32 (45%) required bowel resection for gangrene, or irreducibility. After average follow up of 9.7 months (range 4–22 months) there was no recurrence, but overall mortality was 6 (8.5%) from septicemia. Late presentation, dearth of facilities and trained manpower, and lack of multidisciplinary collaboration may contribute to the regular surgical treatment.

Conclusion: Intussusception in our setting is characterized by late presentation, high rate of bowel resection, and high mortality. Surgery may remain our main stay of treatment until deficiencies in time to diagnosis, specialized facilities, and personnel improvement.

Keywords: Challenges, childhood mortality, intussusception, outcome

Résumé

Objectif/objet: Nous avons pour objectif de déterminer la base pour le traitement chirurgical routine de intussusception au sud-est du Nigeria.

Méthodes: Nous avons analysé 71 enfants exploités pour intussusception entre juin 1998 et mai 2006 à l'Université du Nigéria hôpital d'enseignement Enugu, sud-est du Nigeria.

Résultats: L'âge médian à présentation était 6 mois (plage de 3 mois – 7 ans) et la durée moyenne depuis l'apparition de présentation 3.2 jours (plage 4 heures – 7 jours). Quarante-six (64.8%) avaient intussusception ileocolic, 7 colocolic (9.9%) et 5 (7.0%) ileoileal. Dans 31 (43.7%) il n'y n'a aucune cause identifiable, tandis que lymphadénopathie mésentérique et patches de Peyer enflammée ont relevé dans 37 (52.1%) et POLYPE dans 3 (4.2%). Réduction manuelle a réussi à 39 (55%), tandis que 32 (45%) requis de l'intestin résection de gangrène, ou irreducibility. Après avoir suivi moyen de 9.7 mois (plage 4 – 22 mois), il n'y n'avait aucune récurrence, mais la mortalité globale était 6 (8.5%) de septicémie. Présentation tardive, le manque d'installations et formés Manpower et le manque de collaboration multidisciplinaire peuvent contribuer à la traitement chirurgical régulière.

Conclusion: Intussusception dans notre cadre se caractérise par la présentation tardive, un taux élevé de l'intestin résection et une mortalité élevée. La chirurgie peut rester notre séjour principal du traitement jusqu'à ce que des lacunes dans le temps pour le diagnostic, les installations spécialisées et les membres du personnel améliorer.

Mots clés: Défis, enfance mortalité intussusceptions, résultat

Introduction

Intussusception involves the invagination of a portion of the intestine into another. It is the most common cause of intestinal obstruction in infants.^[1] The peak incidence is found in children aged between 4–6 months.^[2-4] Currently, the diagnosis is usually suspected clinically and confirmed radiologically.^[2,4-6] The definitive treatment of intussusception has also evolved over the decades from routine operative treatment to the current trend that emphasizes initial nonoperative pressure reduction.^[1-6] Operative treatment may then be applied in cases that fail to reduce or are complicated at diagnosis.^[1-8] Nonoperative management has been shown to shorten hospitalization and reduce morbidity and mortality.^[1,6,8] Reports from some developing countries, however, indicate that for some ill-defined reasons, operative treatment is still routinely performed for intussusceptions.^[9-12] Outcome of treatment in these setting is also reported to be poor compared to the results of treatment in more developed countries.^[13]

This retrospective study analyzes childhood intussusception in southeast Nigeria with respect to outcome of treatment and factors that may contribute to the routine surgical treatment.

Materials and Methods

The University of Nigeria Teaching Hospital Enugu (UNTH) is the main tertiary health facility for pediatric surgical services in the Southeast Nigeria. Between June 1998 and May 2006, 71 consecutive children were managed for idiopathic intussusception in the center. All the children were managed by operation after resuscitation. Nonoperative pressure reduction was not attempted on any of the patients. These cases were retrospectively studied. Data on age at presentation, gender, clinical features, and duration of symptoms before presentation, investigations and findings at operation were collected from the case notes, discharge summaries, and theatre records. Also assessed were the operative procedures, postoperative complications, outcome, and factors that may be contributive to the routine surgical intervention for intussusception in our hospital.

Since this is a retrospective review of data and did not involve human experiments or interventions in treatment, our institution did not require ethical clearance.

The statistical package for social sciences (SPSS 11.5 version) was used for data analysis.

Results

There were 50 (70.4%) males and 21 (29.6%) females with a median age of 6.0 months (range 3 months to 7 years) [Figure 1].

The main presentations were abdominal pain ($n = 62$, 87.3%), vomiting ($n = 54$, 76.1%), and rectal bleeding ($n = 49$, 69.0%). Abdominal distension was observed in 41 (57.7%) children and the intussusception was palpable as abdominal mass ($n = 29$, 40.8%) and on digital rectal examination ($n = 9$, 12.7%). A combination of abdominal pain, abdominal mass, and rectal bleeding (classical triad of symptoms of intussusception) occurred in 23 (32.4%). Nine (12.7%) had features of peritonitis.

Overall, the mean duration of symptoms before presentation was 3.2 days (range 4 hours to 7 days) [Table 1].

Prior to 2005, plain abdominal radiograph was the routine radiological investigation done for suspected intussusception. This showed nonspecific features in 38 (53.5%) and bowel obstruction in 33 (46.5%). From 2005, abdominal sonography was routinely performed, and identified in 7 (77.8%) of the 9 children. Contrast enema was not carried out on any of the children.

At operation, 59 (83.1%) children had ileocolic, 7 (9.9%) colocolic, and 5 (7.0%) ileoileal

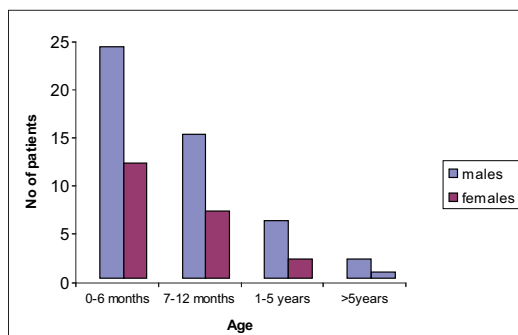


Figure 1: Age and sex distribution of the 71 children with intussusception

Table 1: The duration of symptoms among the 71 children with intussusception before presentation to our center

Duration of symptoms before presentation	No of children	%
<24 hours	12	16.9
1–2 days	20	28.2
3–5 days	31	43.7
>5 days	8	11.2
Total	71	100

intussusceptions, respectively. Three (4.2%) children had ileal polyp which acted as lead point. In 31 (43.7%) cases, there was no identifiable pathology in the intestines, while 37 (52.1%) children had mesenteric lymphadenopathy and inflamed Peyer's patches. Successful reduction of the intussusception was possible in 39 (55%). Thirty-two (45%) children had either irreducible intussusception ($n = 21$, 29.5%) or devitalized bowel ($n = 11$, 15.5%) and required right hemicolectomy in 22 (30.9%) or limited ileal resection in 10 (14.1%). There was temporarily enterostomy in four children who had right hemicolectomy due to their poor clinical state at operation. All the surgical wounds were closed primarily.

Overall, there were 26 postoperative complications. They include surgical site infection ($n = 17$), wound dehiscence ($n = 3$), adhesive small bowel obstruction ($n = 3$), incisional hernia ($n = 2$), and anastomotic leak ($n = 1$). The cases with surgical site infection, wound dehiscence, and adhesive small bowel obstruction were managed nonoperatively with good outcome. On the other hand, anastomotic leak and incisional hernia required operative treatment.

Six (8.5%) children died in the postoperative period. These children had right hemicolectomy ($n = 3$, 50.0%), ileal resection ($n = 2$, 33.3%), and operative reduction ($n = 1$, 16.7%). The cause of death was septicemia in all. The deaths occurred between the 5th and 12th postoperative days.

The mean duration of hospital stay was 12.1 days (range 6–23 days), and the mean duration of follow up was 9.7 months (range 4–22 months) among the survivors. There was no recurrence of intussusception in those that survived.

Discussion

The average duration from onset to presentation of 3 days in this study indicate that most of the cases of intussusception presented late for definitive treatment. This seems to be common in many developing countries.^[9-13] Factors like ignorance, poverty, poor communication, and inadequate access between rural basic health facilities and the tertiary centers may contribute to late presentation.^[9,11,13,14] The importance of delayed presentation in the management of intussusception lies in its tendency to predispose to bowel devitalization.^[15,16] The high proportion of irreducible intussusception and devitalized bowel among our cases may attest to this. Also the finding of some recent studies that success with nonoperative treatment decreases with an increase in the duration of symptoms before intervention^[17] may add to this body of evidence.

Granted that late presentation may have contributed significantly to the routine surgical intervention, the fact remains that other factors might have precluded nonoperative treatment of the cases that presented early.

The diagnosis and nonoperative treatment of intussusception have been shown to rely a great deal on radiological imaging. Since the mid 1930s, barium enema has been applied as diagnostic and therapeutic tool in many centers in developed countries.^[1-5,14,15] More recently, ultrasonography is used for definitive diagnosis and to guide hydrostatic reduction with saline enema.^[5,6,14] In the present report, definitive diagnosis of intussusception was in most cases made at laparotomy. It was only recently that routine use of ultrasonography is applied in the diagnosis. These deficiencies may be related to lack of facilities and trained personnel, which is common in many developing countries.^[9,11-13] It is important to appreciate that non-operative treatment involves an initial confirmation of diagnosis with either ultrasonography or barium enema, after excluding peritonitis. This is followed by pressure reduction with barium, saline enema, or air enema. Executing such procedure presupposes the availability of requisite facilities, training, and personnel. From this study, it is evident that nonoperative treatment in our setting may be hampered by the unavailability of these requirements in addition to delayed presentation. The recent routine use of ultrasonography in our hospital might, however, engender interest in nonoperative treatment in select cases that present early. For this to be effective, effort may have to be intensified toward training more specialized personnel, and encouraging better collaboration among the radiologists, pediatricians, and pediatric surgeons.

Despite the reports on the benefits of nonoperative treatment, surgery still has a definite role in the management of intussusception. Such cases with features of peritonitis at presentation, or those that fail to reduce with nonoperative means, and patients with pathological lead points and/or bowel complications, may invariably require surgery.^[1,16] In the present report, a high proportion of the cases required resection for bowel complications. This implies that surgery might currently be inevitable in a good number of our cases.

The postoperative complications in this study comprising mostly general surgery complications are similar to what has been reported previously.^[1,7,9-11]

The mortality of 8.5% obtained in this study and the 8–54%^[9-13,18,19] from some earlier studies in developing countries is high. The true mortality

may even be higher than these figures as some of the affected children may not survive to reach the tertiary hospitals. In contrast, the outcome in many developed countries is reported to be excellent.^[1-3,5,6,17] This disparity might not be related per se to the routine surgical treatment in these developing countries. The major contributors may be late presentation and lack of supportive facilities.

Conclusion

The management of childhood intussusception in our setting is associated with high mortality, mostly due to late presentation, and lack of supportive facilities. Surgery might be a veritable means of definitive treatment in our hospital probably because of late presentation and dearth of specialized facilities and personnel. Improving time to diagnosis and requisite facilities may encourage the use of nonoperative treatment.

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