Rupture of mature cystic teratoma induced by a car accident

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Abstract

Benign cystic tumors can originate from the retroperitoneum and are known to develop in adult males and females asymptomatically. Radiological diagnosis of teratomas in the retroperitoneal region is difficult and often confused with myelolipoma or other lipomatous tumors. This case report describes the incidental finding of mature cystic teratoma of the retroperitoneal region, which ruptured post motor vehicle accident (MVA) in 31years, old female patient. The patient present to the emergency department 24 hours post-accident with symptoms and signs of peritoneal inflammation. As a result of the seat belt injury, the cystic teratoma of the left retroperitoneum had ruptured. Due to anatomical location, the cyst was only partially removed. This case report has raised multiple clinical dilemmas and is the first of its kind in trauma patient management of mature cystic teratoma.

Keywords: Cystic teratoma, traumatic rupture, abdominal trauma, seat belt injury, aseptic peritonitis, diagnostic laparoscopy.

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Introduction

Benign cystic teratomas, as well as other germs cell tumors, can originate not only from gonads but also from the retroperitoneum and are known to develop in adult males and females asymptomatically. Only a few cases of teratomas in the vicinity of the retroperitoneal space have been reported around the world, especially in adults (1),(2),(3),(4),(5),(6),(7),(8). Teratoma is a germ-cell tumor, which contains well-differentiated tissues from embryonic layers. As a result of this, they are encountered commonly in the gonads. Our report describes a mature cystic teratoma in the retroperitoneal region in a patient, which was incidentally discovered post-MVA trauma.

Case Report

A 31 year old female presented to emergency department (ED) post MVA with a minor laceration to her left forehead. She was a rear-seat passenger when the car was T-boned by another vehicle traveling at speed of 70 km/hr. The other passengers remained unharmed. When she presented, her only medical history was a large ovarian cyst, which had been removed in her 20's. She also suffered intermittently from upper abdominal pain since the age of 10, which was not investigated previously and did not take any regular medications. On initial examination she was hemodynamically stable, Glasgow coma scale (GCS) was 15 and the computer tomography (CT) scan of head and neck was normal. Focused assessment with sonography for trauma (FAST) scan was negative. Tertiary survey did not reveal any other injuries. Her forehead laceration was managed and the patient was discharged home.

However, 12 hours later the patient represented with upper abdominal pain. Examination showed a body temperature of 38.3^0C, heart rate (HR) of 94, her blood pressure (BP) was 115/67 and blood oxygen saturation of 100% on room air. The abdomen on examination was soft, distended and tender in the left upper quadrant. FAST scan revealed free intra-abdominal fluid.

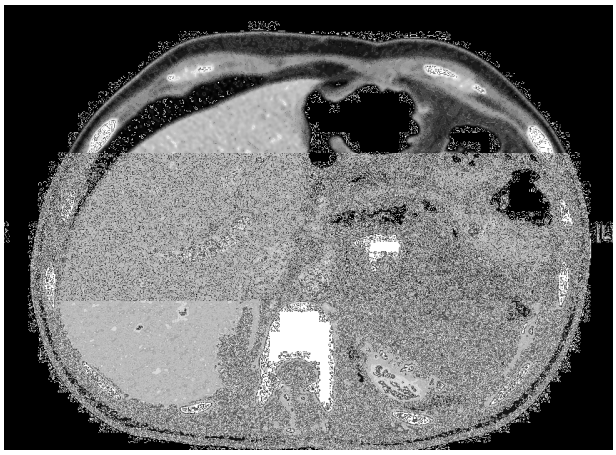

Fig 1A: Axial abdominal CT with contrast showing large retroperitoneal cystic lesion with area of calcification.

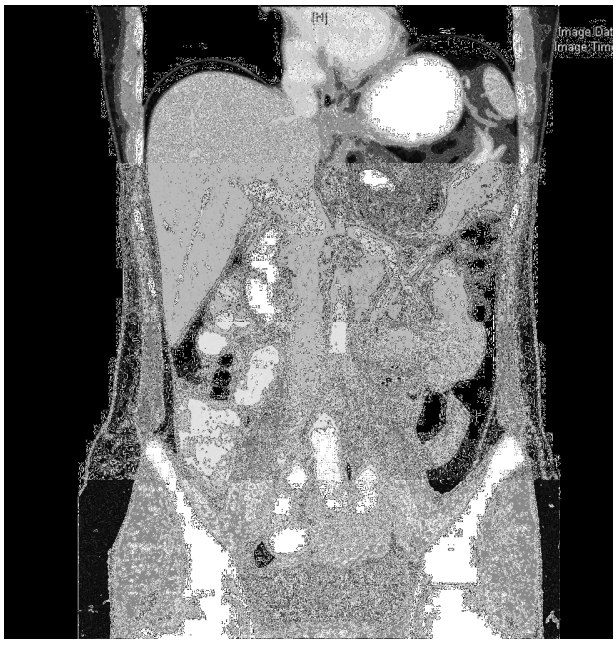

Fig. 1B: Representative coronial view showing retroperitoneal calcification with surrounding high density cystic content.

Provisional diagnosis was made as seat belt bowel injury or splenic injury at that stage. CT scan of abdomen performed to confirm initial diagnosis showed a large mixed density mass 10 x 9 cm in retroperitoneum. The finding location was focused around left adrenal gland and characterized by fat density with calcified rim and central coarse calcification. It also demonstrated soft tissue stranding and free fluid in the abdominal cavity with no free intra-abdominal gas. The liver, spleen, and kidneys were of normal appearance with no evidence of injury. In conclusion, a diagnosis of myelolipoma with post-traumatic hemorrhage was suggested (Fig 1A and B).

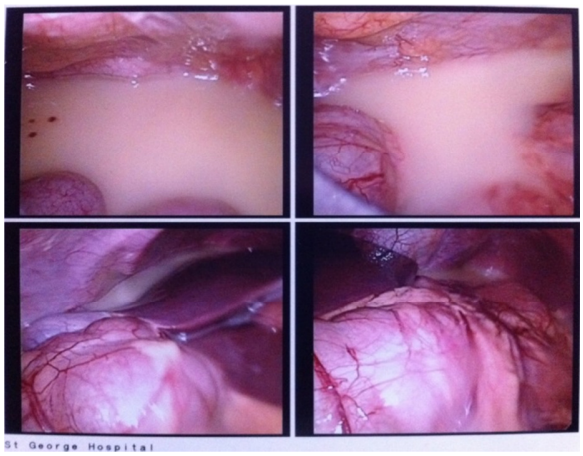

Fig. 2: Laparoscopic view of the patient's peritoneal cavity after ruptured cystic teratoma.

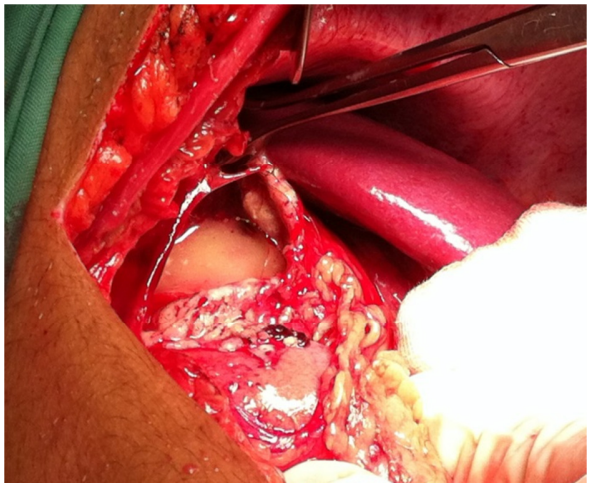

Fig. 3: Intra-operative view of the ruptured retroperitoneal cyst.

Clinically, the patient's condition was deteriorating rapidly with developing symptoms and signs of sepsis. Her full blood count (FBC) included white cells count (WCC) of 14, hemoglobin (Hb) of 144, hematocrit (Ht) of 0.42 and lactate 2.1, which suggested acute inflammatory reaction rather than intra-abdominal bleeding. Based on this a decision

for the emergency surgical procedure was made and the patient was taken to the operating theater for diagnostic laparoscopy. The finding at laparoscopy revealed a large amount of pale, not purulent fluid with fatty inclusions (Fig.2). The procedure was converted to laparotomy with approximately 1.5 L of pus like odor free fluid aspirated. No injuries to the liver, spleen, small and large bowel including right retroperitoneal space were identified. The fluid source was the left side retroperitoneal cyst which was located between the stomach, spleen and left kidney (Fig.3). The cyst contained a large volume of yellow pale mucous and packed hair (Fig.4). The cyst was intimately attached to the splenic hilum, greater curvature of stomach anteriorly and upper renal pole. During removal of the cyst preservation of the spleen was not possible, as the splenic vessels were adherent to the cyst wall. Also, the cyst wall contained the entire left adrenal gland. It was necessary to perform a splenectomy and left adrenalectomy. About 80% of the cyst was removed as the remainder of the wall was intimately adjacent to the left renal vein. The abdominal cavity was flushed with antiseptic solution and normal saline following by placement of a large Blake drain. The patient recovery was unremarkable and she was discharged 10 days post operation.

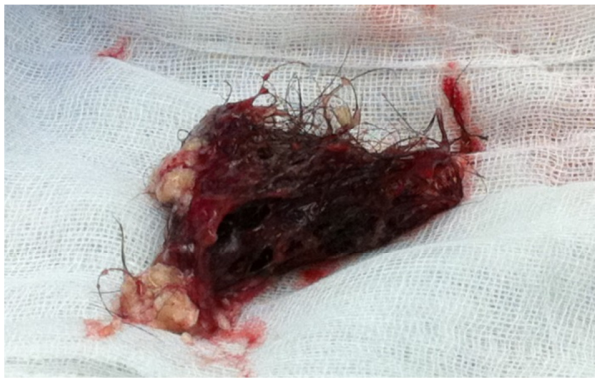

Fig. 4: Content of the ruptured cystic teratoma with hair and adipose material.

The sample of the cyst with adjacent structures was sent for histopathology analysis, which showed a mature cystic teratoma lined by skin with adnexal elements (fat and hair) including minor salivary gland tissue. The capsule of the cyst showed extensive fibrous tissue with dystrophic calcification. A portion of the adrenal gland was also intimately associated with the cyst capsule. There were no immature elements and no evidence of malignancy.

Discussion

Our experience with the mature cystic teratoma was due to a female patient presented post-MVA, causing rupture of the cyst as consequence of seat belt injury from the impact.

The anatomical location of the teratoma was in the left retroperitoneal region involving left adrenal gland, which has a very rare presentation. What makes this case also unique is that the patient was presenting to the hospital emergency with symptoms of peritonism similar to delayed presentation of a ruptured viscus or intra-abdominal bleeding. It was unexpected to find a large cystic teratoma in view of not conclusive preoperative radiological findings.

During the management of this case, surgeons faced several issues. Firstly, difficult to distinguish teratoma from other lipomatous tumors of retroperitoneal space, such as myelolipoma or angiolipoma (2),(9),(10) by radiological findings and diagnosis of bleeding myelolipoma suggested by CT scan was misleading. Secondly, the anatomical location of the cyst with intimately adjusted wall to the major blood vessels and vital organs. Thus, presenting a surgical technical challenge to remove the cyst without complications, keeping in mind the possibility of the malignancy. There are very few published cases of retroperitoneal teratoma in the English literature and all have demonstrated difficulties in the radiological diagnosis of the condition and management.

Also, the management issue, in this case, was that cystic teratoma has a potential risk of malignancy. Our patient had a “benign” grade 0 teratoma, however, malignant endodermal sinus tumor has been reported previously (11),(12). This patient had incomplete removal of her cyst due to anatomy related technical difficulties, which leads to our tertiary issue of long-term follow-up (13),(14). It has been reported, that risk factors for malignant transformation of mature cystic teratoma may include older age with postmenopausal status, large tumor mass and elevated CA-125 level (15). Adequate follow-up requires close observation, involving repeated physical examination, scanning (ultrasound, MRI, or CT), and measurement of AFP, βhCG, and CA-125. We decided the best course of action in this instance was to work in conjunction with the oncology team.

Conclusion

This case report describes a rather unusual presentation of post-traumatic aseptic peritonitis caused by the rupture of large cystic teratoma which was initially misleading for clinicians, simulating intra-abdominal bleeding or traumatic perforated viscus. The absence of shock features with negative FAST was urging to perform diagnostic laparoscopy, which confirmed the present of the free fluid of cystic nature. Although this case is rare, it highlights the importance for surgeons to be aware of possible scenarios and enhancing the role of diagnostic laparoscopy for pathology clarification and surgical decision making. We believe this case report is the first to raise the issue of management of incomplete removal of the mature cystic teratoma and will contribute to detection and management of future cases. Another point of note is that the mature cystic teratoma should be considered as a differential diagnosis of adrenal lipomatous tumors, not only in children but also in adults.

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