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Acute abdominal pain as a manifestation of acute appendicitis in a 15-year-old adolescent: A case report

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Abstract
Acute abdominal pain is a common complaint in pediatric and adolescent patients, frequently encountered in the emergency department, with acute appendicitis being the primary cause. However, the diagnosis of appendicitis in adolescents is often challenging due to atypical clinical presentations, potentially leading to delayed treatment. This case report describes a 15-year-old female patient with complaints of right lower abdominal pain lasting for one week, accompanied by fever and nausea. Physical examination revealed tenderness at McBurney's point and a positive Rovsing's sign. Laboratory results showed leukocytosis with neutrophilia, microcytic hypochromic anemia, and increased prothrombin time and INR. The patient underwent open appendectomy under general anesthesia, and postoperative care included pain management and antibiotics. Monitoring of vital signs and surgical wound condition was performed well. This case report emphasizes the importance of a comprehensive clinical diagnostic approach to acute abdominal pain in adolescents, early detection of acute appendicitis to prevent serious complications such as perforation and sepsis, and optimal postoperative follow-up to speed recovery.

Keywords: Abdominal Pain, Acute Appendicitis, Adolescent

Abstrak
Nyeri perut akut merupakan keluhan umum pada pasien anak dan remaja yang sering ditemui di unit gawat darurat, dengan apendisitis akut sebagai penyebab utamanya. Namun, diagnosis apendisitis pada remaja seringkali sulit karena presentasi klinis yang atipikal, sehingga berpotensi menyebabkan keterlambatan penanganan. Laporan kasus ini menjelaskan seorang pasien perempuan berusia 15 tahun dengan keluhan nyeri perut kanan bawah yang berlangsung selama satu minggu, disertai demam dan mual. Pemeriksaan fisik menunjukkan nyeri tekan pada titik McBurney dan tanda Rovsing positif. Hasil laboratorium menunjukkan leukositosis dengan neutrofilia, anemia hipokromik mikrositer, serta peningkatan waktu protrombin dan INR. Pasien menjalani apendektomi terbuka dengan anestesi umum, dan perawatan pascaoperasi meliputi manajemen nyeri dan antibiotik. Pemantauan tanda-tanda vital dan kondisi luka operasi dilakukan dengan baik. Laporan kasus ini menekankan pentingnya pendekatan diagnostik klinis yang komprehensif terhadap nyeri perut akut pada remaja, deteksi dini apendisitis akut untuk mencegah komplikasi serius seperti perforasi dan sepsis, serta tindak lanjut pascaoperasi yang optimal untuk mempercepat pemulihan.

Kata kunci: Nyeri Perut, Radang Usus Buntu Akut, Remaja.

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1. Introduction

This Acute abdominal pain is one of the most common complaints among children and adolescents in health care facilities, especially in emergency rooms (Ye et al., 2025). One of the main causes of acute abdominal pain in this age group is acute appendicitis, an inflammatory condition of the appendix that requires rapid diagnosis and treatment to avoid serious complications (Walsh & Nicholson 2022). Although acute appendicitis is a common disease, diagnosis in adolescent patients remains challenging due to the often-atypical clinical presentation, which can potentially lead to delays in treatment (Yale et al., 2024).

Previous research and case reports have extensively discussed the presentation of appendicitis in children and adults, but studies specifically focusing on the clinical presentation of acute abdominal pain in adolescents aged 15 years are still relatively limited. This research gap is important to address, given the differences in clinical and physiological characteristics that may influence disease manifestation and response to treatment in this age group. This case report aims to provide a detailed description of the manifestation of acute abdominal pain as a sign of acute appendicitis in a 15-year-old adolescent, while highlighting effective diagnostic approaches and management strategies appropriate for this condition (Vierra et al., 2024).

The main purpose of this case report is to increase clinical insight for medical personnel in recognizing and treating acute appendicitis in adolescents with acute abdominal pain, as well as emphasizing the importance of a thorough evaluation so that a diagnosis can be made earlier (Shen et al., 2022). Thus, it is hoped that the results of this report can help improve the accuracy of diagnosis and reduce the risk of complications due to delayed treatment in the adolescent population(Teng et al., 2021).

Case Report

A 15-year-old female patient came to the surgical clinic of the Yogyakarta Regional General Hospital (RSUD) complaining of pain in her lower right abdomen for 1 week prior to admission. The pain was continuous with a Visual Analog Scale (VAS) score of 6. In addition to abdominal pain, the patient had had a fever for 3 days and felt nauseous but did not vomit today. The patient also complained of a heavy feeling in the chest and shortness of breath alongside the abdominal pain. There was no history of previous illness or family history. The patient had not taken any medication.

Physical examination at the clinic revealed compos mentis consciousness, tenderness (+) at one-third of the distance between the navel and the right iliac crest (McBurney's point), and tenderness (+) on the right lower abdomen when pressing the lower abdomen (Rovsing's sign). Blood pressure was 113/84, heart rate was 110 beats per minute, respiration was 20 breaths per minute, body temperature was 37.1 °C, and oxygen saturation was 99%. The patient was scheduled for an appendectomy, but before that, the patient underwent a complete blood count, white blood cell count, and coagulation tests (Table 1).

Table 1. Preoperative Laboratory Examination Results

Type of Examination	Result	Reference Value	Unit	Interpretation
Complete Blood Count				
Erythrocytes	3.74	4.1 - 5.1	10e6/ul	Low (L*)
Hemoglobin	10.4	11.9 - 14.8	g/dL	Low (L*)
Hematokrit	29.7	37 - 45	%	Low (L*)
Mean Corpuscular Volume (MCV)	79.2	79.9 - 93.9	fL	Low (L*)
Mean Corpusculan Hemoglobin (MCH)	27.9	26.3 – 31.7	Pg	Normal
Mean Corpusculan Hemoglobin Consentration (MCHC)	35.2	32.36	Gr/dl	Normal
Lekosit	11.7	4.4 – 12.9	10e3/ul	Normal
Differential Leukocyte Count				
Netrofil%	77.7	25 - 60	%	High (H*)
Lymfosit%	14.0	25 - 60	%	Low (L*)
Monosit%	5.6	1 - 6	%	Normal
Eosinofil%	2.3	2.0 – 4.0	%	Normal
Basofil%	0.4	0 – 1	%	Normal
IMG%	0.3	0	%	Normal
Neutrofil#	9.08	2-7	thousand/ul	Tinggi
Lymfosit#	1.64	0.8-4	thousand/ul	Normal
Monosit#	0.66	0.12 – 1.2	thousand/ul	Normal
Eosinofil	0.27	0.02 – 0.05	thousand/ul	Normal
Basofil	0.05	0 – 1	thousand/ul	Normal
Coagulation				
Prothrombin Time (PT)	15.8	11.3 – 14.6	seconds	Tinggi
International Normalized Ratio (INR)	1.22	0.8-1.2	-	Tinggi
Control Normal PT	15.6	11.3 – 16.2	seconds	Normal
Activated Partial Thromboplastin Time (APTT)	29.5	26.8 – 36.3	seconds	Normal
Control normal APTT	29.7	26.9 – 38.7	seconds	Normal

The patient's blood test results show several abnormal laboratory findings, indicating inflammation and a possible infection. A complete blood count shows leukocytosis, with a white blood cell count of 11.7 x 103/uL, which is still within the normal range, but accompanied by high neutrophilia (77.7%) and low lymphopenia (14.0%). This condition, known as a left shift, is often an indication of the body's response to acute bacterial infection, as commonly seen in appendicitis. In addition, there are several other parameters that are also abnormal and may be relevant. The red blood cell count showed microcytic hypochromic anemia, characterized by low hemoglobin (10.4 g/dL), hematocrit (29.7%), and erythrocyte (3.74 x 10^6/µL) levels. The MCV of 79.2 fL was also low, confirming the diagnosis of microcytic anemia. Meanwhile, coagulation test results show a high PT of 15.8 seconds and INR of 1.22. This increase in INR indicates a possible disorder in the extrinsic coagulation pathway, which needs to be evaluated further.

The patient underwent an appendectomy with the surgical procedure beginning with the patient being given general anesthesia. After the patient was anesthetized, the

lower right abdomen, where the incision would be made, was cleaned and sterilized. Next, a small incision measuring 2-4 cm was made in the lower right quadrant of the abdomen. Through this incision, the abdominal muscles were carefully separated, and the appendix was identified. Once located, the blood vessels supplying the appendix were ligated, and the appendix was cut from the large intestine. The remaining appendix was then ligated or sutured to prevent bleeding or leakage. After the appendix was removed, the area was examined to ensure there was no bleeding, and the incision was closed with sutures. The sample was then sent to the anatomical pathology laboratory.

Figure 1. Appendix vermiformis

The patient underwent laparotomy on July 17, 2025, with preoperative reports of blood pressure 120/80, respiration 20 times per minute, heart rate 93 times per minute, body temperature 36.5°C, and oxygen saturation 96%. Last meal at 01:30, history of seizures (–), asthma (–), family medical history (–), history of surgery 1 year ago for a Colles fracture of the right hand. The patient was given cefotaxime injections 2x750 mg and antrain injections 3x1/2 ampoule.

Postoperative report: blood pressure 104/71, heart rate 74 beats per minute, respiratory rate 20 breaths per minute, and oxygen saturation 99%. The patient reported pain at the surgical site with generally good condition, alert and oriented, warm extremities, strong pulse, Capillary Refill Time (CRT) <2 seconds, urinary catheter in place. The patient was given an infusion of Kalbamin Asering 1:1, cefotaxime injection 2x1 g, and antrain injection 3x1/2 ampoule.

On July 18, 2025, the patient complained of persistent pain at the surgical wound site. Physical examination results were 117/86, heart rate 90 beats per minute, respiration 20 breaths per minute, body temperature 36.9°C, and oxygen saturation 97%. At 1:30 PM, the catheter was removed, and the patient was permitted to sit and walk. Therapy remains the same.

On July 19, 2025, the patient still complained of pain at the surgical site. Physical examination results showed blood pressure of 130/80, heart rate of 76 beats per minute, respiration of 20 breaths per minute, body temperature of 36.2°C, and oxygen saturation of 98%. The patient was advised to eat freely and was allowed to go home the next day. On July 20, 2025, the patient reported that the pain from the surgical wound had decreased. The patient was allowed to go home and was scheduled for wound care at the surgical clinic for the next week.

2. Research Method

This This study employed a case report design, focusing on the clinical management of a 15-year-old female patient diagnosed with acute appendicitis. The case was documented at the Yogyakarta Regional General Hospital (RSUD) and followed systematically from initial admission to postoperative care and follow-up. Data collection included clinical history, physical examination findings, laboratory results, imaging, surgical procedures, and postoperative monitoring. Laboratory investigations comprised a complete blood count and coagulation profile to identify hematological abnormalities, such as leukocytosis, neutrophilia, microcytic hypochromic anemia, and coagulation disturbances.

The surgical method undertaken was an open appendectomy under general anesthesia, in which the appendix was identified, excised, and sent for histopathological examination. The perioperative protocol included standardized preoperative assessment, anesthesia management, intraoperative procedures, and postoperative monitoring of vital signs, wound condition, and pain levels. Clinical outcomes were evaluated based on the patient's recovery trajectory, pain reduction, hemodynamic stability, and absence of complications.

The methodological approach adopted in this case ensures reproducibility by providing detailed clinical, laboratory, and surgical documentation. Although limited to a single patient, this report contributes valuable insights into the diagnostic challenges and management strategies of acute appendicitis in adolescents, highlighting the importance of early detection, accurate diagnosis, and comprehensive postoperative care to prevent complications.

3. Results and Discussion

2.1. Results

Acute abdominal pain is one of the most common complaints found in emergency services, especially in children and adolescents (Singh et al., 2024). Acute appendicitis is one of the most common causes of abdominal pain in this age group. In adolescent patients, as shown in this case report, clinical presentation can vary and is sometimes atypical, posing a diagnostic challenge for doctors (Sabo et al., 2021). The pain usually begins in the periumbilical or epigastric region as a dull ache, then moves to the lower right quadrant of the abdomen as the inflammation of the appendix progresses. This shift in pain is caused by irritation of the parietal peritoneum, which is a key characteristic of acute appendicitis (Roupakias et al., 2025).

In adolescents, other symptoms accompanying acute abdominal pain may include nausea, vomiting, anorexia, and mild fever (Niyonkuru et al., 2025). However, due to the wide clinical variation, the diagnosis of appendicitis often requires a detailed clinical approach and repeated monitoring (Moris et al., 2022). Physical examination with pressure on the lower right quadrant often reveals characteristic signs such as tenderness, rebound tenderness, and guarding, but these are not always present in all cases (Nils et al., 2025). Therefore, supportive examinations such as abdominal ultrasound play an important role in supporting the diagnosis by showing swelling or inflammation of the appendix (Shahmoradi et al., 2023)

The treatment of acute appendicitis in adolescents should be carried out as soon as possible to prevent serious complications such as appendiceal perforation, intraperitoneal abscess, and sepsis, which can increase morbidity and length of hospital stay (Harriott & Sadava, 2024). Appendectomy, whether laparoscopic or open, is the primary option for treating appendiceal inflammation and relieving acute abdominal pain (Vierra et al., 2024). Additionally, preoperative antibiotic administration is important to reduce the risk of postoperative infection (Javed et al., 2023). Postoperative monitoring must be conducted carefully to ensure optimal recovery and prevent complications (Shen et al., 2022).

3.2. Discussion

This case highlights the importance of a comprehensive clinical approach to acute abdominal pain in adolescent patients. Early detection and proper evaluation can accelerate the diagnosis of acute appendicitis and improve clinical outcomes. Furthermore, this report reminds us that appendicitis should always be a primary consideration in the differential diagnosis of acute abdominal pain in this age group to avoid delayed treatment, which can worsen the patient's prognosis. Education and increased awareness among patients and families regarding signs of worsening abdominal pain are also crucial aspects in preventing potentially fatal complications (Bansal & Hiwale, 2023).

After appendectomy in adolescent patients, postoperative management is crucial to ensure optimal healing and prevent complications (El-Rahman et al., 2023). Postoperative pain is the main complaint that must be effectively treated through a combination of pharmacological therapies such as analgesics and antibiotics to prevent infection. Comprehensive pain assessment and appropriate interventions can reduce stress and the risk of complications in young patients. In addition, regular monitoring of vital signs and hydration management are also important to prevent the risk of fluid volume depletion due to restricted intake or fluid loss during pre- and post-operative fasting. Non-pharmacological approaches, such as relaxation techniques and effleurage massage, have also been shown to be effective in reducing post-operative pain and anxiety. Educating patients and families about wound care, signs of infection, and the importance of early mobilization helps speed recovery and reduce length of stay. With comprehensive monitoring and care, patients after appendectomy can return to their activities quickly and the risk of complications can be minimized.

4. Conclusion

This case report highlights the critical importance of a comprehensive and thorough clinical approach when diagnosing and managing acute abdominal pain in adolescents. The patient, a 15-year-old female, presented with a week-long history of right lower abdominal pain, along with fever and nausea. Physical examinations revealing tenderness at McBurney's point and a positive Rovsing's sign, combined with laboratory findings of leukocytosis with neutrophilia and microcytic hypochromic anemia, supported the diagnosis of acute appendicitis. The patient underwent a successful open appendectomy, and the report emphasizes that early detection and timely intervention are crucial for preventing serious complications like perforation and sepsis. Postoperative care, including pain management and antibiotic therapy, was essential for a quick and optimal recovery. This case adds valuable clinical knowledge for medical professionals, reinforcing the need for early and accurate diagnosis to improve outcomes and minimize the risk of complications from delayed treatment in adolescent patients.

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