



A Case of Appendicitis in Children: Neglected Case with Atypical Symptoms

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ABSTRACT

Background. Appendicitis is a condition where there is inflammation of the appendix due to bacterial infection, blockage of the appendix and others. Appendicitis rarely occurs in children due to the difference between anatomy of appendix in children and adult, but if it does occur in children, it usually has atypical symptoms so it is often under-diagnosed. Because of atypical symptoms, child patients often get wrong medication and become worsen overtime.

Case Presentation. A nine-year old child was admitted to the Emergency Room because of abdominal pain since two weeks before entering the hospital. She also had constipation, nausea and vomiting. She also had decreased appetite. She had been taken by her parents to midwifery, but her condition was not better, even worsen. This case shows the condition of appendicitis in children that's rarely happened and often be neglected.

Conclusion. Appendicitis in children does occur, but often with atypical symptoms and become neglected.

Keywords: Appendicitis, Children, Atypical Symptoms, Neglected

BACKGROUND

Appendicitis is inflammation that occurs in the vermicular appendix. Appendicitis is the most common cause of acute abdominal pain in children and adults including emergency surgical cases. There are around 250,000 cases of appendicitis that occur in the United States every year, especially in children aged 6-10 years¹. Appendicitis can be triggered by several things, namely bacterial infection, mucosal erosion, and blockage of the appendiceal lumen. Blockages in the appendiceal lumen can be caused by various things, such as parasitic infections, namely ascaris worms, lymph tissue hyperplasia, fecaliths, and appendiceal tumors. Apart from the things mentioned previously, increased intracecal pressure can also cause obstruction of the appendiceal lumen. Usually, this is caused by low fiber diet habits which trigger constipation.^{2,3}

Appendicitis can affect all age groups, although it is not common in children before school age. Nearly 1/3 of children with acute appendicitis experience perforation after surgery. Even though there has been increased provision of fluid resuscitation and better antibiotics, appendicitis in children, especially children of gestational age, still has a high morbidity rate. The diagnosis of acute appendicitis in children is sometimes more difficult than in adults. The diagnosis is correct in only 50-70% of patients at the time of initial assessment. The negative appendectomy rate in children ranges from 10-50%.⁴

Appendicitis can start with constipation which will increase the number of colonic germ flora. Then, a blockage happen accompanied by a competent ileocecal valve which will increase the pressure in the cecum. Increased pressure and germ colonies will irritate the appendiceal mucosa and cause mucosal appendicitis. Obstacles in emptying the contents of the appendix due to stenosis, adhesions, or a short mesoappendix accompanied by mucosal erosion will cause complete appendicitis.^{3,5} If this continues (multiplication of bacteria in the distal part and increased pressure), the blood supply to the appendix will be strained. Disruption of blood supply will cause appendicitis to become progressive, resulting in gangrene. Appendiceal rupture is most likely to occur after gangrene. Rupture will cause spread to the peritoneum area and the entry of intestinal organisms into the area, causing peritonitis.²

The patient's medical history and physical examination are important in establishing a diagnosis of appendicitis. All cases of appendicitis require the removal of the inflamed appendix either by laparotomy or laparoscopy. If treatment is not carried out, the death rate will be high, mainly due to peritonitis and shock.^{6,7} This article aimed to present a case of child suffered from appendicitis which is rarely happened as the start point to study more about this topic.

CASE PRESENTATION

A case of nine year old child came to the hospital emergency room with complaints of lower right abdominal pain since \pm 2 days before entering the hospital. The pain was continuous, increasing with movement of the abdominal wall. Pain was not relieved by rest. The patient also had a fever since \pm

7 days before entering the hospital. The fever was high and intermittent. Apart from that, there was also a sore throat since \pm 6 days before entering the hospital, the pain made it difficult for the patient to swallow. The patient also experienced nausea and vomiting. The patient also experienced a decrease in appetite.

The patient did not find any complaints when urinating or defecating. The patient had previously seen a midwife for treatment but did not know the name of the medication given. However, patient complaints the pain was not decreased. On physical examination there was a fever of 37.6 celcius, tenderness and loose pain at the Mc.Burney point, positive psoas test and positive obturator test. On laboratory examination the leukocytes and platelets counts were normal.

DISCUSSION

A 9 year old female patient who came to the emergency room at Hospital. She was diagnosed with acute appendicitis. The diagnosis was made from anamnesis, physical examination and supporting examinations. From the anamnesis, the patient complained of lower right abdominal pain since \pm 2 days before entering the hospital. Based on literature, abdominal pain in the lower right quadrant can be caused by various diseases such as appendicitis, inflammatory bowel disease, cholecystitis, hernia, neoplasm and other causes. This patient complained with Abdominal pain that felt continuous, increased with movement of the abdominal wall and did not decrease with rest. Complaints like this are discussed as somatic pain that occurs due to stimulation of the parietal peritoneum with inflamed viscera, for example, appendicitis.³

Lower right abdominal pain leads the diagnosis to appendicitis with typical classic symptoms, namely pain starting around the umbilicus then the pain moves and stays in the lower right quadrant right at Mc.Burney's point. Patients also complain of nausea and decreased appetite. In pediatric patients these classic symptoms are rarely found. Usually children come with initial complaints of not wanting to eat accompanied by lower right abdominal pain.⁸

The patient complained of fever since \pm 1 week ago. Fever is the body's response when inflammation or infection occurs. Appendicitis is caused by a bacterial infection which can be determined by a blockage in the lumen of the appendix.⁹

Appendicitis can appear with typical classic symptoms. Typical symptoms of appendicitis include pain that gets stronger over time in the epigastric and mesogastric areas. Apart from that, patient may experience discomfort accompanied by nausea and sometimes vomiting. Severe pain in the right lower quadrant is a symptom of advanced stages of appendicitis. Other symptoms found are mild fever with a temperature ranging from 37.5C to 38.5 C, tachycardia and ileus. Symptoms that can be found in perforation of appendicitis include very severe abdominal pain. High fever, abdominal rigidity, aching pain, and pain during digital rectal examination can indicate that purulent peritonitis has occurred.^{3,4}

At extreme ages (older people and young children), the symptoms of appendicitis are not typical. Patients may present with complaints of ileus for several days, nausea, vomiting, electrolyte imbalance, and signs of systemic toxicity. Pediatric patients may present with symptoms of being fussy and not wanting to eat at the start of appendicitis. If left untreated, the child can show symptoms of vomiting, weakness and lethargy within a few hours.⁵

On this patient' physical examination there was a fever of 37.6 C, tenderness (+) at the Mc.Burney point, loose pain (+), psoas test (+) and obturator test (+). Laboratory examination showed normal leukocytes. This may be because in children the symptoms of appendicitis are not as typical as those found in adults. So it is best to carry out supporting examinations in the form of an abdominal ultrasound or appendicogram. The diagnosis of appendicitis is made based on data from the history, physical examination and necessary supporting examinations. On physical examination, usually a mild fever can be found with a temperature ranging between 37.5°C-38.5°C. If a higher temperature is found in the patient, the possibility of perforation in the patient must be suspected. Flatulence can also be found in patients complicated by perforation. In addition, a bulge in the right abdomen can be seen if there is a periappendicular mass or abscess.^{3,6}

On palpation, pain will be felt in the right iliac region. Signs of stimulation of the parietal peritoneum appear with manifestations of muscular defans. Intestinal peristalsis is often normal except in paralytic ileus in generalized peritonitis. Pain in the area of infection can be felt on digital rectal examination which may indicate the location of appendicitis in the pelvis. The location of appendicitis can also be estimated by other physical examinations, namely by carrying out the psoas test and obturator test. The psoas test is carried out by hyperextending the right hip joint or by actively flexing the right hip joint and then applying resistance to the right thigh. If the appendix attaches to the psoas major muscle, it will feel painful. The obturator test is carried out by flexing and rotating the hip joint in the supine position. If the patient feel pain, the appendix is in a position that is in contact with the obturator internus muscle or known as the pelvic appendix.³

Supporting examinations that can help confirm the diagnosis of appendicitis include laboratory examinations and ultrasound. Laboratory examination can reveal leukocytosis with values above 12,000 mm³ in acute appendicitis. Leukocyte values above 16,000 mm³ usually indicate that a perforation has occurred in the patient. Another examination that can be done is an ultrasound. From the results of the ultrasound, fluid can be seen in the abdomen and/or pelvis. These results can also be used to rule out the possibility of abnormalities in the ovaries and/or tubes as well as cholecystosis. Apart from that, the presence of a large appendix with or without an abscess can also be assessed from this examination.^{3,4}

It should be noted that there is still a possibility of making a mistake in diagnosing acute appendicitis in around 15%-20% of cases. Misdiagnosis occurs more often in women than men. This is usually caused by other disorders in women such as internal genitalia, ovulation, menstruation, pelvic inflammatory disease, etc.¹⁰

The initial management of this patient is to maintain patient hydration by installing IVFD RL 18 tpm. The patient was given antibiotics in the form of Ceftriaxone 2x500 mg (IV) because during the course of appendicitis there was an increase in the number of germs in the intestine which could cause

further infection. Ranitidine 2x1 amp (IV) is given to prevent stomach disorders due to antibiotics. The patient was given Paracetamol 3x500 mg (infusion) as an antipyretic. Then the patient is prepared for an emergency appendectomy.^{10,11}

Appendectomy is the definitive therapy for appendicitis patients. It is recommended that in cases of acute appendicitis, an appendectomy be performed within 2x24 hours after diagnosis. The patient underwent an open appendectomy through an incision in the Mc.Burney area.¹⁰

Conclusion

Cases of appendicitis in children can occur with atypical symptoms such as abdominal pain that happens more than 2 weeks, constipation, no appetite, nausea and vomiting. However, if appendicitis in children is ignored and inappropriate therapy is given, it often progresses to appendiceal perforation or peritonitis.

Conflict of Interest

No potential conflict of interest relevant to this article was reported

Acknowledgements

The manuscript preparation was supported by Research and Community Services (LPPM) Universitas Andalas, Andalas University and all the sectors involved.

References

1. Guan L, Liu Z, Pan G, Zhang B, Wu Y, Gan T, Ouyang G. 2019. The global, regional, and national burden of appendicitis in 204 countries and territories, 1990-2019: a systematic analysis from the Global Burden of Disease Study. *BMC Gastroenterol.* 2023 Feb 22;23(1):44. doi: 10.1186/s12876-023-02678-7. PMID: 36814190; PMCID: PMC9945388.1.
2. Henry M, Thompson J. 2005. *Clinical Surgery* 2nd edition. United States. Elsevier Saunders. 408-411.
3. R. Sjahmuhidayat, Wim de jong. 2004. *Buku Ajar Ilmu Bedah. Edisi 2.* Jakarta: Penerbit Buku kedokteran EGC.
4. Gadiparthi R, Waseem M. Pediatric Appendicitis. [Updated 2023 Jul 3]. 2024. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK441864/>
5. Baxter KJ, Short HL, Travers CD, Heiss KF, Raval MV. 2018. Implementing a surgeon-reported categorization of pediatric appendicitis severity. *Pediatr Surg Int.* Dec;34(12):1281-1286.
6. Snyder MJ, Guthrie M, Cagle S. 2018. Acute Appendicitis: Efficient Diagnosis and Management. *Am Fam Physician.* Jul 01;98(1):25-33.
7. 3. García JC, Vázquez-frías JA. 2003. Appendectomy. In: García JC, Jacobs M, Gagner M. 2003. *Laparoscopic surgery.* United States. McGraw-Hill Companies Inc.
8. Cameron DB, Anandalwar SP, Graham DA, Melvin P, Serres SK, Dunlap JL, Kashtan M, Hall M, Saito JM, Barnhart DC, Kenney BD, Rangel SJ. 2020. Development and Implications of an Evidence-based and Public Health-relevant Definition of Complicated Appendicitis in Children. *Ann Surg.* May;271(5):962-968.
9. ani A, Hall NJ, Rahman A, Morini F, Pini Prato A, Friedmacher F, Koivusalo A, van Heurn E, Pierro A. 2019. European Paediatric Surgeons' Association Survey on the Management of Pediatric Appendicitis. *Eur J Pediatr Surg.* Feb;29(1):53-61.
10. Yevgeny Shuhatovich Y, Sherwinter DA, Adler HL, Goldstein EB, Zuniga JMR, Bernshteyn A. 2015. Laparoscopic appendectomy. Medscape. Access in :<http://emedicine.medscape.com>
11. Obayashi J, Furuta S, Kawaguchi T, Kawaguchi K, Ohyama K, Nagae H, Wakisaka M, Kitagawa H. 2018. The effect of the broad-spectrum antibiotics for prevention of postoperative intra-abdominal abscess in pediatric acute appendicitis. *Pediatr Surg Int.* Oct;34(10):1121-1125.