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THE CLINICAL MANIFESTATION OF CHILDREN WITH INTUSSUSCEPTION ATTENDING AL SALAM TEACHING HOSPITAL IN MOSUL CITY

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ABSTRACT

Background: Intussusception is a life-threatening disorder characterized by strangulating bowel obstruction that can lead to gangrene and perforation. While the majority of patients arrive with the traditional triad of vomiting, abdominal pain, and rectal bleeding, a small percentage may report rectal mass prolapse, or other symptoms of underlying conditions. **Objectives:** To assess the clinical manifestation of children with intussusception in Mosul City. **Patients and methods:** This is a prospective study was performed on 36 patients were diagnosed as intussusceptions, who were admitted to Al Salam Teaching Hospital during the period from the first of January 2023 to the end of June 2024, all patients were randomly chosen. The questionnaire includes four parts, part one for sociodemographic information of the study participants. Part two for clinical manifestation of the study participants. Part three for x-ray and ultrasound findings. Part four for the received treatment. **Results:** The study includes 36 subjects with intussusception. The majority of them aged between 6-12 months (61.1%), male gender (63.9%), urban residence (66.7%), breast feeding (72.2%), and the onset of symptom with 12-24 hours. Statistically significant difference between the study subgroups regarding age, gender, residence, mode of feeding and onset of symptoms (P value <0.001). 32 patients (88.88%) were presented with screaming attack while 27 patients (75%) were presented with bloody stool, 24 patients (66.66%) were presented with vomiting, 23 patients (63.88%) were presented with fever, 19 patients (52.77%) had sausage shape mass on examination, 18 patients (50%) had abdominal distension, 17 patients (47.22%) presented with lethargy, 16 patients (44.44%) had diarrhea, 3 patients (8.33%) were had shock and 1 patient (2.7%) had prolapsed through anus. 24 (66.7%) patients had intussusception associated with gastroenteritis and 12 (33.3%) patients had intussusception associated with upper respiratory tract infection. X-ray of abdomen shows 16 patients (44.44%) had air fluid level, 9 patients (25%) had gaseous distention, 11 patients (30.56%) were inconclusive. While ultrasound shows mass in 29 patients (80.6%), and inconclusive in 7 patients (19.4%). Surgical reduction was done for 27 patients (75%), while surgical resection was done for 8 patients (22.2%), and hydrostatic reduction for only 1 patient (2.8%). The commonest type of intussusception found in the study was ileocolic among 31 patients (86.1%). No pathological lead point was founded in 27 patients (75%), while Michele's diverticulum was the commonest pathological lead points 6 patients (16.7%). **Conclusions:** Intussusception is more common in boys than in girls. Acute abdominal pain (screaming attack) and bloody stool, were the commonest presenting symptoms and the characteristic sausage shape mass is not always palpable. keeping intussusceptions in mind is very important fot every pediatrician because early diagnosis and prompt treatment improve the outcome and decrease mortality.

KEYWORDS: Intussusception, Iraq, Mosul, Presentation, Pediatrics.

1- INTRODUCTION

Intussusception is a life-threatening disorder characterized by strangulating bowel obstruction that can lead to gangrene and perforation.[1] Intussusception refers to the invasion of one intestinal segment into the next segment.[2] While the majority of patients arrive with the traditional triad of vomiting, abdominal pain, and rectal bleeding, a small percentage may report rectal mass prolapse, or other symptoms of underlying conditions.[3]

Intussusception is most commonly diagnosed in children between the ages of four months and two years, with a peak incidence occurring between four and nine months.[4] The most common site of intussusception in

pediatric patients is ileocolic, while it can also occur in cecocolic, colonocolic, jejunojejunal, or ileoileal sites. However, in pediatric patients, ileocolic is the most common site of intussusception.[5]

Furthermore, it can be characterized as either primary or secondary intussusception.[4] In contrast to secondary intussusception, which is caused by pathological lead points like the appendix, Meckel's diverticulum, intestinal polyp, intestinal lymphoma, and solid bowel lesions, primary intussusception is idiopathic and makes up 95% of cases in the pediatric age group.[6-7] Ultrasonography can confirm intussusception by identifying pathognomonic signs such the "target sign" and "sleeve sign" in cross and vertical sections, respectively.[8] Treatment and management are based on the patient's condition.[9] Non-operative reduction is undertaken in healthy children under continuous ultrasonographic monitoring. Although air enema reduction is more effective than water-soluble contrast enema reduction, both are utilized as the first-line therapy for idiopathic intussusception in babies and children following stabilization. If there are radiological contraindications, such as severe dehydration or septic shock, or if non-operative methods fail, surgical reduction is the last choice.[10-11]

The aim of the study is to assess the clinical manifestation of children with intussusception in Mosul City.

2- PATIENTS AND METHODS

A prospective study was performed on 36 patients were diagnosed as intussusceptions, who were admitted to Al Salam Teaching Hospital during the period from the first of January 2023 to the end of June 2024, all patients were randomly chosen.

Data were collected according to attached questionnaire regarding, age, gender, residence, clinical presentation, associated illness, investigation, mode of treatment, type of intussusceptions, pathological lead point, and sequel and full history was taken from their mothers. Full systematic examination and abdominal examination including digital rectal examination was done. All patients were sent for ultrasound of abdomen and Erect plain abdominal x – ray was done for 14 patients. Moreover, all the patients were given intravenous fluid to correct their dehydration and they were prepared completely for proper treatment. (laparotomy or hydrostatic).

Thirty fives Patients underwent surgical treatment (laparotomy) while in one patient, intussusception was reduced during diagnostic Barium study. No dead was recorded in this study.

Analysis of data was carried out using the available statistical package of SPSS 30 (Statistical Package for Social Sciences-version 30). Data were presented in simple measures of frequency and percentage. The significance of different percentages (qualitative data) was tested using chi-square test. Statistical significance was considered whenever the P value was less than 0.05.

3- RESULTS

The study includes 36 subjects with intussusception. The majority of them aged between 6-12 months (61.1%), male gender (63.9%), urban residence (66.7%), breast feeding (72.2%), and the onset of symptom with 12-24 hours. Statistically significant difference between the study subgroups regarding age, gender, residence, mode of feeding and onset of symptoms (P value <0.001). As shown in table 1.

Table 1: Distribution of the study population according to their demographic, mood of feeding and onset of symptom.

Variable	Number	Percent	P value
Age:			
-Less than 6 months	9	25%	**<0.001**
-6-12 months	22	61.1%	
-12-24 months	1	2.7%	
-More than 24 months	4	11.2%	
Gender:			
-Male	23	63.9%	**<0.001**
-Female	13	36.1%	
Residence:			
-Rural	24	66.7	**<0.001**
-Urban	12	33.3	
Mode of feeding:			
-Breast feeding	26	72.2%	**<0.001**
-Bottle feeding	8	22.2%	
-Ordinary diet	2	55.6%	
Onset of symptoms:			
-Less than 12 hours	4	11.1%	**<0.001**
-12-24 hours	25	69.4%	
-24-48 hours	5	13.9%	
-More than 48	2	5.6%	

Table 2 shows numbers and percentages of different clinical manifestation within the study participants. It's evident that 32 patients (88.88%) were presented with screaming attack while 27 patients (75%) were presented with bloody stool, 24 patients (66.66%) were presented with vomiting, 23 patients (63.88%) were presented with fever, 19 patients (52.77%) had sausage shape mass on examination, 18 patients (50%) had abdominal distension, 17 patients (47.22%) presented with lethargy, 16 patients (44.44%) had diarrhea, 3 patients (8.33%) were had shock, 1 patient (2.7%) had prolapsed through anus and no patients had perforation.

Table 2: Clinical manifestation of the study population.

Clinical manifestations	Number of patients	Percentage
Abdominal pain (screaming)	32	88.88%
Vomiting	24	66.66%
Bloody stool	27	75%
Fever	23	63.88%
Diarrhea	16	44.44%
Lethargy	17	47.22%
Abd. Mass (sausage shape)	19	52.77%
Abdominal distension	18	50%
Perforation	0	0%
Shock	3	8.33%
Prolapsed through the anus	1	2.7%

Figure 1 shows distribution of the study participation according to their associated medical illnesses. 24 (66.7%) patients had intussusception associated with gastroenteritis and 12 (33.3%) patients had intussusception associated with upper respiratory tract infection.

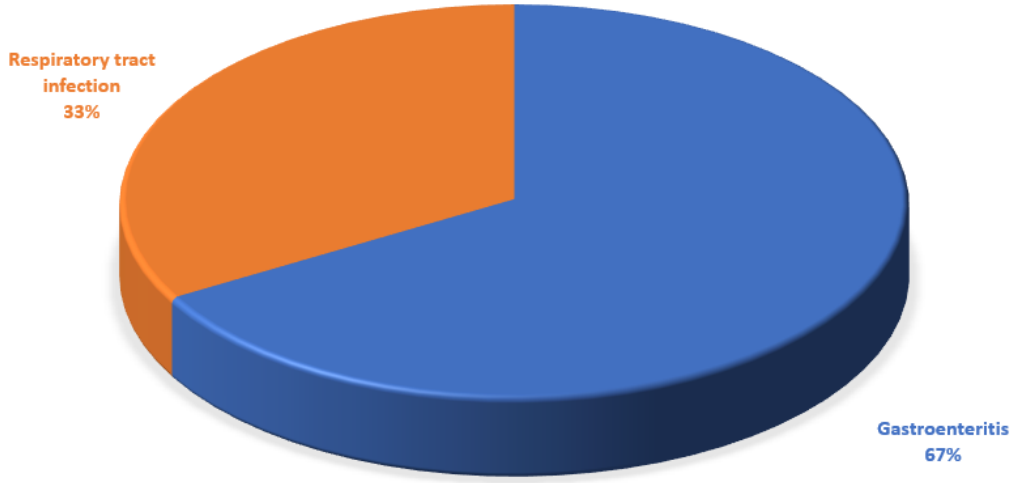

Figure 1: Distribution of the study participants according to their associated medical illnesses.

Table 3 shows distribution of the study participants according to their imaging technique. X-ray of abdomen shows 16 patients (44.44%) had air fluid level, 9 patients (25%) had gaseous distention, 11 patients (30.56%) were inconclusive. While ultrasound shows mass in 29 patients (80.6%), and inconclusive in 7 patients (19.4%).

Table 3: X-ray and ultrasound findings of the study population.

Imaging technique	Number of patients	Percentage
X-ray of the abdomen:		
-Gaseous distention	9	25%
-Air fluid level	16	44.44%
-Inconclusive	11	30.56%
Ultrasound of the abdomen:		
-Abdominal mass	29	80.6 %
-Inconclusive	7	19.4%

Table 4 shows treatment options received by the study participants. Surgical reduction was done for 27 patients (75%), while surgical resection was done for 8 patients (22.2%), and hydrostatic reduction for only 1 patient (2.8%).

Table 4: Treatment options received by the study population.

Treatment option	Number	Percent	P value
-Surgical reduction			
-Surgical resection	27	75%	**<0.001**
-Hydrostatic	8	22.2%	
reduction	1	2.8%	

Table 5 shows types of intussusceptions found among the study participants. The commonest type of intussusception found in the study was ileocolic among 31 patients (86.1%), while 3 patients had colocolic (8.3%), 2 patients with ileoileocolic (5.6%) and no patient had ileoileal intussusception.

Table 5: Types of intussusception.

Type of intussusception	Number	Percent	P value
-Ileocolic	32	86.1%	**<0.001**
-Ileoileocolic	2	5.6%	
-Colocolic	3	8.3%	
-Ileoileal	0	0%	

Figure 2 shows distribution of the study patients according to their underlying pathological leas point. It's evident that no pathological lead point was founded in 27 patients (75%), while Michele's diverticulum was the commonest pathological lead points 6 patients (16.7%), followed by lymphoma 2 patients (5.6%) and least common polyp 1 patient (2.7%).

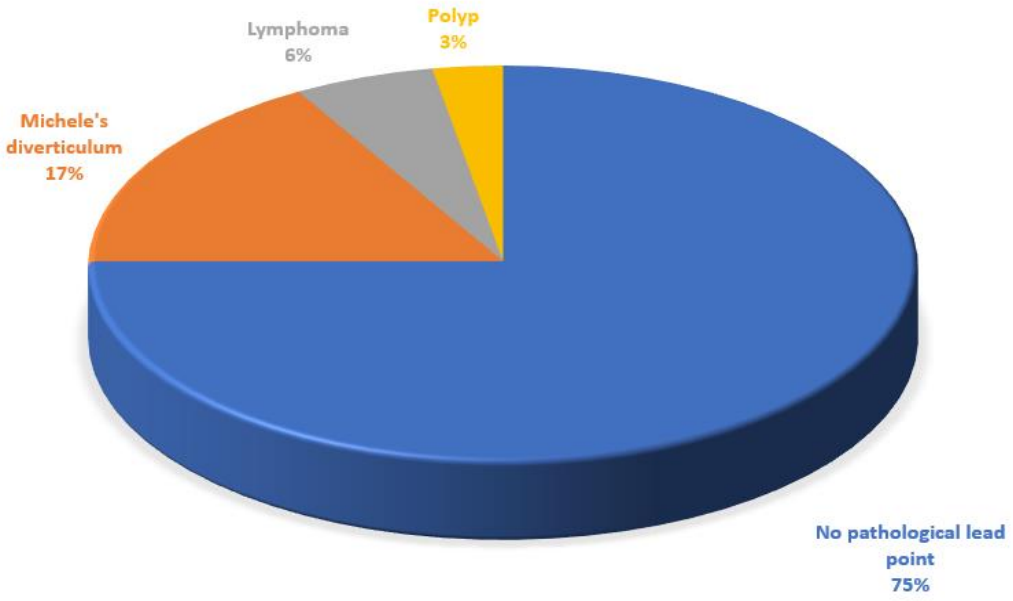

Figure 2: Distribution of the study participants according to their underlying lead point.

4- DISCUSSION

Data from our study shows that the peak age of intussusceptions was between 6-12 months which is similar to the results of Shobhit Jain and Micelle J. Haydel.[12] and the of Haider Ibraheem Khaleel and Hussein Ali Abed Ahmad.[13] The susceptibility of this age group may be explained by many factor like this age of weaning food introduction, declining level of transferred maternal immunity to her infant together with the introduction of foreign to the mouth of these infant at such age as they have learned to crawl and pick object in their hand which increase the risk of gastroenteritis.

On the other hand, males were more commonly affected than females with male to female ratio 1.5:1 this agree with Basil Hanoudi and Ishraq M. Hameed study result (1.6:1).[14] While the exact reasons for this male predominance are not fully understood, some hypotheses suggest hormonal or anatomical factors may play a role, but further research is needed to confirm these theories. Moreover, the study showed about two third of the enrolled patients were reside in rural areas which is agreement with Mohammed M.M. Al-Ani et al study finding.[15] Furthermore, about three quarter of the study participants were breast fed, while breastfeeding is associated with some types of intussusception, it might be a factor in certain cases, but other factors play a role as well. Anyhow, Kesiena et al shows comparable results.[16] Additionally, sixty nine percent of our cases were presented with in 12-24 hours after onset of symptom these results was agrees with that encountered by Tuqa Alsinan et al.[17]

Most of the patients were presented with acute abdominal pain 88% while 75% of patients were presented with red currant jelly stool, vomiting were presented in 67% of cases, while abdominal mass (sausage shape) was detected in 50% patients, fever was presented in 67% of patients. While the classic triad of abdominal pain, currant jelly stool, and a palpable abdominal mass is often cited, it's not always present in its entirety. Many cases are initially misdiagnosed as gastroenteritis due to vomiting and diarrhea. It's important to note that the presence of these symptoms can vary, and the classic triad is not always present. Intussusception is a serious condition, and prompt diagnosis and treatment are crucial to prevent complications like bowel necrosis and perforation. These results are similar to that founded by P.B. Ooko et al.[18] and Charu Tiwari et al.[19]

Regarding associated medical illnesses, two third of patients enrolled to this study had acute gastroenteritis and one third had upper respiratory tract infection. This

indicates a strong association between these illnesses and the occurrence of intussusception in the studied population, as these infections can cause swelling of the lymph tissue in the intestine, potentially leading to intussusception. Consistent findings reported by Shobhit Jain et al.[12]

Ultrasound was shown to be sensitive in about 81% of the studied sample in contrast to x-ray which was sensitive in about 70%. This is meant that ultrasound is the preferred imaging modality for diagnosing intussusception due to its higher sensitivity, lack of radiation, and relatively easy accessibility. Arthina Dadlani showed comparable findings.[20]

There are two method of treatment open surgical and hydrostatic reduction, open surgical reduction done for three-fourths of patients while the remaining one fourth had surgical resection, these results are parallel to Yohannis Derbew Molla et al study findings.[21]

The study found that the commonest site of intussusception was ileocolic in 86%, while other types like ileoileal or colocolic intussusception exist, were less frequent. Priscilla Marsicovetere et al showed consistent results.[22] Furthermore, 77% of the children enrolled in this study had idiopathic cause of intussusception while Michele's diverticulum was the commonest pathological lead points which is comparable to T. Charles et al study's result.[23]

5- CONCLUSIONS

Intussusception is more common in boys than in girls. Acute abdominal pain (screaming attack) and bloody stool, were the commonest presenting symptoms and the characteristic sausage shape mass is not always palpable. Ultrasound of abdomen is a useful method in the diagnosis. Meckel's diverticulum is most common underlying pathology. Every pediatrician should keep intussusceptions in his/her mind because early diagnosis and prompt treatment improve the outcome and decrease mortality.

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