A Case Report of Pediatric Colorectal Carcinoma in an 11-year-old Indonesian

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ABSTRACT
Introduction: Colorectal carcinoma (CRC) is a rare condition among pediatric patients and is often considered the last possible diagnosis in individuals with defecating issues. Therefore, this case report aims to present and elaborate on the identification of pediatric CRC in a center in Indonesia.

Case Presentation: An 11-year-old female adolescent presented with obstipation for a week after a series of defecating difficulty episodes spanning the last three months. Furthermore, these difficulties had been progressively worsening over the past two weeks. The patient also reported recurrent colic pain in the abdominal region, but the exact location was unspecified. Positive results of goat-like stool were found for three months, without any observed diarrhea episodes and blood or mucous layer on the stool. A significant weight loss of ±10 kg was reported during the illness period. On physical examination, symmetrical abdominal distention was observed, and colon-in-loop and CT assessment results supported this. These diagnostic measures showed a malignant-suggestive mass ascending to the transverse colon. A right extended hemicolectomy procedure was then carried out as the definitive treatment, accompanied by stoma ileocolostomy to divert defecation. The histopathological analysis on the 4.0 x 4.0 cm intraluminal mass confirmed the presence of poorly differentiated adenocarcinoma.

Conclusions: The identification of chronic constipation among pediatric patients must raise awareness regarding the potential for mechanical bowel obstruction due to a malignant mass, specifically in inpatients.

INTRODUCTION
Colorectal carcinoma (CRC) is a condition that has traditionally been perceived by clinicians as a rare occurrence among the pediatric population. This rarity often prompts consideration of an underlying pathological or genetic issue, leading to malignant transformation of the structures. Several studies showed that the dependence on the risk factors of the condition was deemed insufficient to explain its occurrence. However, it is important to note that pediatric CRC is the most common gastrointestinal cancer, accounting for approximately 1% of all pediatric neoplasms [1,2]. Despite its prominence, the infrequency of occurrence has led to challenges in the prompt recognition of the condition. The majority of initial results were not immediately suspected of malignancy, particularly when presenting symptoms, such as the inability to defecate. Results indicative of mechanical bowel obstruction on colonic structures are expected to raise suspicion for the presence of an intraluminal mass, which prevents the stool from passing completely [3,4]. Based on the results, the main objective for a physician when confronted with lower gastrointestinal tract symptoms, specifically among individuals with a well-documented family history of malignancy or genetic mutations, is to avoid the diagnostic pitfall associated with attributing symptoms to a ‘more benign’ etiology. Therefore, this case report aims to elaborate on early-onset CRC in a pediatric patient at the center of Haji Adam Malik General Hospital, Indonesia. The results are expected to provide a regional perspective from Indonesia or Southeast Asia regarding the case workup and management.
CASE PRESENTATION

An 11-year-old female patient was presented to the emergency department (ED) with the main complaint of being unable to defecate for the past week. The symptoms initially began last three months, but progressively worsened in the previous two weeks, reaching a point characterized by the complete inability to pass any stool. The patient was then referred from the district hospital after 2–3 days of in-hospital care and demonstrated invagination-related symptoms, as confirmed by history taking and a plus colon-in-loop abdominal X-ray before presenting to the ED (Figure 1). Colicky, dull, and unspecified abdominal pain was also experienced during the period, along with the occurrence of nausea and vomiting as the accompanying digestive tract symptoms. Results of goat-like stool were reported, but diarrhea, bloody, and mucous-covered stool was not found during the toilet session.

Over the past three months, there was a significant weight loss of approximately 10 kg without any additional complaints from urinating function. The patient was the 4th child born spontaneously through the vaginal route. The birth history showed the presence of premature birth (34 weeks of gestational age), birthweight 2,000 gr, history of unsponstaneous crying and cyanotic episodes for the first 24 hours found, and there was passage of meconium in the latter period. After the emergence of symptoms, there was periodic treatment with washout and laxatives, but the symptoms became worse over time. The patient was referred from the regional hospital to the center of Haji Adam Malik General Hospital.

After a thorough physical examination, a symmetrical abdominal distention was observed, which appeared to be borborygmi-sounded on auscultation and hyper-tympanic percussion. On digital rectal examination, the perineum was expected with a tight anal sphincter tone and smooth mucosal layer. However, it featured a collapsed ampulla recti and there was no pain report during the procedure. Abdominal X-ray and CT scan

Figure 1. Initial colon-in-loop abdominal x-ray finding of the patient before presented to our ED (May 29th, 2022) on anteroposterior (AP) view (A) and lateral/oblique view (B).

Figure 2. Coronal section of the abdomen on CT-scan examination.
were performed to confirm the suspicion of a colon mass, with the result of a suspected intraluminal mass on the transverse colon, suggestive of malignancy (Figures 2, 3, and 4). Based on the results, the patient was diagnosed with total mechanical bowel obstruction (TMBO) due to suspicion of a transverse colon mass with the malignant suggestion (cT4N0M0), with malnutrition as the additional and implicated diagnosis.

An operative procedure was carried out immediately at 3 hours post-presentation in ED. The transverse supraumbilical incision was performed to identify critical structures, such as dilated caecum and terminal ileum, until the hepatic flexure of the proximal transverse colon due to distal obstruction of the colonic lumen. Furthermore, a collapsed transverse colon to the sigmoid structure was observed, showing an intraluminal mass. Traced back from the sigmoid to the ascending colon, a tumor was found on the latter structures, specifically on the hepatic flexure area, with solid consistency, irregular border, mobile, intraluminal, and sized 4x4 cm. Palpable lymph nodes were also on the paracolic and para mesenteric node groups (which were taken for further histology analysis).

The physicians decided to perform a right extended hemicolectomy with an incision on the white line of Toldt close to the lateral wall of the ascending colon (from the caecum upward until the hepatic flexure area). Furthermore, resection of the ileum, 10 cm from the ileocecal junction until the transverse colon ± 5 cm anally from the mass, was also undertaken, leading to the performance of an ileocolostomy on the left lower abdomen (Figure 5). The operative procedure was carried out without any unexpected reactions and uncontrolled bleeding episodes. The histopathological
analysis confirmed the diagnosis of colorectal adenocarcinoma. After the procedure, there was no complication from the surgery and the feeding resumed on the second day with the consumption of 50 cc milk every three hours on the third day, and porridge on the fourth day. The patient was discharged from the hospital on the fifth day and visited the pediatric surgery polyclinic three additional times (a week, two weeks, and a month after discharge) with no complaints or complications, and the stitches significantly healed.

DISCUSSION

Elaborating the rarity of pediatric CRC necessitated a reference to its common but predictive symptoms. These included abdominal pain, nausea, vomiting, and particularly noteworthy signs, such as the inability to defecate, which strongly suggested the possibility of colon obstruction. An observable progression of the latter symptoms could also signify a progressive obstruction, excluding any acute etiology. Therefore, physicians must be suspicious of a neoplastic transformation when the history taking and physical examinations appear supportive. Changes in bowel habits were eventually a lengthy symptom, often preceded by several occult results, such as microscopic bleeding, anemia, and unspecified but hardly located abdominal pain [5].

The identification of CRC among pediatrics was also more common in the second decade of life compared to the first. This was consistent with this report, where it affected an 11-year-old female adolescent. Several studies reported the possibility of encountering malignancy in older populations. Furthermore, it was presumed that predisposing and preexisting factors played a significant role in its occurrence, including familial adenomatous polyposis (FAP) or autoimmune-related colon disorders (classified as pediatric inflammatory bowel disease, e.g., Crohn’s disease and ulcerative colitis). In this case, a notable history of predisposing or preexisting factors was found, namely unspontaneous crying and cyanotic episodes for the first 24 hours after birth, characterized by the passage of meconium during the latter period. However, further investigation regarding autoimmune-related colon disorders was not carried out. Genetic mutation among pediatrics was often posed as the primary etiology of a malignancy, considering the dysfunctional DNA repair system. This condition often leads to cells’ malignant transformation, uncontrolled proliferation, apoptosis avoidance, and production of metastasis foci on nearby or distal systems [6–8].

At present, the only curative approach for CRC is a surgical procedure. In some cases, it required immediate action to resolve the acute yet emergency symptoms, such as TMBO, as seen in this case. The results showed that there were no postoperative complications, and feeding resumed on the second day with the consumption of 50 cc of milk every three hours on the third day, and porridge on the fourth day. The patient was then discharged from the hospital on the fifth day and visited the pediatric surgery polyclinic three additional times (a week, two weeks, and a month after discharge) with no complaints or complications, and the stitches significantly healed. The continuation of treatment with adjuvant chemotherapy was recommended, but the procedure was rejected by the parents.

CT-scan results also suggested that the patient was currently diagnosed at T4 for malignancy assessment, placing the plausibility of performing the surgery and delaying the chemotherapy to the “adjuvant” settings to eradicate the microscopic remains of the cancer cells [1,4,9,10]. In this case, there were no observable or clinically manifested metastasis symptoms, leading to the diagnosis of un-metastatic CRC. However, it was acknowledged that the survival and progression-free rate were closely related to the tumor size, lymph node engagement, and metastatic focus. The prognosis of this case remained questionable since the patient was currently on stoma, had undergone significant colon resection, and positively engaged several lymph node groups [11,12]. Apart from the prognosis and curative-related discussion, it was mandatory to focus on elaborating on the patient’s quality of life, considering how extensive cancer and procedure affected daily activities.

As an essential factor for the advancement of medical practices and the enhancement of caregiver quality, it was imperative that referring physicians from district or regional medical centers remain acutely aware of the potential occurrence of cancer in pediatric patients. This heightened awareness was crucial to mitigate any substantial impact on the patient’s quality of life. Furthermore, this was particularly important when considering scenarios comprising young females who harbored considerable expectations from their families regarding future personal and professional aspirations. This showed that the community had a profound responsibility to ensure a better life for these patients after the occurrence of a significant catastrophic event in their lives.

CONCLUSIONS

Pediatric patients presented with progressive symptoms of mechanical bowel obstruction with the main suspicion of obstructed intraluminal colonic mass could raise the suspicion of a possible diagnosis of underlying malignancy. Furthermore, early cancer detection could translate into favorable tissue salvage with a better prognosis and quality of life.
DECLARATIONS

Competing of Interest
The authors declare no competing interest in this study.

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Not applicable

REFERENCES