



Ileocolic Intussusception in Radiological Imaging: A Case Report

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Abstract

Ileocolic intussusception is an abdominal emergency in infants and toddlers that requires immediate diagnosis and treatment.

Aims: The aim of this case report is to explain how cases of ileocolic intussusception can be diagnosed and treated quickly.

Methodology: This research is a descriptive study with a case report design on a patient.

Results: A baby girl, 3 months old, weighing 6 kg, was referred to the emergency unit with symptoms of vomiting, jelly-red stools, excessive crying, but not bloating. There was no history of fever, trauma, or previous eating. Found of decreased intestinal gas on plain abdominal radiographs, and the appearance of a target sign also known as the doughnut sign and sausage shape on ultrasound examination. Ultrasound-guided hydrostatic reduction has been attempted as a first-line non-operative treatment but failed. The results of the operation it was finally discovered that the cause of the ileocolic intussusception was a polyp.

Scientific Novelty: Reliability of ultrasound in finding and diagnosing ileocolic intussusception in infants.

Conclusion: Ultrasonography is the gold standard in finding and diagnosing ileocolic intussusception. Ultrasound-guided hydrostatic reduction is the first non-operative treatment before surgery becomes an option. Unsuccessful ultrasound-guided hydrostatic reduction may indicate that the ileocolic intussusception is caused by a polyp.

Keywords: Ileocolic Intussusception, Polyp, Ultrasound-guided hydrostatic reduction, Radiological Imaging.

Received: September 19, 2023

Revised: October 11, 2023

Accepted: December 20, 2023

Published: December 30, 2023

Introduction

Ileocolic intussusception is one of the most common abdominal emergencies in infants and toddlers who come to the emergency department [1]. The common clinical manifestations are vomiting, bloody stools (red currant jelly stool), abdominal pain, and excessive crying. The classic triad of ileocolic intussusception is vomiting, abdominal pain, and blood in the stool [2]. Approximately 90% of cases of intussusception in children arise from unknown causes. Known causes may include: Infection, anatomic factors, motility changes, Meckel's diverticulum, duplication, polyps, appendicitis, hyperplasia of Peyer's patch, and Idiopathic [1]. Intussusception occurs secondary to pathological lead points. The main types of pathological lead points are Meckel diverticulum, duplication cysts, and intestinal polyps [3].

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DOI: <https://doi.org/10.57125/FEM.2023.12.30.06>

Research Problem

About 90% of the causes of intussusception are unknown. Known causes include infection factors, anatomical changes, motility changes, Meckel's diverticulum, Duplication, Polyps, Appendicitis, Hyperplasia of Peyer's patches, and Idiopathic [4].

Research Focus

Radiological examination is one of the gold standards for finding cases of Ileocolic Intussusception and treating it

Research Aim

The aim of this case report is to explain how a case of ileocolic intussusception can be diagnosed and treated quickly through radiological imaging.

Research Questions

How do radiologists diagnose and treat cases of ileocolic intussusception in infants?

Case Presentation

Baby girl, 3 months old, 6 kg, was referred to the emergency department of RSUD Dr. Soetomo with red currant jelly stool for 1 day before admission. There was no bloated. She had vomitus 5-7 times a day, yellowish, approximately 10-15 ml every vomit, and excessive crying. There was no history of fever, trauma, or eating before. From the blood test result, there was an increase in WBC: 12.880 U/L. The hemoglobin is still normal: 15,4 g/dl. The patient was referred to the radiology unit for further examination and diagnosis. The stages and results of the examination are as follows:

1. Physical examination (Figure 1)

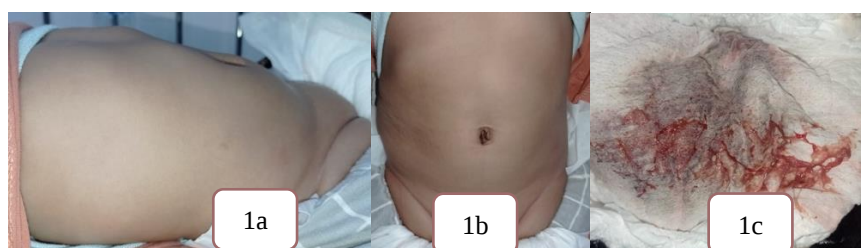


Figure 1. From a physical examination of the abdomen, there was no distention, feature of bowel contour, or peristaltic movement

There was no lump (fig.1a, 1b), the rectal toucher, there was no fecal, only blood and mucus (fig.1c).

2. Radiological examination with plain abdominal X-Ray (Figure 1)

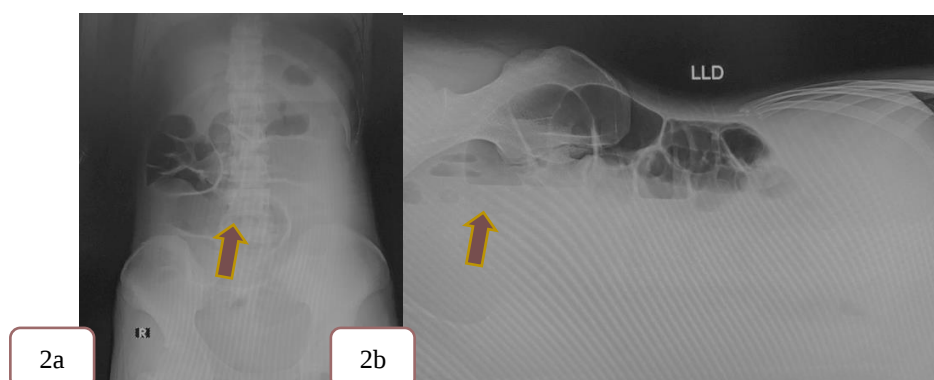


Figure 2. Decreased bowel gas left lumbar-pelvic region: suspected intussusception (X-Ray)

Plain abdominal radiography X-Ray AP (fig.2a) and LLD projection (fig. 2b), there was a decrease of bowel gas at the left lumbar region to the pelvic cavity, suspected of intussusception at that region with obstruction partial.

3. Radiological examination with ultrasound (Figure 3)

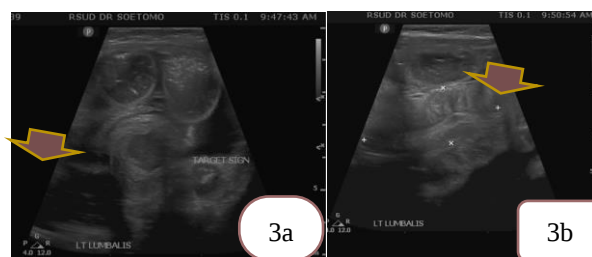


Figure 3. Following ultrasonography examination

There was a target sign also known as the doughnut sign (fig.3a) and sausage sign (fig. 3b) at the left lumbar region suspected an intussusception at the descending colon. This is an emergency condition in infant and requires immediate treatment.

4. Hydrostatic reduction under ultrasound guidance by a radiologist (figure 4)

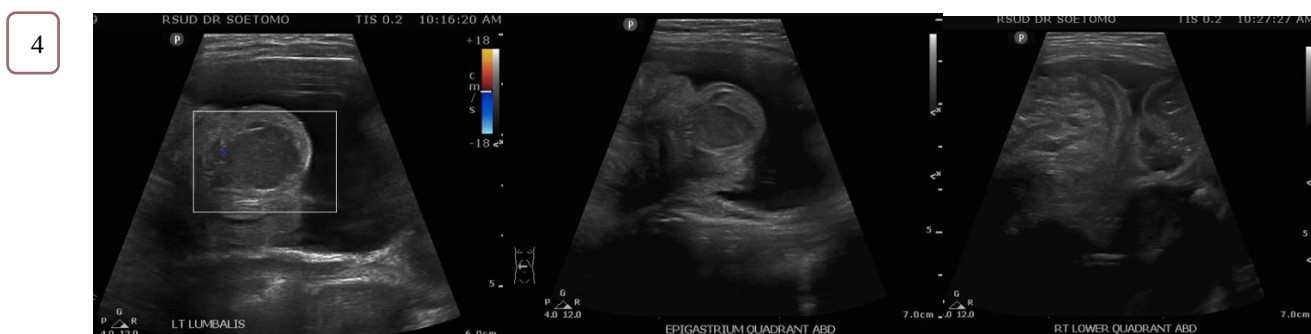


Figure 4. Hydrostatic reduction as first aid for infants as a non-invasive treatment

Management of this patient was hydrostatic reduction with ultrasound guidance 3 times but was unsuccessful (fig. 4). This poor baby girl ended up having to undergo invasive surgery to help her.

5. Results after surgery



Figure 5. Surgical resection of ileocolic intussusception with intraluminal mass

The results of the operation we got that information, there was ileocolic intussusception approximately 40 cm from descending colon to the ileocaecal junction and also single mass intraluminal at ileum with diameter +/- 2 cm, bluish in color, chewy consistency (fig.5a). Ileum resection +/- 3 cm and end-to-end anastomoses were performed due to this case too (fig.5b).

Discussion

Intussusception is an emergency form of occlusive-strangulation intestinal obstruction in infants and requires immediate diagnosis and treatment to avoid intestinal ischemia and necrosis [5]. Intussusception is diagnosed quickly based on the results of a physical examination and radiological examination. On the results of the physical examination, clinical symptoms found in baby girl, 3 months old fulfill the classic triad of ileocolic intussusception, namely red currant jelly stools, vomiting 5-7 times a day, and excessive crying [2]. In radiological imaging

examinations, Decreased intestinal gas on plain abdominal radiographs is a sign of ileocolic intussusception [6], [7]. Ultrasound is the main examination which is the gold standard for diagnosing intussusception with visible images of a target or doughnut sign, or a "sausage-shaped" mass which confirms the diagnosis [8], [7]. Intussusception is a surgical emergency that commonly occurs in children, especially in infants, with treatment which can be non-operative or operative [9]. If facilities and a radiologist are available, non-operative reduction with Ultrasound-guided hydrostatic reduction is the first line of treatment; if this fails, operative management is the next logical step [5].

Ultrasound-guided hydrostatic reduction is a safe option and the gold standard of non-invasive treatment for infants and children with a high success rate in the diagnosis and treatment of ileocolic intussusception in both early and recurrent episodes [10], [2]. Ultrasound-guided hydrostatic reduction is the most effective non-operative treatment modality for this condition, has a high success rate, is simple and safe because the entire procedure is performed with real-time ultrasound without the danger of radiation to infants and children, time-saving, cost-effective, prevents radiation exposure in children, and causes almost no complications and minimal hospitalization time [11], [12], [13]. Ultrasound-guided hydrostatic reduction is performed by a radiologist using a saline solution or saline enema at body temperature with a pressure of 100-120 cm H₂O per rectum and waiting until the intussusceptum decreases or retrogrades. Movement stops for up to 15 minutes [5]. Hydrostatic reduction for 15 minutes using an ultrasound-guided saline enema can successfully treat intussusception [14], especially at the onset and between 1 month and 3 years of age [15]. The case of this baby girl, 3 months old, has been subjected to hydrostatic reduction with ultrasound guides 3 times but failed. During the surgery, it turned out that the cause of the intussusception was a polyp. This incident is following the results of research that found that hydrostatic reduction with ultrasound guidance that was not successful was subsequently treated with open surgery and found that the cause of intussusception was polyps and lymphoma [15] which are commonly found in children aged over 2 years [3].

Limitations

Ultrasound examination is the gold standard for diagnosing ileocolic intussusception quickly and accurately, but in this case of a 3-month-old baby girl it was not possible to know that polyps were the cause. Polyps are generally the cause of cases of ileocolic intussusception in children over 2 years of age and are rarely found in babies. Radiological examination to clearly see the polyps that cause ileocolic intussusception in babies requires further research while still paying attention to the minimal risk of radiation hazards.

Conclusions

Ileocolic intussusception is an emergency condition in infants and that requires immediate diagnosis and treatment in the emergency department. Radiological examination is the gold standard in diagnosing this case with the finding of decreased intestinal gas on plain abdominal radiographs, and the appearance of a target sign also known as the doughnut sign and sausage shape on ultrasound examination. If facilities and radiologists are available, ultrasound-guided hydrostatic reduction is the safest non-invasive treatment for these cases with a high success rate, fast, very minimal risk of complications, and free from radiation hazards. Our ultrasound-guided hydrostatic reduction failed and from the results of the operation it was finally discovered that the cause of the ileocolic intussusception was a polyp.

Declarations

Author contributions

All authors have sufficiently contributed to the study and agreed with the results and conclusions.

Declaration of interest

No conflict of interest is declared by authors.

Data sharing statement

Data supporting the findings and conclusions are available upon request from the corresponding author.

Data Availability Statement

- Data sharing not applicable: No new data were created or analyzed in this study. Data sharing is not applicable to this article.

Funding

Funding information is not available.

Institutional Review Board Statement

While performing the work, the norms of conducting research in the field of biology and medicine were observed: the Vancouver Conventions on Biomedical Research (1979, 1994).

This study received ethical approval from the Hospital Health Research Ethics Committee. Dr. Soetomo Surabaya with the number Letter of Exemption Ref.No: 1056/LOE/301.4.2/IX/2022.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

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