CASE REPORT
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Sub-Hepatic Appendicitis: A Case Report

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ABSTRACT

Sub-hepatic appendicitis, an uncommon type of acute appendicitis, has distinct obstacles in diagnosis and therapy. A 12-years-old boy presented with two days of right-sided lower abdomen pain, fever and vomiting. Computed Tomography (CT) scan revealed characteristics indicative of sub-hepatic appendicitis. An open appendectomy was performed. Sub-hepatic appendicitis is regarded as a rare presentation of acute appendicitis. Its atypical anatomical position might complicate recognition and diagnosis, mirroring other disorders. The prognosis of sub-hepatic appendicitis relies on prompt diagnosis and treatment. Complications may arise from a delayed diagnosis.

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INTRODUCTION

Appendicitis is one of the most common causes of abdominal pain in the younger population. It is also a common acute surgical condition.[1] Normal appendix anatomy and classical presentation are well documented but aberrations exist as evidenced by the published literature.[2] Classic symptoms include right iliac fossa (RIF) pain, anorexia, nausea, constipation, and vomiting; however, these classical presentations only occur in 50%of people.[3] A high index of suspicion and awareness of these anatom-ical variants is necessary in order to correctly diagnose and safely manage appendicitis.

This case report details the clinical and radiological findings of a 12 year old male child diagnosed with a sub-hepatic appendicitis, emphasizing the obstacles faced, the management strategies utilized, and the significance of recognizing such anatomical variations.

The Case

A 12 years old male patient presented to the Surgery department of North Bengal Medical College and Hospital with a two days history of right-sided lower abdominal pain, fever, nausea, anorexia, and vomiting. His core body temperature was 37.8°C and other vital signs (e.g. Blood pressure, respiratory rate etc.) were within normal limit. The abdominal examination indicated tenderness in the right side of abdomen, predominantly in the upper right quadrant, accompanied by muscular rigidity and positive rebound tenderness. The laboratory blood analysis revealed a leukocyte count of $4.2x10^9$/L, with neutrophils constituting 85% of the total. Kidney and liver function tests were within normal limit. Ultrasonography (Figure 1) of the whole abdomen indicates sub-hepatic acute appendicitis or diverticulitis.

Figure 1: USG findings of Sub hepatic appendix

Chest and abdominal radiographs were normal; however, the abdominal CT scan (figure 2) revealed sub-hepatic acute appendicitis or diverticulitis, with the liver appearing of average size and exhibiting homogeneous CT texture. There was no dilation of intra-hepatic or extra-hepatic biliary radicles.

Figure 2: CT scan image depicting a subhepatic appendix

CT scan stated that the appendix is notably dilated, measuring 9.3 mm in diameter, with a fluid-filled lumen and an augmenting wall, accompanied by surrounding fat stranding and small regional lymphadenopathies in the sub-hepatic region, without any accompanying mass, abscess, or fluid collection. The patient was transported to the operating room for open

appendectomy following antibiotic prophylaxis. During the exploration, we identified the inflamed appendix and caecum located in the sub-hepatic region. The appendectomy was performed successfully as there was no mass or perforation. The patient experienced a smooth recovery and was discharged after three days. On follow up he was well without any complication.

DISCUSSION

In 1955, King documented the first case of sub-hepatic appendicitis.[4] The sub-hepatic appendix results from the cecum's failure to descend and rotate. Approximately 0.2% of neonates exhibit intestinal malrotation, leading to the appendix and cecum being positioned subhepatically. The medical literature has concentrated on the prevalence of anatomical variations in the location of the vermiform appendix, including sub-hepatic appendix. The vermiform appendix is usually located in the lower right quadrant of the abdomen but anatomical anomalies may result in other positioning. Approximately 0.08% of the general population possesses sub-hepatic appendix.[5] Clinical signs and symptoms may be deceitful, resembling other conditions such as upper gastrointestinal disorders e.g. gastritis, cholecystitis or pancreatitis. Consequently, delays or misinterpretations in the diagnosis of sub-hepatic appendicitis may occur. Radiological imaging is necessary for the proper diagnosis of sub-hepatic appendicitis. Contrast-enhanced computed tomography (CT) scans are widely used to detect inflammatory changes and expose structural anomalies. Computed tomography (CT) scans exhibit a precision rate of 93 to 98%, surpassing that of ultrasonography.[6] Ultrasound is the initial preferred imaging modality because to its non-invasive characteristics. Nonetheless, sensitivity may be constrained by the appendix's location beneath the liver. A CT scan is often considered the most effective diagnostic method. It provides a comprehensive visual depiction of the inflammatory changes and anatomical site. A CT scan can aid in distinguishing sub-hepatic appendicitis from other illnesses that have similar symptoms.A contrast-enhanced CT scan was crucial in this report as it confirmed the sub-hepatic position of the appendix and indicated inflammation.

The standard treatment approach for appendicitis aligns with the management of sub-hepatic appendicitis. Surgical intervention, typically via appendectomy (open and laparoscopic), remains the cornerstone of treatment.[7] The patient's condition and the surgeon's expertise should inform the choice of surgical strategy. Laparoscopic appendectomy, with a success rate of 96.97%, has emerged as the predominant surgical method, enhancing patient outcomes.[8] The advantages of the laparoscopic procedure encompass a shorter recovery period and less postoperative pain. Open appendectomy was done for this case. The prognosis of sub-hepatic appendicitis relies on prompt diagnosis and timely management. A delayed identification of the inflamed appendix, situated near the liver, may lead to abscess formation, peritonitis, and potential organ damage.

Recognizing and understanding anatomical variations, such as the sub-hepatic appendix, yields significant clinical implications. Surgeons, radiologists and clinicians must be cognizant of these accurate diagnoses and effective treatments. Prompt identification of sub-hepatic appendicitis can avert unnecessary diagnostic delays and inform suitable management decisions. Insights derived from managing such cases contribute to improve medical treatments and patient outcomes

CONCLUSION

Evaluating this case of a 12 years old kid with a sub-hepatic appendicitis enhances understanding of this rare problem. A high index of suspicion and awareness of these anatomical variants is necessary in order to correctly diagnose and safely manage appendicitis.

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