
Evaluation of 16 Years Experience of Management of Intussusception and Role of Cooperation with Radiologists to Improve the Outcome

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Abstract:

Aim: To review the presentation, management, and outcome of children and adults with intussusceptions admitted to the general surgical department in Misurata Central Hospital, and comparing the results with various series in literature.

Method: The medical records of 78 cases of intussusception were studied retrospectively over 16 year period from Jan 1990 to Dec 2005.

Results: From 78 reviewed patients there were 57 (73%) males and 21 (27) females most of them were below two years old .The most common clinical features are vomiting (97%), bleeding per rectum (50%), abdominal mass was felt in (59%) . Barium enema was done for 15 patients only, successful reduction achieved in 6 patients, 72 patients were operated, and bowel gangrene was found in 10 patients (13%). The mortality rate was 1.2%.

Conclusion: Early presentation and management reduce the risk of bowel gangrene and resection and allows the trial of non-operative reduction in the presence of good cooperation with radiologists in order to improve the outcome and decrease the complications.

Introduction:

Intussusception is a process in which a segment of intestine invaginates into the adjoining intestinal lumen, causing a bowel obstruction.

Intussusception presents in (2) variants: idiopathic intussusception, account about (95%) of cases, and secondary intussusception, which occurs in older patients. The latter is associated with special medical situations (e.g. Henoch-schonlein purpura, cystic fibrosis, hematological disorder, Meckel's diverticulum, tumours and intramural haematoma) and can occur in the postoperative period.

Intussusception has been differentiated from other forms of intestinal obstruction for less than (300) years.¹

In the mid-17th century, Paul Barbette of Amsterdam clearly described intestinal invagination and suggested operative reduction.²

The first successful operation for intussusception in an infant was performed by Jonathan Hutchinson in 1871.³

Hirschsprung of Copenhagen in 1876 published the first of series of reports dealing with the systemic reduction of intussusception by hydrostatic pressure. And after monitoring

a series of 107 cases, reported a 35% mortality rate in 1905.⁴

Patients and Methods:

The presented study is a retrospective study and it was carried out in the department of Surgery at Misurata Central Hospital during the period from January 1990 to December 2005. In this 16 years period, 78 patients with intussusception were admitted to The Department of Surgery.

The data collected from files, including personal information, symptoms and sign of intussusception, past medical history, investigation, type of intussusception, histopathological diagnosis and operative procedures

Results:

During the study period, 78 patients were admitted to our department, most of the patients (53) below 1 year (68%), and a few patients are adults,⁶ as shown in table (1).

The majority of cases in this study are males as shown in table (2); male to female ratio is approximately (3:1).

The most common clinical features are: vomiting, abdominal pain, bleeding per rectum and abdominal mass, as shown in table (3).

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In our study barium enema was performed in about 20% of cases (15 cases), successful reduction achieved in only 6 patients out of the total number 78 and this represent about 8% and all of these are below 2 years of age.

The most common type of intussusception is ilio-colic which is seen in 83% of cases as shown in table (4).

Regarding surgical treatment, 72 patients were operated, resection was done in 16 cases, 10 of them due to bowel gangrene, and table (5) demonstrates the procedures performed for the operated patients.

Discussion:

Intussusception is an important abdominal emergency in infancy and children, and usually idiopathic; in adults it is a rare cause of intestinal obstruction and in most of the cases, there is an underlying cause such as polyps, malignant lesions and adhesions. It occurs when one segment of the bowel telescopes in to another segment caudal to it leading to venous compression and wall edema.⁵

The peak incidence is among infant less than one year as in our study about (68%) of the patients were below one year of age, and a few cases are adults. Males are more affected, which is similar to those in Jordan,⁶ India,⁷ in Tripoli medical center⁸, Saudi Arabia⁹, and in John Hopkins hospital (USA).¹

The most common clinical presentations in our study are vomiting (97%), abdominal pain (81%), bleeding per rectum (50%) and palpable abdominal mass (59%). In another series from Jordan, the main symptoms were vomiting (92.5%), rectal bleeding (75%), current jelly stool (55%) and abdominal mass in (47.5%) of patients⁶. and similar to those in Saudi Arabia.⁹

Barium enema is 100% accurate in the diagnosis of intussusception (the diagnosis of claw sign was seen in all cases where barium enema done)¹.

In our study barium enema was performed in 15 patients, 20% of cases, successful reduction achieved in only 6 patients and this represent about 8% of the total study group and all of these are below 2 years of age.

In a retrospective study of 33 cases of intussusceptions in Saudi Arabia⁹ barium enema done in 32 cases and successful reduction was achieved in 20 cases (56% of the study group).

In another series from Jordan⁶, barium enema was done in 33 cases out of 40 cases with successful rate of 55% of the total study group;

while in a series from Tripoli Medical Center⁸ barium enema was done in only 22 cases out of 98 patients presented with intussusception, the success rate of reduction was 13% of the total series. In another retrospective study from New Zealand¹⁰ barium enema examination was used in 67 patients out of 98, but successful reduction was achieved in only 13 cases which represents 13% of the total group.

The limited use of barium enema in many series is due to late presentation especially when associated with rectal bleeding which is considered as a relative contraindication for hydrostatic reduction hence rectal bleeding usually is a sign of mucosal sloughing and ischemia; on the other hand, lack of facility, unavailability of experienced radiologist at any time, and uncooperation between surgery and radiology departments may play a role in this limitation.

In our study 9 cases out of 78 cases (all of them are above two years and adults), the primary pathology is recognized as leading point to intussusception (secondary intussusception) which represents (11%) of the cases, the lesions are: Burkett's lymphoma of terminal ileum, lymphoma of the ileum, post laparotomy with splenic and pancreatic injury, Peutz-Jeghers syndrome with jejunal polyps, and Meckel's diverticulum which act as leading point for intussusception.

In patients with secondary intussusception, surgery is the treatment option to deal with the primary pathology which usually the leading point of the intussusception.

Operative treatment is still the standard treatment of intussusception in our hospital where 72 patients out of 78 patients are operated, which represent 92% percent of the cases, and 8% are reduced by barium enema.

In our study manual reduction was done in 53 patients (73%), resection of bowel was done in 16 cases, in 10 cases the resection was performed due to gangrene (13% of the total study group) which indicates delayed management as a result of either late presentation or delayed intervention.

In the series from Saudi Arabia⁹ the rate of resection due to gangrene was 14% of the study group, and in Jordan series⁶ the rate of resection due to bowel gangrene was 12.5%, also in the retrospective study from New Zealand,¹⁰ the rate of resection because of bowel gangrene was 17%, while in another retrospective study from Nigeria¹¹ the resection rate of gangrenous bowel was 39%, which is markedly high compared to other series.

Although the rate of overall resection (i.e., due to gangrene or resection of tumor bearing segment of bowel) is more than these figures, we concentrate on the rate of resection of gangrenous bowel because it reflects a subjective problem which is delayed management, and we found that, this rate is almost the same in many series in spite of the differences in the rates of successful reduction by barium enema, which usually succeed in idiopathic intussusception and early presented cases.

Recently, normal saline enema and pneumatic or air enema under ultrasound guidance is the most developed technique for non-surgical treatment,¹² laparoscopy has been used for diagnosis of failed reduction as laparoscopic-assisted pneumatic reduction and hydrostatic saline enema during the procedure.¹³

In our study one patient died due to late presentation and gangrenous bowel (mortality

rate is 1.2%), the mortality rate in TMC is 1%, and in Ramadwar et al (1995) the mortality rate is 0%.⁸

Conclusion:

Early presentation of the patients and early diagnosis will increase the rate of successful non-operative hydrostatic reduction and decrease the risk of complications mainly bowel gangrene and resection.

The use of barium enema or normal saline enema under ultrasound guidance will decrease the indication for surgical intervention and hence, improves the outcome by reducing the complications of surgery.

To achieve a proper management of intussusception, patients should be referred early to surgical department and cooperation with radiology department for non-operative reduction which always gives high successful rate in early presented cases.

Table 1: Age distribution

Age	Number of cases	Percentage (%)
< 1 year	53	68%
1- 2 years	15	19%
> 2 years	10	13%
Total	78	100%

Table 2: sex distribution

Sex	Number of cases	Percentage (%)
Male	57	73%
Female	21	27%
Total	78	100%

Table 3: Symptoms and signs at the time of presentation

Symptom	Number of cases	Percentage (%)
Abdominal pain	63 cases	81%
Vomiting	75 cases	97%
Rectal bleeding	39 cases	50%
Abdominal mass	46cases	59%

Table 4: types of intussusception in the operated cases.

Type	Number of cases	Percentage (%)
Ilio-colic	60	83%
Ilio-colico-sigmoid	4	6%
Jejuno-ileal	3	4%
Jejuno-jejunal	2	3%
No intussusception	3	4%
Total	72	100%

Table 5: procedures performed for the operated cases.

Procedure	Number of cases	Percentage (%)
Manual reduction	53	73%
Colectomy (due to gangrene)	5	7%
Small bowel resection (tumour bearing segment)	4	6%
Small bowel resection (due to gangrene)	5	7%
Manual reduction & resection of Mickel's diverticulum	2	3%
Negative laparotomy	3	4%
Total	72	100%

References:

1. Kenneth J. Welch, Judson G. Randolph, Mark M. Ravitch, James A. O'Neill, Jr .Mark I. Rowc paediatric surgery, 1986, (4th edition).
2. Barbette P.:Oeuvres chirurgiques et anatomiques. Geneva, francois miege, 1674, p.522
3. Hutchinson J.: A successful case of abdominal section for intussusception. proc.R.Med.chir.Soc.7:195, 1873.
4. Hirschprung H.: ET Tilfaelde AF subakut Tarminvagination Hospital – Tidende 3:321, 1876.
5. Kuppermann N, Odea T, Pinknea L, Hoecker C. predictors of intussusception in young children. Arch Pediat Adolesc Med 2000; 154:250-255.
6. Taha Q, Hussein B. Childhood intussusception in south of Jordan .Jam Med J 2007; 7(1):63-64
7. Rege VM, Deshmukh SS, Borwankar SS, Kulkarni BK. Intussusception in infancy and childhood; evaluation of a prognostic scoring pattern. J Postgrad Med 1991; 37(1):109-114
8. Mahmoud MO, Intisar MZ, Abdul AE. Management of intussusception in tertiary referral centre. Jam Med J 2005; 4(3):223-224
9. Stanley JC, Abdullah AA, James D et. Idiopathic intussusception in infancy and children. Saudi Med J 2003; 24(5):518-520
10. Raudkivi PJ, Smith LH. Intussusception: analysis of 98 cases. Br J Surg 1981; 68(9): 645-8.
11. Mangete ED, Allison AB. Intussusception in infancy and childhood: analysis of 69 cases. East Afr Med J. 1993; 70(11): 734-6.
12. Mahayosnond A, Sethsakul E, Trinavarat P et al. Treatment of paediatric intussusception by pneumatic reduction under ultrasound guidance: first case of King Chulalongkorn Memorial Hospital. Chula Med J 2004; 48(5): 299-307.
13. Hay SA. Kabesh AA., Soliman HA., Abdelrahman AH. Idiopathic intussusception: the role of laparoscopy. J Pediatr Surg 1999; 34: 577-578.