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Original Research Paper

General Surgery

Torsion Of A Fatty Fringe Of The Falciform Ligament, A Rare Cause Of Acute Abdomen: A Case Report

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ABSTRACT The falciform ligament is a double fold of peritoneum that marks the anatomical division between the right and left lobes of the liver. Pathologic conditions of the falciform ligament are extremely rare; one particularly rare condition is the torsion of a fatty appendage of the falciform ligament leading to fat infarction. In this article, we present a case of an isolated falciform ligament torsion, a rare primary pathology of the falciform ligament. A 56-year-old female patient was admitted with the complaints of abdominal pain for 3 days. Imaging studies demonstrated torsion of facliform ligament. Exploratory laparotomy revealed a torsion and necrotic mass of the falciform ligament.

KEYWORDS : Falciform ligament; acute abdomen; Torsion

INTRODUCTION

The falciform ligament, which is located on the left of the midline of the abdomen, runs through the anterior wall of the abdomen and diaphragm. It is one of the anatomical structures which attaches the liver to the remnants of the umbilical veins. The length of the falciform ligament may vary individually and it contains the ligamentum teres and obliterated umbilical vein. Pathologic conditions of the falciform ligament are extremely rare; one particularly rare condition is the torsion of a fatty appendage of the falciform ligament leading to fat infarction. This type of torsion and/or infarction occurs more commonly in the greater omentum or epiploic appendages. The condition causes abdominal pain and associated raised inflammatory markers, and it can be identified on ultrasound and CT scan. In this paper, we present a case that underwent urgent surgery due to acute abdomen, which was secondary to primary falciform ligament torsion.

CASE PRESENTATION

A 56-year-old female patient was admitted with the complaints of pain in the right upper quadrant and the epigastric region. The patient's history revealed an abdominal pain for past 2 days with an increasing severity. Patient is a known hypertensive on treatment. Physical examination suggested a systolic blood pressure of 110/70 mmHg, pulse rate of 108 bpm. The patient was afebrile and was not jaundiced. Guarding & tenderness was present in the right hypochondrium & epigastric region of abdomen, picture that of an acute abdomen. Laboratory test results showed a leukocyte count of 10,500/mm3 (4000–10,000/mm3). Serum chemistry tests and electrolyte measurements did not indicate any pathology related to acute abdomen. Abdominal ultrasonography did not demonstrated any abnormality like free fluid or any gall bladder pathology. Abdominal computed tomography showed Oval shaped fat dense structure lying adjacent to the falciform ligament with focal inflammatory changes in the local fat (Figure 1). It has an enhancing margin with mild stranding of the fat around it, features suggestive of torsion of falciform ligament with focal fat necrosis. Based on these findings, the patient was immediately scheduled for laparotomy which revealed torsion of falciform ligament around its axis (figure 2), a focal necrotic patch with early gangrenous changes noted in the falciform ligament towards the abdominal wall with minimal omental adhesions, no free fluid noted. All other organs were found to be normal. The falciform ligament was resected. The histopathological examination of surgical specimens revealed congested capillaries and necrosis seen compatible with torsion of falciform ligament. The postoperative period was uneventful. Patient was discharged on the seventh postoperative day and also after 6-month follow-up, no complaints were found out.

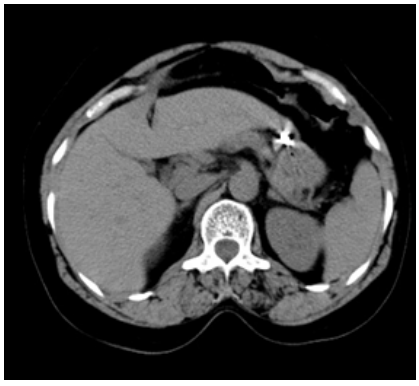

Figure 1- CECT abdomen

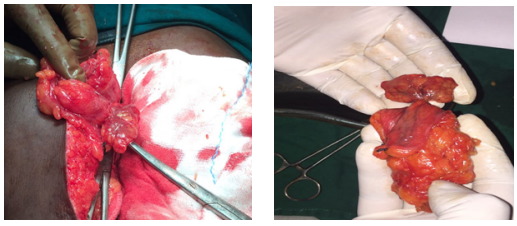

Figure 2 - torsion of falciform ligament around its axis

DISCUSSION

The term "intra-abdominal focal fat infarction", or IFFI, has been used to describe focal fatty tissue necrosis or in various anatomical locations. IFFI are most often due to torsion and/or infarction of the greater omentum or epiploic appendages but have also been reported to involve the lesser omentum and the appendage of the hepatic falciform ligament which is very rare. [1]

The falciform ligament is a double fold of peritoneum that

anatomically divides the liver into the right and left lobes. It extends from the superior surface of the liver to the inferior surface of the diaphragm and to the posterior surface of the anterior abdominal wall. It contains the ligamentum teres, paraumbilical veins, and variable amount of extra peritoneal fat. [3] It is extremely rare to see pathologic conditions of the falciform ligament which include ligament cysts, tumours, abnormal vascularisation due to portal hypertension, iatrogenic internal hernia of bowel loops through the ligament, and gangrene related to acute necrotising pancreatitis, along with torsion of the falciform ligament as described in this case. Additionally, the most recognized abnormalities of the falciform ligament are congenital pathologies including derivation and partial ligament defects [3][4][5].

Both ultrasound and CT can be used to visualise a torted fatty appendage of the falciform ligament. It is not possible to use plain film radiography to diagnose this condition, as the falciform ligament is only evident on abdominal plain films in the setting of pneumoperitoneum. In that situation, the "falciform ligament sign" is produced, which consists of gas outlining the falciform ligament. On ultrasound, a torted fatty appendage of the falciform ligament appears as a hyperechoic, noncompressible, slightly heterogeneous mass in the area of maximal abdominal tenderness. Further, on real-time sonography, the lesion does not move with underlying intraperitoneal structures while breathing, which indicates its extra peritoneal position. On CT, a torted fatty appendage of the falciform ligament appears as an area with increased fat density, associated with surrounding inflammatory changes in the adjacent fat planes [1]. To our knowledge, there has been no previous description of the appearance of a twisted infarcted fatty appendage of the falciform ligament on MRI. However, MRI would be a valid alternative form of imaging to diagnose this condition, because it would distinguish adipose tissue from oedema or bleeding, it avoids radiation exposure particularly in the case of a paediatric patient, and it avoids contrast medium administration and its associated nephrotoxicity. Coulier reported that the contrast-enhanced abdominal computed tomography is the gold standard for diagnosis of intraperitoneal fat necrosis as well as the follow-up of the disease. In recent years, the number of patients faced with the intraperitoneal fat tissue necrosis including the falciform ligament has been increasing parallel to the development in the field of radiology[3][4][5].

The primary falciform ligament torsion & necrosis is often diagnosed during surgery. Coulier proposed that patients diagnosed with falciform ligament necrosis could be treated medically after excluding other disorders with a detailed history, whereas most writers still put forward to surgical treatment in patients with falciform ligament necrosis. In such patients, laparoscopy is another treatment option. Wider uses of diagnostic laparoscopy in acute abdomen have also picked up many such cases. But only a few cases of falciform ligament infarction have been reported. Laparoscopy or laparotomy is indicated when the diagnosis is not clear or when there is no improvement on conservative measures. [2][4][5]

CONCLUSION

In conclusion, falciform ligament torsion is an extremely rare cause of acute abdomen. Always a surgeon should have this diagnosis in mind and confirm it with a radiological imaging. If conservative management fails, surgery is the only treatment of choice. Laparoscopy or laparotomy can be performed according to the preference and experience of the surgeon as well as the overall condition of the patient.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interests regarding the publication of this paper.

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