

# Delayed presentation of intussusception in children—a surgical audit

Anand Pandey, Sunita Singh, Ashish Wakhlu and Jiledar Rawat

**Background** The preferred modality of treatment of intussusception is radiologic reduction; however, the situation is different in our setup, in which surgery is the only possible treatment modality to salvage patients. This study presents the management of patients of intussusception in our setup with delayed presentation, in which surgery becomes necessary to save life.

**Patients and methods** This retrospective study included reviewing the records of all patients having intussusception. The patients were evaluated for their age of presentation, sex, duration of symptoms before presenting to the hospital, type of intussusception, complications of surgery, mortality, and follow-up.

**Results** The study duration was 9 years and included 95 patients. The male-to-female ratio was approximately 2.5 : 1. The mean age at presentation was  $3.24 \pm 2.49$  years. The mean duration of symptoms before presenting to the hospital was  $6.08 \pm 1.38$  days. The presenting features were vomiting in 95 patients (100%), distension of the abdomen in 67 patients (70.5%), lump in the abdomen in 61 patients (64%), and bleeding per rectum in 10 patients (10.5%). Eighty-six patients (90.5%) had ileocolic or

ileoileocolic intussusception. Resection was required in 75 patients (79%). The mortality rate in this study was 10.5%.

**Conclusion** Despite the advances in the diagnosis and treatment of intussusception, a large number of children in the developing world still present very late. Hence, the treating surgeon must be ready to manage this entity effectively. Proper clinical evaluation, resuscitation, and treatment as per the condition of the patients yield good results. *Ann Pediatr Surg* 7:130–132 © 2011 Annals of Pediatric Surgery.

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**Keywords:** bowel obstruction, children, delayed presentation, intussusceptions, surgery

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## Introduction

Intussusception is defined as the invagination of a proximal segment of the intestine into a distal segment of the intestine [1]. It remains a common cause of bowel obstruction in young children and results in significant morbidity and mortality if not promptly treated [2]. Less than one-quarter of patients present with the classic triad of abdominal lump, abdominal pain, and bloody stools [3,4]. Other patients often present with a wide range of nonspecific symptoms such as nausea, vomiting, gastrointestinal bleeding, change in bowel habits, constipation, or abdominal distension. Thus, the diagnosis continues to rely on clinical suspicion.

Although the preferred modality of treatment of intussusception is radiologic reduction with favorable outcome [5], the situation is somewhat different in our setup, in which patients present late to the referral center and surgery is needed to save them. This study presents the management of patients with intussusception in our setup with delayed presentation.

## Patients and methods

This was a retrospective study conducted at the university hospital from January 2000 to January 2009. The records of all the patients having intussusception were reviewed. All patients diagnosed with intussusception were included in the study. In all the patients, the final confirmation of the diagnosis was made at laparotomy.

The patients were evaluated for their age of presentation, sex, duration of symptoms before presenting to the hospital, type of intussusception, complications of surgery, mortality, and follow-up. All the data were recorded in a Microsoft excel sheet and analyzed. Statistical analysis was conducted using Statistical Package for Social Sciences (SPSS Inc., Chicago, Illinois, USA) 12.0 version for windows.

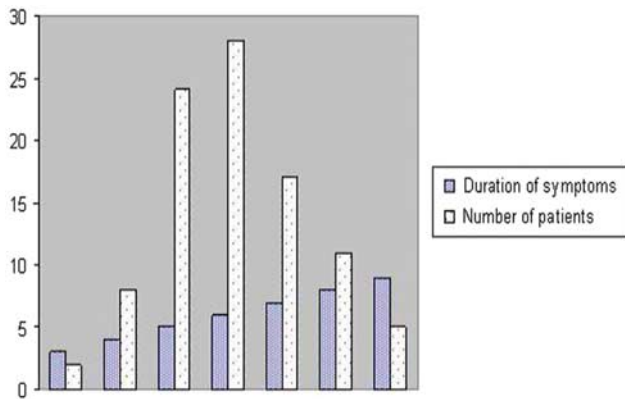
## Results

The total duration of this study was 9 years. The total number (*n*) of patients was 95. There was no seasonal variation. The male-to-female ratio was approximately 2.5 : 1. The mean age at presentation was  $3.24 \pm 2.49$  years (range: 5 months to 10 years).

The mean duration of symptoms before presenting to the hospital was  $6.08 \pm 1.38$  days (range: 3–9 days, Fig. 1). The presenting features in the patients were vomiting in 95 patients (100%), distension of the abdomen in 67 patients (70.5%), lump in the abdomen in 61 patients (64%), and bleeding per rectum in 10 patients (10.5%). The classic triad was noticed in eight patients (8%).

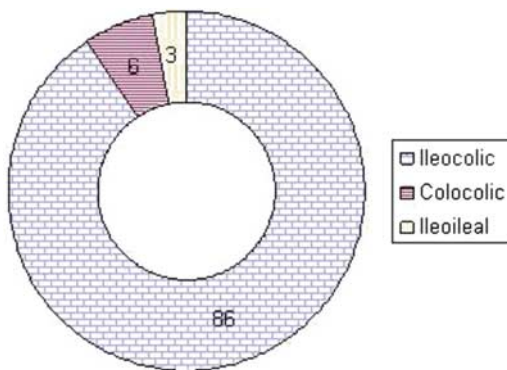
Ultrasonography of the abdomen was carried out in 14 patients (15%) and it suggested the diagnosis of intussusception. Barium enema was attempted in these patients, which failed, and they were operated upon. All other patients presented with poor general conditions such as severe dehydration, tachycardia, and sepsis. Hence, they were operated upon immediately after

Fig. 1



The number of patients presenting at various time intervals. Most patients have presented after 3 or 4 days.

Fig. 2



Different types of intussusceptions, most common being the ileocolic type.

resuscitation. Eighty-six patients (90.5%) had ileocolic or ileoileocolic, six patients (6.3%) had colocolic, and the remaining three patients (3.2%) had ileoileal intussusception (Fig. 2). Ninety patients (94.7%) had idiopathic intussusception. The lead points noticed in the remaining five patients were Meckel's diverticulum in four patients and polyp in one patient. Manual reduction was successful in only 20 patients (21%); resection was required in 75 patients (79%). Resection was needed because of gangrene of the bowel, failure to successfully reduce the bowel manually, or because of perforated bowel. The mortality in this study was 10.5% (10 patients).

The mean duration of hospital stay was  $9.92 \pm 1.27$  days (range: 8–12 days). The mean duration of follow-up was  $6.04 \pm 0.65$  months (range: 5–7 months). No complications were noticed in the follow-up.

## Discussion

The first description of this entity was given by Barbette and later in a detailed study by Hunter [4]. It is one of the most frequent causes of bowel obstruction in infancy, which can progress to bowel necrosis and needs bowel

resection. If not recognized and treated appropriately, it may lead to death [6].

The mean age at presentation has been reported to be from 6 months to 2.7 years [1,3,5–10]. In our study, the mean age was very close to the reported mean age. The male-to-female ratio in our study was 2.5:1, which is close to that of some studies [3,5,10] but higher than that of other studies [8,11]. An important finding was the duration of symptoms before presenting to the hospital. This was approximately 6 days and is much higher than that reported in most of the developed world [1,5,9,] where the usual presentation is within 24 h. Saleem *et al.* [7] observed that the average interval between the onset of symptoms and presentation to the hospital was 46 h. This is probably because of delay in seeking medical advice by the attendants. Moreover, primary care taken at the remote centers may also delay the proper diagnosis. Delay in diagnosing this condition increases the likelihood of surgical intervention [2,6,9,12]. The clinical features were the same as described in the literature [1,6].

With regard to the use of ultrasonography, which has been designated as the most important diagnostic tool, it is relevant to see that it was not used to diagnose all patients who were suspected of having intussusception. The reason lies in the delayed presentation and poor general condition of the patients. Most of the patients presented late. Hence, surgical treatment after resuscitation was imperative for them.

Idiopathic intussusception was noticed in approximately 95% of patients by us, and has also been observed by others.

The salient feature of our study is the absence of nonsurgical measures for treatment. There have been various studies suggesting the use of nonsurgical measures to treat intussusception with high success rates [2,3,5,6,9,13]. We agree that nonsurgical measures are the first line of treatment for intussusception, but the situation in our country is somewhat different.

Although there is a high success rate of nonsurgical measures such as air or barium enema, they are successful when patients present early, possibly within 72 h [2,5,6,12,14]. In our series, the mean age at presentation was approximately 6 days, which is well beyond the stipulated time period (Fig. 1). This is also suggested by the fact that barium enema reduction failed in all those in whom it was attempted. The delay increases the possibility of resection [2]. It is also suggested by the fact that resection was needed in approximately 75% of patients in our series.

Although laparoscopy has been used in intussusception [15,16], it had not been carried out by us until now. As rota virus vaccine is not routinely given in our setup, we have not evaluated our results from this perspective.

## Conclusion

To conclude, despite the advances in the diagnosis and treatment of intussusception, a large number of children

in the developing world still present very late during the course of illness. Hence, the treating surgeon must be ready to manage this entity effectively. Proper clinical evaluation, resuscitation, and treatment as per the condition of the patients yield good results.

## Acknowledgements

### Conflicts of interest

There are no conflicts of interest.

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