



## Research Article

# Demographic Study of Intussusception in Patients Referring to Amir Al-Mo'menin Hospital of Zabol City from 2003 to 2013

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### Abstract

Intussusception is the entrance of some part of the intestine into its neighboring lumen and creating a state of obstruction in the intestine which is the most common abdominal emergency and the second common cause of intestinal obstruction in children under two years of age. The aim of this study was demographic study of intussusception in patients referring to Amir Al-Mo'menin Hospital in the city of Zabol from 2003 to 2013.

### Methods

This cross-sectional study used descriptive method to investigate demographic prevalence of intestinal intussusception from 2003 to 2013 in Amir Al-Mo'menin Hospital of Zabol City. The study was conducted by investigating the files of patients affected by intussusception in Al-Mo'menin Hospital of Zabol City between 2003-2013 during which 40 patients were examined based on manual calculations regarding variables of age, gender, comorbidities, main complaint of the patients, visiting season, etc.

### Results

Results showed that the mean age of patients was  $23.61 \pm 28.71$  months and the most age groups were under one year of age (42.5%). 25 patients were male (62.5%) and 15 patients were female (37.2%). 70% of patients mentioned no comorbidities. The main complaint of about 50% of patients was abdominal pain and the least complaints were other symptoms (5%). Most patients referred in summer (40%) and the least visits were made in winter (10%). 80% of patients had no viral disease. About 90% of patients had no jelly-like stool. 26 patients (65%) had medical treatment and 14 patients (35%) had surgery treatment. The highest prevalence of intussusception in patients regarding the lesion was ileocolic while the lowest prevalence was ileoileal (10%).

### Conclusion

Results showed that the incidence of intussusception is consistent with most studies in terms of gender, age, main complaint, and therapies. It is then necessary to pay more attention to the prevention of risk factors of intussusception in children aged less than one year in male patients and make continued efforts to further educate various groups such that we can keep abreast of scientific, empirical advances in other parts of the world in the near future

and offer more and better services to the patients and especially children, this innocent group.

### Keywords

Demographic characteristics; Prevalence; Intussusception

### Introduction

Intussusception is the most common cause of acute intestinal obstruction in infants where the ileum is usually intussuscepted through the ileocecal valve into the cecum and causes obstruction [1].

Intussusception is entrance of part of the intestine into its adjacent lumen and creation of obstruction in the intestine. The disease is reported in patients of all ages and even during fetal life, which later leads to non-formation of intestine. Albeit, it is the most common abdominal emergency and the second common cause of intestinal obstruction in children under the age of two years [2,3].

More than ninety percent of these cases have no pathological cause (such as polyps, lymphoma, or Meckel's diverticulum). Spontaneous cases may be due to secondary enlargement of the lymph tissue of the intestine as a result of viral infection, and there is a positive relationship with adenovirus infections. The outbreak of this disease is in mid-summer and mid-winter and in most cases, Pierre swollen plaques play a stimulating role. There are mechanical factors such as Meckel's diverticulum, polyps, wall hematomas (HSP schoenleinii), and intestinal lymphoma whose prevalence is higher in patients older than one year of age. Male to female affection ratio is 3: 1. Highest prevalence is among children of 5-9 years old and 80% of patients are less than 2 years old. Only in some cases, especially in people over 5 years old, there is an underlying lesion [4,5].

The consequence of intussusception is obstruction. In addition, walls in close contact with each other are affected by inflammation, edema, and ultimately reduced blood flow. Hypoperfusion, perforation, inflammation of the peritoneum, and shock are of serious complications of intussusception [6].

Classic indication of intussusception is a child of usually between 3 to 12 months which suddenly experiences colic abdominal pain. Specific behavior includes screaming and pulling the knees to the chest. These events include agony with intervals of normal status. During the initial stage, vomiting usually occurs; the child has normal stool; a sausage-like mass in the right upper quadrant may be felt; jelly-like stool (a mixture of blood and mucus) occurs within a few hours, and the abdomen becomes sensitive and flatulent. Sometimes dark and sometimes bright red blood is excreted leading to anemia and shock [6]. The main classic symptoms of this illness include pain, touch of sausage-like mass in the abdomen, and jelly-like stool in 15 to 20 percent of children [7,8].

Today, diagnosis is based on para-clinical measures such as plain abdominal radiography, ultrasound, Single Contrast Barium Enema, or CT scanning. Delay in diagnosis and proper treatment can cause intestine ischemia, gangrene, perforation, peritonitis, shock, and even death within a few days [9].

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Treatment should be done within 12-24 hours. Urgent treatment includes intravenous fluids, barium enema, and surgical treatment [6].

Timely and accurate diagnosis in infants affected by intussusception and their urgent referral lead to early treatment and reduced mortality. Hence, we first need to determine its prevalence in the region to take the necessary measures accordingly [6]. We conducted this study to evaluate the demographic distribution of intussusception among children hospitalized in Amir Al-Mo'menin hospital (AS).

### Materials and Methods

In this cross sectional-descriptive study, we investigated the files of all children hospitalized in Amir Al-Mo'menin Hospital of Zabol with the diagnosis of intussusception during 2003-2013. Information such as age, gender, main complaint, comorbid disease, viral disease, jelly stool, lesion, and treatment type of the patients were extracted. Files containing incomplete information was excluded. The obtained data were analyzed using SPSS 22 and other statistical analyses such as standard deviation (SD).

### Results

In this study, after studying the 10-year information (2003-2013) of the Pediatric Ward of Amir Al-Mo'menin (AS) Hospital of Zabol City, 40 patients diagnosed with intussusception were studied. The studied patients had an average age of 67.13 (minimum of 2 months and maximum of 324 months). Among patients, 25 were male (62.5%) and 15 were female (37.5%). Among the 40 studied patients, 12 (30%) suffered comorbid disease, and 28 (70%) did not have comorbidities. Out these 12 patients, 3 suffered upper respiratory infection (25%), 3 (25%) suffered gastrointestinal inflammation, 2 (16.6 %) had a previous history of intestinal intussusception, 1 (8.3%) had a

history of previous surgery on right inguinal hernia, and 1 (8.3%) had a tumor on the lining of the small intestine. Highest incidence of intestinal intussusception in patients was in summer (40%) and the least incidence was in winter (10%). Frequency of other variables such as the main complaint, lesion, treatment, jelly-like feces, and viral disease can be seen in Table 1.

### Discussion

Intussusception is a common cause of acute intestinal obstruction in infants and young children. The prevalence of this disease in developed countries is 0.5 to 4.3 cases per 1,000 births and is reported by the World Health Organization as 1.2% to 66% in every 1,000 infants under one year old in South America and 24% in Venezuela and 35% in Brazil (10). In the current study of 40 cases during 2003 to 2013, prevalence of the disease was higher among boys (62.5%). Results of this study comply with most researches [11,12]. A study was conducted by Chen et al. in 2007 in Taiwan for epidemiologic study of intussusception. In a study of 7541 patients, the male to female intussusception ratio was raised from 1.31 in the first year of life to 2.52 in year nine of life [11].

In a prospective observational study, Wayne Miller conducted several clinical criteria for risk classification of children prone to intussusception. The study concluded that the age of above 5 months, male gender, and drowsiness are 3 important clinical factors predicting intussusception [13].

Another study was conducted by Pezhmanmhr et al. [12] during 2009 to 2010 to assess the factors predictive of barium enema success in intussusception reduction in Al-Zahra Hospital of Isfahan. Of the 45 patients studied, 10 were female and 35 were male.

In a study conducted by Tan et al. [14] in Singapore, the prevalence of intussusception was studied up to two years after vaccination

**Table 1:** Frequency of other variables such as the main complaint, lesion, treatment, jelly-like faeces, and viral disease.

		Frequency	Percentage
Season	Spring	12	30%
	Summer	16	40%
	Autumn	8	20%
	Winter	4	10%
	Under 1 year old	17	42.5 %
	1-2 years old	5	12.5 %
	2-3 years old	9	22.5 %
	Above 3 years old	9	22.5%
	Male	25	62.5%
	Female	15	37.5 %
	Positive	12	30%
	Negative	28	70%
	Abdominal pain	20	50%
	Restlessness	2	5%
	Diarrhea	7	17.5 %
	Vomit	7	17.5 %
	Other cases	4	10%
	positive	8	20%
	Negative	32	80%
	Positive	4	10%
	Negative	36	90%
	Pharmaceutical	26	65%
	Surgery	14	35%
	Ileo-colic	27	67.5%
	Ileo-cecocolic	9	22.5 %
	Ileo-ileal	4	10%

against rotavirus. The prevalence of intussusception in 2005, 2006, and 2007 were respectively reported as 39.9, 26.4, and 35.6 per hundred thousand people. Hence, the prevalence of intussusception had not increased after vaccination.

In 2006, Davoodi et al. [15] conducted a study to evaluate the predictive value of clinical and radiological findings in early diagnosis of intussusception in Hormozgan. From the total of 160 patients, 63.1% were male and 36.9% were female.

Regarding age distribution, children less than one year of age had the highest infection rates (42.5%) which are consistent with other studies [16], but in recent years, intussusception outbreaks have been reported at earlier ages following rotavirus vaccination [17].

The most common symptom or complaint of patients was abdominal pain (50%). Abdominal pain has been reported in many papers as the most common complaint of patients [2,18].

The highest incidence of the disease was in summer (40%) which is consistent with the studies conducted by Chen et al. [11] such that the outbreaks are higher in the warmer months of the year compared to the cold months. There are also reports indicating the relationship between seasonal changes and the outbreak of intussusception which is the same as the high-prevalence season of gastrointestinal inflammation [18,19] and was also observed in this study. Gastrointestinal inflammation is more common during warm seasons and hence, intussusception has higher prevalence, too. Regarding the presence or absence of jelly stools, 10% of patients had jelly stool which was consistent with the study of Yamamoto et al. [8]. Most patients (about 65%) experienced medical treatment.

## Conclusion

Results showed that the incidence of intussusception is consistent with most studies in terms of gender, age, main complaint, and therapies. It is then necessary to pay more attention to the prevention of risk factors of intussusception in children aged less than one year in male patients and make continued efforts to further educate various groups such that we can keep abreast of scientific, empirical advances in other parts of the world in the near future and offer more and better services to the patients and especially children, this innocent group.

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