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Case Report

Diagnostic Approach of Mesenteric Cyst in Children: A Case Report

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Abstract:

Background: Mesenteric cysts are intra-abdominal masses that arise from obstructed lymphatic drainage within the mesentery. Early diagnosis can be challenging, as it is often difficult to recognize based solely on clinical findings. The diagnosis is frequently made following imaging studies or during surgery. Despite their generally benign nature, delayed diagnosis can lead to serious complications**.** This case report aims to share our experience on the diagnostic approach for mesenteric cysts in children.

Case: A 2-year-old boy presented with a 14-month history of slowly progressive abdominal distension and signs of bowel obstruction, including weight loss. Abdominal ultrasound revealed thin-walled, well-demarcated, septated fluid sacs consistent with a cyst. Abdominal CT-Scan showed massive ascites filling the intraperitoneal cavity and pushing the intestine upward along the thickened mesentery, causing bowel obstruction. Histopathological examination confirmed the diagnosis of cyst lymphangioma derived from mesentery. The cyst was successfully excised via laparotomy, and histological examination confirmed it as a cystic lymphangioma.

Discussion: Our diagnostic approach focused on exclusion of differential diagnosis for abdominal distention in children, including ascites, abdominal tuberculosis, mesenteric cysts, and intra-abdominal masses. The absence of constitutional symptoms and lack of response to anti-tuberculosis therapy made it an unlikely diagnosis. While the CT-scan suggested ascites, the ultrasound results suggested a mesenteric cyst. Despite its large size, a complete excision of the cyst was successfully performed via laparotomy.

Conclusion: The nonspecific nature of mesenteric cysts often delays diagnosis, making abdominal ultrasound an essential initial imaging modality for patients suspected of having this condition.

Keywords: abdominal distension, bowel obstruction, diagnostic approach, mesenteric cysts, ultrasound

Introduction

In 1907, Benevieni, an anatomy expert in Italy, first discovered a mesenteric cyst during an autopsy of an 8-year-old girl.[1] Mesenteric cysts are benign intra-abdominal masses that arise from obstructed lymphatic drainage within the mesentery, leading to cystic accumulation of lymph fluid.[2] While these cysts are generally benign, delayed diagnosis and treatment can increase the risk of rupture, leading to peritonitis, sepsis, and potentially death.[3]

The most common locations for mesenteric cysts are the small intestine (60%), colon (24%), and retroperitoneum (14.5%), with the ileal mesentery being the most frequent site. The mean age of incidence for mesenteric cysts is 4.9 years, and they are more prevalent in males (60%) than females (40%).[3]

Mesenteric cysts do not have specific (pathognomonic) signs or symptoms. The most common manifestation is a slowly developing, ascites-like abdominal enlargement, which may or may not be accompanied by signs of obstruction. Early diagnosis can be challenging, as it is often difficult to recognize based solely on history and physical examination. In most cases, the diagnosis of a mesenteric cyst is established after imaging studies or during laparotomy.[4]

Mesenteric cysts are relatively rare in children, occurring in approximately 1 per 250,000 cases compared to 1 per 105,000 in adults. One-third of mesenteric cyst cases occurred in children under 15 years old, and one-quarter occurred in children under 10 years old.[5]

Prompt and accurate diagnosis of mesenteric cysts is crucial for optimal treatment and prognosis. This case report aims to share our experience on the diagnostic approach for mesenteric cysts in children.

Case Illustrations

A 2-year-old boy with a mesenteric cyst was admitted with abdominal distension-like ascites that had been present for 14 months before admission. On examination, the abdomen was distended, and a palpable soft mass with fluid consistency was observed. In the preceding month, the patient exhibited signs of bowel obstruction, such as vomiting 3 – 4 times a week, constipation, and difficulty passing gas. These symptoms were not accompanied by abdominal pain. The cyst caused mechanical obstruction, leading to weight loss and decreased appetite.

Abdominal examination revealed marked ascites with visible dilated veins (venodilation). An abdominal ultrasound revealed thin-walled, well-demarcated, septated fluid sacs consistent with a cyst. A contrast-enhanced abdominal CT-scan

showed massive ascites filling the intraperitoneal cavity and pushing the intestine upward along the thickened mesentery. An attempt at ascites puncture yielded no fluid production.

The patient underwent an excisional laparotomy, revealing a 46 cm x 26 cm x 5.9 cm cyst originating from the mesentery. Histological examination confirmed the presence of cystic lymphangiomas, consisting of endothelial cells, foam cells, and a thin wall containing lymphatic spaces, lymphoid tissue, and smooth muscle. This type of cyst is commonly found in children and is classified as mesenteric cysts.

Discussion

In this case, a mesenteric cyst was diagnosed in a 2-year-and-10-month-old boy. Mesenteric cysts are relatively uncommon in pediatric populations. Tripathy et al. reported that majority of the pediatric mesenteric cysts occurred in children under 5 years of age, with a median age of 27 months. The condition in children is more prevalent in boys (60%) compared to girls.[6]

The clinical presentation of mesenteric cysts is markedly diverse. Common presentations include incidental findings on physical examinations or imaging studies (40%), nonspecific abdominal symptoms, such as distension, or complications of the cyst (33%). Typically, the signs and symptoms of mesenteric cysts are abdominal enlargement and rarely manifest acutely.[6]

The absence of pathognomonic symptoms in this disease complicates the initial diagnosis. Our patient presented with a chronic, slowly progressive abdominal distention over 14 months, without preceding associated pain or other bowel obstructive symptoms.

Loomba et al. reported abdominal distension in 50% of mesenteric cyst cases, abdominal pain in 58%, and bowel obstruction symptoms (nausea, vomiting, constipation) in 27 – 45%. Mesenteric cysts can range in size from 2 – 25 cm. However, cysts larger than 8 cm carried a significant risk of causing a mechanical bowel obstruction.[7] In this case, the large size of his cyst, measuring 46 cm x 26 cm x 5.9 cm, likely contributed to the mechanical bowel obstruction symptoms, and later, weight loss. Additionally, weight loss occurs in approximately 37% of mesenteric cyst cases and is more common in cysts with an enteric origin.

Our differential diagnoses were similar to those for abdominal distension in children, including mesenteric cysts, ascites, abdominal tuberculosis, abscess, and intra-abdominal masses.[7] While neuroblastoma and Wilms' tumor are common intra-abdominal masses in children under 5 years of age, our patient did not exhibit

associated symptoms such as abdominal pain, hypertension, asymmetric abdominal enlargement, or haematuria. Based on these findings, neuroblastoma and Wilms tumor seem less likely to be the diagnosis.

Weight loss, as observed in our patient, was more commonly observed in cases of abdominal tuberculosis compared to mesenteric cysts, occurring in approximately 61% of all abdominal tuberculosis cases.[8] On physical examination, abdominal percussion may confirm the presence of ascites, a finding commonly associated with mesenteric cysts. Approximately 60–70% of mesenteric cyst cases present as soft, fluid-filled intra-abdominal masses. To confirm ascites, a shifting dullness test should be performed. However, this was not conducted in the present case.

Furthermore, the previous hospital only conducted an abdominal CT-scan and did not conduct a tuberculin test to rule out abdominal tuberculosis. The CT scan revealed massive ascites and mesenteric thickening, raising the suspicion of tuberculosis.

To rule out the causes of ascites, routine laboratory tests, including complete blood count and blood chemistry, were performed and the results were within normal limits. There was no evidence of biliary obstruction, as indicated by normal GGT and bilirubin levels.

Considering that ascites was not definitively confirmed, along with normal laboratory results, the absence of constitutional symptoms (such as fever), and no response to anti-tuberculosis therapy after 12 months of treatment, abdominal tuberculosis was deemed unlikely in this case. However, abdominal tuberculosis should still be considered as a differential diagnosis in malnourished children with abdominal distension in endemic regions, particularly in Indonesia.

In our hospital, an abdominal ultrasound was performed. The ultrasound revealed septated ascites with thin intrinsic walls and no lymphadenopathy, suggestive of a mesenteric cyst. Ultrasound is an ideal initial diagnostic tool for mesenteric cysts, providing information about size, location, and the presence of internal septa. Its non-invasive nature and lower cost compared to CT scans make it preferably performed early in the diagnosis of mesenteric cysts.[9] Abdominal CT scans can offer more detailed anatomical information about the mass or cyst and its relationship with surrounding structures.[10] In some cases, CT scans still may be used to confirm ultrasound findings or guide surgical procedures.

In cases of ascites, ultrasonography typically demonstrates a homogenous and anechoic fluid collection within the peritoneal cavity and Morrison's pouch, without septations.[11] These findings are different with tuberculous peritonitis, which typically

presents with septated, thin ascites and associated lymphadenopathy. [12] In contrast, the ultrasound features in this case were more suggestive of a mesenteric cyst, characterized by thin-walled, septated ascites containing multiple anechoic structures.[13] The findings from the abdominal ultrasound strongly suggest the diagnosis of mesenteric cysts, which can be differentiated from ascites or abdominal tuberculosis.

Surgical enucleation is the treatment of choice for mesenteric cysts. In this patient, a complete excision of the cyst, or known as enucleation, was successfully performed via laparotomy, despite the large size of the cyst. Marsupialization, an alternative option for large or inaccessible cysts, was not necessary.[14]

Intraoperative macroscopic examination revealed a brown, firm, nodular cyst encapsulated by adipose tissue. The multilocular cyst contained a greenish-brown fluid. Cysts containing yellowish-brown or greenish-brown fluid are often associated with the posterior jejunum or ileum due to the abundant arterial vascularization of the mesentery in this region.[15] Given the cyst's location and the frequent occurrence of mesenteric cysts in the ileal mesentery, the origin of this cyst was likely from the ileal mesentery.

Histopathological examination confirmed the diagnosis of lymphangioma, characterized by the presence of lymphatic follicles in the cyst wall.[16] Lymphangiomas are congenital, benign neoplasms of the lymphatic system, resulting from malformations or disruptions of the lymphatic drainage system. Although acquired lymphangiomas may occur secondary to surgery, trauma, or radiation, the absence of such a history in this patient suggests a congenital origin.[2]

The prognosis for patients with lymphangioma is generally excellent, and the risk of recurrence after complete surgical excision is low, reported to be less than 3%.[2] In this case, the patient has had an uneventful postoperative course with no evidence of recurrence This patient had good prognosis, as the condition is not life-threatening, does not require bowel resection, and has a low likelihood of recurrence.

Conclusion

This case report highlights the diagnostic challenges associated with mesenteric cysts in children, as illustrated by a 2-year-old boy with a 14-month history of abdominal distension. Our differential diagnoses included mesenteric cysts, ascites, abdominal tuberculosis, abscess, and intra-abdominal masses. Given the nonspecific presentation of mesenteric cysts, relying solely on history and physical examination for diagnosis can be challenging. Therefore, abdominal ultrasound is necessary for initial imaging modality in the workup of patients suspected of having a mesenteric cyst.

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Conflict of Interest

None declared.

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