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Frequency, Associated Symptoms and Prognosis of Intussusception in Tertiary Care Hospital of Province Sindh

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Authors' contributions

This work was carried out in collaboration among all authors. Author NAS conceptualize the study, data analysis, drafting and finalizing of the results was done by authors NBN and ZAB. Author HUR critically reviewed the article. Finally reviewed and approved by author IM data collection and session organization was facilitated by author SSA. All authors read and approved the final manuscript.

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ABSTRACT

Background: Intussusception is an important disease of childhood & has been recognized since ancient time. It commonly involves young infants of 3 ½ months to 10 months of age. Diagnosis is mostly clinical on the basis of classical triad or quarter of pain in abdomen, vomiting palpable abdominal mass and currant red jelly stools. It is confirmed by ultrasound, barium enema which also has a therapeutic potential. The parents in our region lacks awareness regarding the intussusception. They usually bring the child to hospitals after trying various homemade or herbal remedies. The delay in diagnosis always results in severity in symptoms and aggressive mode of treatment.

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Objective: The current study was aimed to identify the Frequency, associated symptoms and post-operative complications of intussusception in tertiary care hospital of Province Sindh
Methodology: It was a cross sectional study conducted from July 2017 to June 2020 at department of Pediatric Surgery Ghulam Mohammad Mahar Medical College Teaching Hospital Sukkur. Data regarding symptoms and prognosis was noted on the file of patient and written informed consent was taken from parents. Data was analyzed by using SPSS version 20. Chi square was applied as test of significance at 95%confidance interval and p-value less than 0.05 was considered as significant.
Results: Fourty patients of intussusceptions were reported the mean age was 5.88 ± 1.5 months while 8 (20%) patients were 1to10 years with mean age of 3.88± 3.18 years. Thirteen (32.5%) patients presented within 24 hours of onset of symptoms and 27 (67.5%) presented after 24 hours 19 (47.5%) patients had history of diarrhea while 6 (15%) patients had respiratory tract infection. The most common postoperative complication was gut gangrene.
Conclusion: In three years of study we found only 40 children who came to our hospital with diarrhea and the triad i.e. abdominal pain, abdominal mass and bleeding per rectum. Ultrasound abdomen was found to be best diagnostic modality with impressive accuracy rate at our setup. Gut gangrene was postoperative complication and recurrence was uncommon.

Keywords: Frequency; symptoms; intussusceptions; postoperative complications.

1. INTRODUCTION

Intussusception is an important disease of childhood & has been recognized since ancient time. It commonly involves young infants of 3 ½ months to 10 months of age, but can occur in adults also [1]. Etiology varies between infants and older children. In infants it is idiopathic usually; while Meckel's diverticulum is the commonest lead point in children & adults [2]. Diagnosis is mostly clinical on the basis of classical triad or quarter of pain in abdomen, vomiting palpable abdominal mass and currant red jelly stools. It is confirmed by ultrasound, barium enema which also has a therapeutic potential [3]. If the facility is available hydrostatic pneumatic reduction is the treatment of choice in many cases, otherwise surgery is mandatory. Intussusception is a common emergency in pediatric surgical patients. It is a leading cause of intestinal obstruction in infancy. Because of its serious nature, it requires prompt diagnosis and early treatment [4].

The usual classical clinical picture of this condition is not always seen in our region. Techniques for diagnosis and treatment have changed in the last 20 years. In developed countries most patients are treated non operatively but in our setup due to late presentation and lack of radiological experience; our patients are treated surgically [5]. The mortality rate has steadily declined during this century to well under 1% in industrialized countries. Delay in diagnosis is the primary factor that contributes to mortality. Different surgical procedures i.e. manual reduction, reaction and anastomosis and reaction and stoma formation are performed to treat the anomaly but prognosis of disease vary according to procedure performed [6].

The parents in our region lacks awareness regarding the intussusception. They usually bring the child to hospitals after trying various homemade or herbal remedies. The delay in diagnosis always results in severity in symptoms and aggressive mode of treatment [7]. The current study was aimed to identify the Frequency, associated symptoms and post-operative complications of intussusception in tertiary care hospital of Province Sindh.

2. MATERIALS AND METHODS

It was a cross sectional study conducted at the department of Pediatric Surgery Ghulam Mohammad Mahar Medical College Teaching Hospital Sukkur. The duration was over 3 years from July 2017 to June 2020, Only those patients, who after clinical evaluation, investigations and on exploration proved to be the case of intussusception, were included in the study. Patients were divided in two groups as follows:

Group-I Infants

a) Presenting within 24 hours.
b) Presenting after 24 hours.

Group-II Children 01 year to 10 years

a) Presenting within 24 hours.
b) Presenting after 24 hours.

All patients were subjected to following investigations after history and clinical examination:

- Blood complete picture.
- Serum electrolytes and blood urea.
- Plain X-ray abdomen erect and supine posture.
- Ultrasound abdomen.
- All patients were managed preoperatively with intravenous fluids and intravenous antibiotics including.
  - Ceftriaxone 100mg /kg/day.
  - Gentamicin 5mg/kg/day.
  - Metronidazole 7.5mg/kg/day.

State of hydration was assessed by urine output. Those patients who fulfilled the following criteria were subjected to hydrostatic reduction.

- Presenting within 24 hours of the onset of symptoms.
- No sign of peritonitis.
- Haemodynamically stable.

All others were subjected to operative treatment. Surgical options vary according to operative findings including manual reduction if possible, resection and anastomosis or stoma formation in case of full-blown peritonitis. Complications during this period were managed accordingly. Patients were discharged following recovery and follow-up was done in OPD. Data regarding symptoms and prognosis was noted on the file of patient and written informed consent was taken from parents. Data was analyzed by using SPSS version 20. Data was recorded in frequency and percentages.

3. RESULTS

During three year period 40 patients of intussusceptions were reported in the pediatric ward of tertiary care hospital, out of them 32 (80%) were 3 ½ months to the 10 months of age. The mean age was 5.88 ± 1.5 months while 8 (20%) patients were 1to10 years with mean age of 3.88± 3.18 years. In our study 7 patients were on breastfeed/formula feed and weaning had also been started in these patients and 7 patients were on normal diet. These patients were above 1 year of age. Six patients were exclusively on breastfeed, age ranged between 3 ½ months to 5 months. Thirteen (32.5%) patients presented within 24 hours of onset of symptoms and 27 (67.5%) presented after 24 hours 19 (47.5%) patients had history of diarrhea while 6 (15%) patients had respiratory tract infection. Clinical presentation of the patients is mentioned in (Table 1).

X-ray abdomen erect posture was performed in all 40 cases and findings were, multiple air fluid levels, dilated loops in upper abdomen with hazy pelvis and soft tissue shadow in right lower quadrant Those patients who presented to us between 1st to 8th days of their onset of symptoms, their X-ray films showed dilated gas filled loops further results are expressed in Table 2.

Operative procedures included, manual reduction of intussusception, resection and anastomosis and resection and stoma formation (Table 3).

In 3 (7.5%) cases mal-rotation was also present, that is, the duodenojejunal junction was on the right side of spine (cecum and ascending colon were mobile with long lax ladd's band). Postoperative course was uneventful in 30 (75%) cases. Complications developed in 10 (25%) patient, details of complications are mentioned in (Table 4).

4. DISCUSSION

In cases of infantile intussusception age range was found between 3 ½ months to 10 months with mean age of 5.86 months, in children of more than one year of age, mean age was 3.88 year which is similar with the studies [8-10] Majority of our infants developed intussusception, when they just started their weaning whether breast fed and formula fed. Only six patients were exclusively on breast feeding [11]. Intussusception commonly occurred in otherwise healthy chubby children in contrast to it, nutritional status was fair in half of the case while only 15% patients had good nutritional status the same was reported by Marsicovetere P et al. [12] In our cases nearly half of the cases had history of diarrhea before they developed symptoms and signs of intussusception. This finding does not correlated with the studies where respiratory tract infection is said to be preceding event in majority of cases. This controversy is also reported in studies published in Pakistan [13,14]. Due to diarrhea and malnourishment, diagnosis of intussusception

becomes difficult and many of these infants are treated in other hospitals and by the general practitioners as cases of diarrhea, dysentery or post diarrheal distention and they do not recognize intussusception thus resulting in delay [2,5-6]. This dilemma is reflected in our study as 24 (60%) patients were referred to us without diagnosis and 27 (67.5%) patients presented after 24hour onset of symptoms. Symptoms and signs of intussusception in our study were not comparable with the multiple studies [15-16]. The triad of abdominal pain, abdominal mass and bleeding per rectum was present in 37.5% of cases which is comparable with the given 32% internationally published article of Department of surgery Johns University Teaching Hospital Nigeria [17]. Abdominal pain was commonest presenting feature in our study, which appeared in form of painful cry, drawing up of the knees in preverbal age group and explainable in elder patients. All 40 (100%) cases presented with complain of pain vomiting and other cardinal symptom of intussusception that occurred in initial stages and later on due to mechanical obstruction and are comparable with reported data [18]. Jelly stool i.e. passage of blood and mucus per rectum was found in 27 (67.5%) cases, abdominal mass was palpable in 22 (55%) cases which is similar to study published by wong CW et al. [19]. X-ray abdomen erect posture was done in all cases. There were multiple air fluid levels and soft tissue shadow in right lower quadrant of abdomen in 9 (22.5%) cases. Ultrasound abdomen, which is found to be best diagnostic modality, was performed in 15 (37.5%) cases and was suggestive of intussusception in 14 (35%) cases with success rate of 93% comparable with the results of di Giacomo et al. [20].

The gold standard for diagnosis and also therapeutic potential for reducing the intussusception is barium enema. In our study 4 patients underwent barium enema reduction and was found diagnostic in all cases, but we failed to reduce the intussusception in all 4 cases. The failure rate is in our study does not coincide with [21]. Postoperative recovery was smooth in 30

Table 1. Clinical presentation of patients and frequency/percentage of associated symptoms

Sr. No.	Symptoms & signs	No. of patients	Percentage(%)
1.	Pain in abdomen	40	100
2.	Tender abdomen	38	95
3.	Vomiting	37	92.5
	i. Non bilious	21	
	ii. Bilious	16	
	iii. Feculent	-	
4.	Dehydration	31	77.5
	i. Mild	20	50
	ii. Moderate	11	27.5
5.	Bleeding per rectum	27	67.5
6.	Blood and mucus came out on withdrawal of finger	27	67.5
7.	Fever	23	57
	Low grade	21	
	High grade	2	
8.	Mass in abdomen	22	55
	Site of abdominal mass		
	i. Left lumber	5	12.5
	ii. Right lumber	4	10
	iii. Umbilical region	7	17.5
	iv. Epigastrium	2	5
	v. Right iliac fosa	4	10
9.	Abdominal distention	18	45
10.	Mass palpable rectally	9	22.5
11.	Gut sounds		
	i. Audible	10	25
	ii. Sluggish	18	20
	iii. Absent	12	30

Table 2. Findings of X-ray abdomen

Sr. No.	Findings	No. of patients	Percentage
1.	Multiple air fluid levels with diluted loops in upper abdomen and hazy pelvis	26	65
2.	Only soft tissue shadow in right lower quadrant	4	10
3.	Multiple air fluid levels with dilute gas filled loops and soft tissues shadow in right lowed quadrant	9	22.5
4.	Normal pattern	1	2.5

Table 3. Operative procedures

Operative procedure	Presentation of patients to us		Total n=40
	Within 24 hour	After 24 hours	
Manual Reduction	10 (47.6%)	11 (52.4%)	21(5.2.5%)
Reaction and anastomosis	3 (16.7%)	15 (83.3%)	18 (45%)
Reaction and stoma formation	0 (0%)	1 (100%)	1 (2.5%)
Total n=40	13 (32.5%)	27 (67.5%)	40

Table 4. Postoperative complications in patients of intussusception

Sr. No.	Complications	No. of patients	Percentage (%)
1.	Fever	7	17.5
2.	Ileus	3	7.5
3.	Post-operative atelectasis	2	5
4.	Wound dehiscence	1	2.5
5.	Recurrent intussusception	1	2.5
6.	Postoperative adhesions	1	2.5

(75%) cases; while 10 (25%) patients developed complications. Theses complications occurred in 8 patients from the group that presented after 24hours (developed gangrene of the gut), and two patients from the group that presented within 24 hours. Only 1 (2.5%) patient developed recurrent intussusceptions on 5th postoperative day. At re-exploration, ileoileal intussusceptions was found and reduced manually. The incidence of recurrent intussusceptions was low in comparison to internationally reported data [22-23].

5. CONCLUSION

In three years of study we found only 40 children who came to our hospital with diarrhea and the triad i.e. abdominal pain, abdominal mass and bleeding per rectum who were diagnosed as cases of intussusception the ages of occurrence was 4 months to1 year. We found that ultrasound abdomen is a best diagnostic modality with impressive accuracy rate at our setup. Most of the patient presenting after 24 hours developed gut gangrene as postoperative complication and recurrence was uncommon.

CONSENT

As per university standard guideline, participant consent have been collected and preserved by the authors

ETHICAL APPROVAL

The study was approved by ERC of SMBBMU Larkana.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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