

Pattern of Intussusceptions on Infants and Children in Dr. Hasan Sadikin General Hospital Bandung from 2009 to 2011

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Abstract

Background: Intussusception is the most frequent cause of acute intestinal obstruction in infants and toddlers. Incidence was reported at 1.5 to 4 cases for every 1000 live birth. In Dr. Hasan Sadikin General Hospital, Bandung, 55 cases were reported between 2005–2008. This study aimed to identify the characteristics of intussusception patients at Department of Pediatric Surgery Dr. Hasan Sadikin General Hospital, Bandung periode 2009–2011.

Methods: This was a retrospective descriptive study by using medical records of intussusceptions patient's from January 2009 to December 2011. The information collected were age, gender, chief complaint, signs and symptoms, onset of symptoms, nutritional status, history of previous infection, type of intussusceptions, pathologic lead point, and complications; including bowel necrosis and sepsis. The collected data was analyzed and presented as percentages shown in tables

Results: There were 32 cases found, of which 84.4% affected well-nourished infants <1 year. Male was predominant (2:1). Bloody mucous stool was the major chief complaint (84.4%). Accompanying symptoms were pain due to colic, vomiting, bloating, and abdominal mass. Eleven patients were found with the onset of symptoms at ≤24 hours. Thirty-one percent (31%) cases were reported with the history of respiratory tract infection and 44% cases with the history of diarrhea. Most common type found was ileocolic. Pathologic lead point was only found in a single case.

Conclusions: Intussusception cases in Dr. Hasan Sadikin General Hospital are decreasing, with the characteristics mainly affect well-nourished children, under 1 year old, predominantly male. The prominent chief complaint is bloody mucous stool, whereas ileocolic is the most common type with history of infection.

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Introduction

Intussusception is invaginated condition of a part of intestines into a more distal part.¹⁻³ This condition is the most common cause for acute intestinal obstruction in infants and children.¹⁻⁴ If not treated immediately, intussusceptions can be potentially lethal; because it can obstruct arterial blood supply to the intestines, and cause necrosis and perforation of the intestines.^{2,3}

The incidence of acute intussusceptions on infants and children is reported varying; between 1.5 to 4 cases for every 1000 live births.^{1,5} Data on the acute intussusceptions

incidence on infants and children in developing countries are still very few. According to Bines and Ivanoff², van Heek et al. reported a study in Indonesia (1999) revealing that the number of intussusceptions patients each year was at 17.2 for every 1000 live births. In Dr. Hasan Sadikin General Hospital, Bandung, Indriasari (2008) reported that 55 intussusceptions cases were treated in the period of 2005–2008.

In developing countries; including Indonesia, it is common to find lack of continuous and updated data. Therefore, it is not possible to know the most recent characteristics and description of intussusception patients. A previous study

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about intussusceptions patients profile was performed in the Division of Pediatric Surgery, Dr. Hasan Sadikin General Hospital, Bandung in the period of 2005–2008. Nevertheless, for the period of 2009 to recent times, there had not been any further studies about the characteristics of intussusception patients. With that background, this study aimed to see the characteristics of intussusceptions patients in the Division of Pediatric Surgery, Dr. Hasan Sadikin General Hospital, Bandung, in the period of January 2009–December 2011.

Methods

The methodology used in this study was retrospective descriptive on intussusceptions cases treated by the Division of Pediatric Surgery, Dr. Hasan Sadikin General Hospital, Bandung in the period of January 2009–December 2011. The population of this study was all patients diagnosed with intussusceptions treated in the Division. Secondary data were obtained from the medical records; including age, gender, chief complaint, sign and symptoms, onset of symptoms, nutritional status, history of previous infection, type of intussusceptions, pathologic lead point (PLP), and complications such as bowel necrosis and sepsis. Incomplete medical record data of intussusceptions patients and those whose chief complaints were a continuation of the previous intussusceptions surgery were excluded from this study.

Data collection was carried out at Dr. Hasan Sadikin General Hospital, Bandung in the months of August–November 2012. The data obtained from these medical records were processed. Their frequency and percentage of each characteristic based on age, gender, chief complaint, other accompanying signs and symptoms, onset of symptoms, nutritional status, history of previous infections, type of intussusceptions, pathologic lead points and complications, were calculated. All calculations were executed using SPSS 17.0 and Microsoft Office Excel 2007. The results were then presented in tables.

Results

In the period between January 2009–December 2011, 47 intussusceptions cases were treated in Dr. Hasan Sadikin General Hospital, Bandung. From all these cases, 15 cases (31.9%) had to be excluded because the patients coming had chief complaints of

Table 1 Distribution of Intussusception Patients in RSHS Bandung in the Period of January 2009 – December 2011

	Frequency
Gender	
Male	22
Female	10
Age	
<1 year old	27
1-2 year old	1
>2 year old	4
Chief Complaints	
Mucous bloody stool	27
Vomiting	2
Bloating	2
Colicky abdominal pain	1
Comorbidities	
Colicky abdominal pain	31
Vomiting	32
Bloating	23
Abdominal mass	8
Onset of symptoms	
≤24 hours	11
>24 hours	21
Nutritional status	
Good	27
Bad	5
History of previous infections	
URTI	10
Diarrhea	14
Type of intussusception	
Ileocolic	23
Ileocecal	2
Ileoileal	1
Ileocolocolic	5
Jejunojejunal	1
Pathologic lead point	
Found (+)	1
Not found (-)	31
Necrosis	14
Sepsis	5

Table 2 Distribution of Pathologic Lead Point (PLP) According to Age

	Age ≤ 2 years old		Age > 2 years old	
	Frequency	(%)	Frequency	(%)
PLP(+)	0	0	1	3.1
PLP(-)	28	87.5	3	9.4

continuing previous intussusceptions surgery or incomplete data. Therefore, the subjects appropriate to be analyzed were 32 cases (68.1%).

Twenty eight (28) patients (87.5%) under 2 years-old had no PLP, whereas in 4 patients older than 2 years-old 1 PLP was found in a 10 year old patient (Table 2).

Table 1 show that in 32 cases fulfilling inclusion criteria, male was the predominant gender. The age range of intussusceptions patients were from 3 months old to 10 years old, whereas the most afflicted age group is 1 year, peaked at 8 months old.

The most common chief complaint of the patients was mucous bloody stool. Other comorbidities included colicky abdominal pain, vomiting, bloating, and abdominal mass. Vomiting happened in all patients. Patients who came to Dr. Hasan Sadikin General Hospital, Bandung in this study had their chief complaints to be appearing within 1 hour to 14 days. Most of them came more than 24 hours after the onset of symptom.

Most patients were well nourished; only 10/32 patients had history of acute respiratory tract infection, while gastrointestinal infection (diarrhea) occurred in 14/32. The type of intussusceptions most commonly found in the surgery was the ileocolic type, while the others were ileocecal, ileoileal, ileocolocolic and jejunojejunal.

Pathologic leading point in this study was revealed only in 1 case as multiple jejunal polyps; happening in >2 year-old patients, while the rest had no PLP. (Table 2)

Discussion

In this study, most intussusception patients in Dr. Hasan Sadikin General Hospital, Bandung were male, with 2:1 ratio between male and female. This was in accordance with those saying that previous study on intussusceptions was found more in males. Aside from that, most studies revealed a ratio between male and female with 2:1 or 3:2.^{1,2,5}

Most of the cases occurred in less than one-year-old patients; with the peak at 8 months

of age. This was in accordance with several studies stating that intussusceptions cases happened most commonly in children under 1 year old. According to a study in Toronto⁵, 75% of intussusceptions cases occurred in children under 2 years old, whereas more than 40% occurred between the age of 3 to 9 months. While Cusick and Woodward¹ stated that 50% of intussusceptions cases occurred between 3 and 10 months old and 65% occurred before 1 year old. Indriasari (2008) reported that 77% of cases occurred to children aged 1 year old and less, with the peak at 1 year old (20%).

As stated by Ein and Daneman⁵, 85% of classic symptoms of intussusceptions patients are sudden cholic abdominal pain which is severe and episodic. Ravitch and Young in Ein and Daneman⁵ also revealed vomiting as the most frequent early symptom on intussusception cases with 44%. Both Toronto serials discovered that vomiting is the second most common symptom after pain, with 80% within 1959–1968 and 48% within 1985–1990. The mass or protrusion in stomach was reported at 65% of cases. However, according to the Toronto serial of 1997, the percentage decreased to 22% without any clear reasons. It is different from the case with rectal bleeding which was reported with 60% in Toronto serial cases in the year of 1968 and with 43% in 1997. According to Ravitch in Ein and Daneman⁵, rectal bleeding is a more common sign than abdominal mass (95% in babies, 65% in older children).

Cusick and Woodward¹ stated that the triad of classic signs and symptoms (abdominal pain, vomiting, and rectal bleeding) are only complete on one-third of the patients. While a study conducted by Ozguner et al.⁶ stated that only a fifth or 20% of the patients experienced the classical triad symptoms. However, if waited for all classic signs and symptoms to appear before making a diagnosis, then it would be too late.⁵ In this study, the most common complaint was mucous bloody stool in 27 patients. Most patients had other classic comorbidities such as colicky abdominal pain in 31 patients and vomiting in all children. Abdominal mass only occurred in 8 patients.

Therefore, most cases showed 3 classic signs and symptoms of intussusception (abdominal pain, vomiting, and rectal bleeding) in 21/32 of the child patients. This was higher than another study stating that the classical signs and symptoms of the triad appeared completely only in one-third or 30% of the cases. This might be due to the patients who came to Dr. Hasan Sadikin General Hospital, Bandung were too late to be diagnosed with intussusceptions. In addition, in this study, the emergence of mucous bloody stool was the most common chief complaint when the patients came. This occurred because mucus and blood are the most visible change appearing for the parents, which became the main reason for the parents to bring their children for treatment.

The onset of symptoms on intussusceptions patients is related with the degree of morbidity and mortality. The average length of time before any combination of the signs and symptoms leads to a diagnosis is about 24 hours.⁵ Ravitch and McCune in Janik⁷ clearly explained the incidence of abdominal gangrene and mortality rate of intussusceptions increased in 24 hours after onset of symptoms, with the peak at 72 hours. In developing countries, patients mostly come 24 hours after the onset of symptoms and this is related to the high mortality rate.² Ravitch in Ein and Daneman⁵ also estimated that ischemic process which is not only undiagnosed, but also unhandled within 2 to 5 days would be fatal. This lateness may bring serious complications such as necrosis and sepsis. In this study, most of the patients, 21/32, came later than 24 hours after the first onset of the symptoms. Out of all patients, 14 experienced necrosis while 5 experienced sepsis.

Although nutritional status have not been much reported in Asia, the All Indian Institute of Medical Science, New Delhi, reported that all children who came with intussusceptions had normal nutritional status. In Medan, Indonesia, studies also reported that 87% of the intussusceptions patients had good nutritional status.² In the year of 1905, Hirschprung in Ein and Daneman⁵ reported that he never observed intussusceptions cases in malnourished children. The well-nourished assumption of Hirschprung means that most of those afflicted with intussusceptions have higher body weight percentile.⁵ In this study, most patients were well nourished while the rest of them, 5 patients were malnourished.

Some studies explained that the presence of history of acute respiratory tract infection or gastroenteritis infection often plays a role in

intussusceptions.^{2,4,5,8} Both acute respiratory tract infection and gastroenteritis infection can cause lymphatic tissue enlargement.^{4,5} Ignacio and Fallat⁴ described that most idiopathic intussusception cases occurred to children between the age of 6 to 36 months and are very susceptible to viral infection. This study discovered that out of 32 patients, only 10 had history of acute respiratory infection, whereas diarrhea history only occurred in 14 cases.

In this study, the most frequently found type of intussusceptions during surgery was ileocolic intussusception. This was in accordance with the research stating that majority of intussusceptions cases in children was ileocolic.^{4,5,9} According to Cserni et al.⁸, more than 90% of intussusceptions cases were ileocolic. Aside of that, Arnold et al.¹⁰ also stated that most of intussusception cases occurring in the age of less than 2 years old were ileocolic.

Only one case of PLP was found in this case as multiple jejunum polyp. This is in accordance with other studies stating that the etiology of intussusceptions on most infants is unclear or idiopathic.^{8,11} In a study conducted by Janik⁷, out of 20 children, only 3 who had their intussusceptions resected, and one of them was due to multiple jejunal polyp. This is similar to the case with PLP in this study with multiple jejunal polyps.

From this study, it can be concluded that intussusceptions patients treated in the Division of Pediatric Surgery, Department of Surgery, Dr. Hasan Sadikin General Hospital, Bandung in the period January 2009–December 2011 were decreasing. The characteristic mostly found was in the age of less than 1 year, with male predominance of 2:1 ratio. Although most patients were well nourished, there was previous history of infections in either the respiratory tract or digestive tract. The most common type of intussusceptions was ileocolic. Pathologic lead point was discovered in 1 case to more than 2 year-old patients. The most common complaint was mucous bloody stool; some patients experienced sepsis and in surgical findings, there were necrosis of the intestines. The limitations of this study were incomplete data from medical records and unspecified diagnostic method for the intussusceptions.

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