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Recurrent intussusception in children and infants

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ABSTRACT

Background: Recurrent intussusceptions in child and infants are problematic and there are controversies about its management. The aim of this study is to determine the details of the clinical diagnosis of recurrent intussusception and to determine the aetiology of recurrent intussusceptions. **Patients and Methods:** It's a retrospective study of 28 cases of recurrent intussusception treated in the paediatric surgery department of Monastir (Tunisia) between January 1998 and December 2011. **Results:** During the study period, 505 patients were treated for 544 episodes of intussusception; there were 39 episodes of recurrent intussusceptions in 28 patients; the rate of patients with recurrence was 5.5%. With comparison to the initial episode, clinical features were similar to the recurrent episode, except bloody stool that was absent in the recurrent group (P = 0,016). Only one patient had a pathologic local point. **Conclusion:** In recurrent intussusception, patients are less symptomatic and consult quickly. Systematic surgical exploration is not needed as recurrent intussusceptions are easily reduced by air or hydrostatic enema and are not associated with a high rate of pathologic leading points.

Key words: Child, recurrent intussusception, surgery,

INTRODUCTION

Acute intussusception is the most common abdominal emergency among infants.[1] Most cases in early childhood are idiopathic. Pathologic lead points such as a tumour, polyp, or Meckel's diverticulum are more common in neonates and children over 5 years old or in those whose intussusceptions are restricted to the small intestine. Barium saline or gas enemas have been widely used to reduce uncomplicated intussusceptions, but 10% to 30% of patients eventually require surgery. Surgery is definitely indicated when patients present with signs of perforation, shock, or peritonitis, when other attempts at reduction fail, or when a pathologic lead point is suspected.[1]

Recurrent intussusception after hydrostatic or air reduction is not uncommon. In most series, recurrence is defined after a minimum of 12 hours following the reduction. The finding of intussusception within less than 12 hours is rather due to incomplete reduction.[2-5]

Recurrent intussusception might be a diagnosis and therapeutic challenge to the paediatrician, radiologist and paediatric surgeon.

Management of recurrent intussusception is still controversial, raising two main questions namely, whether there is a local cause to look for in each case of recurrent intussusception and, if surgical exploration should be systematically undertaken.

This study evaluated the clinical characteristics, diagnosis and aetiology of recurrent intussusception.

PATIENTS AND METHODS

A retrospective study of 28 cases of recurrent intussusception was undertaken in the department of paediatric surgery Fattouma Bourguiba university hospital Monastir, Tunisia from January 1998 to December 2011. The clinical signs, imaging data and the results were collected from the files and encoded on cards and computer equipment using SPSS 18ML. Recurrence of intussusception was defined as the occurrence of a new episode after a minimum period

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of 12 hours after the reduction of the initial episode. The recognition of intussusception less than 12 hours was rather attributed to incomplete reduction of the previous episode. Ultrasound examination confirmed the diagnosis in all patients. Hydrostatic enema was our first-line therapy for the majority of patients. Surgery was limited to cases where the enema was contraindicated and where there was a failure of no operative reduction. The recurrence rates after each type of treatment were compared and correlated with the reduction mode of the initial episode.

RESULTS

During 12 years of study, 505 patients were treated for 544 episodes of intussusception. Recurrence of the intussusception was observed in 28 patients who presented 39 episodes of recurrence with a recurrence was 5.5%. A clear male predominance was noted (M:F = 6:4). Their average age at the initial episode was 11.3 months with a range of 4 months to 54 months. More than 75% of the patients were aged within one year. The time of recurrence ranged from 1 day to 2.4 years, and about 72% of recurrences occurred within 6 months after the initial episode. Abdominal pain and vomiting were the most common features during relapses. Compared to the initial episode, the clinical symptoms in relapses showed no statistically significant difference, except for rectal bleeding which was almost absent ($P = 0.016$) [Table 1].

Children with recurrent intussusception consulted more rapidly than in the first episode with a statistically significant difference ($P = 0.029$). The recurrence rate increased significantly with a number of previous recurrences ranging from 5.5% during the first recurrence to 37.5% during the third episode. This rate increased slightly after radiological reduction compared with surgical reduction (5.7 vs. 4.6%). An underlying cause was observed only in one patient who had a Henoch-schonlein purpura complicated with an appendicular hematoma discovered intraoperatively. During relapses, the hydrostatic or pneumatic enema was attempted as a first line treatment for the majority of patients if there was no contraindications with a success rate of 97%. No perforation was observed.

Table 1: Frequency of abdominal pain, vomiting and rectal bleeding in the initial episode and in the recurrences

Episode	Frequency of abdominal pain	Frequency of vomiting	Frequency of rectal bleeding
Initial episode	100%	78.5%	57%
1st recurrence	96.4%	75%	25%
2nd recurrence	100%	50%	0
3rd recurrence	100%	66.6%	0

Anatomical diagnosis in all cases was an ileo-colic intussusception, except one case of jejuno-jejunal intussusception in a patient who had a recurrence after surgical reduction of an ileo-colic intussusception.

Indications for surgery in 4 patients were as follows: The first case was because of failure of two attempts of radiological reduction. The patient was operated using a McBurney incision; a manual reduction with appendectomy was done, and no local cause was found. After 2 years, the follow-up was uneventful.

The second case was because of suspicion of a bowel intussusception in a patient who had a Henoch-schonlein purpura. No hydrostatic enema reduction was attempted. The surgical exploration discovered an appendicular haematoma. An easy manual reduction with appendectomy was done. No recurrence was described after 1 year follow-up.

The third case was due to a postoperative intussusception after a surgical reduction of an ileo-colic intussusception. This recurrence was revealed by bilious vomiting 3 days after the initial operation. The abdominal ultrasonography confirmed the diagnosis. No hydrostatic enema reduction was attempted. The surgical exploration found a jejuno-jejunal intussusception without a local cause. A manual reduction was done. The 4 year follow-up was uneventful.

As for the fourth patient, after 3 recurrences, his parents' anxiety necessitated surgery. Hydrostatic enema was not attempted. The surgical exploration did not find any local cause; a manual reduction with appendectomy was done. No recurrence was noticed after 3 years follow-up.

DISCUSSION

Recurrent intussusception is one of the evolving forms of acute intussusception. Its frequency is extremely variable depending on the series, ranging from 2 to 20%.[2] [Table 2]

In most series, recurrence is defined after a minimum of 12 hours following the reduction. The finding of intussusception within less than 12 hours is rather due to incomplete reduction.[2-5] It is conventionally accepted that the rate of recurrent acute intussusception is lower after surgical reduction than after hydro pneumatic reduction. Data from previous studies showed a recurrence rate of

Table 2: Rate of recurrence of acute intussusception according to different series

Authors	Study period	% of recurrence
Beasley *et al.*	1971-1987	4.4
Ein *et al.*	1958-1974	5
Niramis *et al.*	1976-2008	8
Champoux *et al.*	1979-1990	8.7
Daneman *et al.*	1979-1996	9
Fecteau *et al.*	1980-1995	10.9
Schuh *et al.*	1974-1984	20
Our series	1998-2011	5.5

8 to 12% after radiological treatment against 0-4% after surgical reduction.[3,4,6] However, was not significant this has not been well illustrated in our series because the difference between the two recurrence rates after each treatment was not significant. Epidemiological data of recurrent intussusception overlap with those of the acute form. In fact, 82% of our patients were aged within 1 year during the initial episode. Among these patients, 72% had a recurrence within 6 months. This is probably due to the scarcity of this condition after the age of 2 years. Our experience agrees with others that abdominal pain with vomiting is the more frequent signs during the initial episode and recurrence. Rectal bleeding is usually absent in recurrences.[4]

The consulting delay of our patients had decreased with a statistically significant difference between the initial episode and recurrence. This can be explained by parent's awareness about possible recurrence. Most publications showed that the risk of finding a local cause was higher in cases of recurrent intussusception with a reported frequency ranging from 7 to 10.7%.[1,2,5] In our series, the frequency was only 3.5%.

Surgery is usually indicated for cases of recurrent intussusception, although others would only operate starting from the third episode.[1]

Currently, the hydrostatic or pneumatic enema is the first treatment of recurrent intussusception even if previously reduced by surgery, except when there is a long history and a higher risk of non-reduction.

In our series, the results of the radiological reduction of recurrence are similar to those previously reported probably because of early diagnosis and treatment of recurrent episode.[3,4,6]

Intussusception caused by pathologic leading points might be more difficult to reduce by hydrostatic enema; therefore, would need surgery from the first episode. This may explain the low rates of pathologic leading points in recurrent intussusceptions.[7]

We usually perform appendectomy in intussusceptions when surgery is necessary for two reasons: we often use McBurney incision; also, we believe that appendectomy can induce post-operative adhesions in the ileo-caecal region, increasing the caecum fixity. This might reduce the risk of recurrence.

CONCLUSION

In recurrent intussusception, patients are less symptomatic and yet consult promptly. The radiological reduction is simple, and a local cause is rarely found. Surgery should not be routinely undertaken because the rate of secondary cause is low.

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