Case Report

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Ruptured Cystic Mesothelioma Diagnosed after Blunt Trauma; Case Report and Literature Review

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ABSTRACT

The majority of blunt trauma is secondary to motor vehicle crashes,especially in those wearing seat belts or sitting in the front or passenger seat location. Hollow viscus gastrointestinal injuries occur more frequently in small bowel, followed by colorectal, duodenum, stomach and appendix. A 25-year-old male presents after being involved in a motor vehicle accident. Initial workup was significant for moderate amount of pelvic free fluid and curvilinear,cysticlike structures in the pelvis. He subsequently developed peritonitis and under went diagnostic laparoscopy, which revealed multiple cystic nodules arising from the peritoneum. Pathology demonstrated benign cystic mesothelioma (BCM). BCM is a very rare condition of mesothelial lined, variably sized, fluid filled cysts that arises from the serous, pericardial or peritoneal lining. Due to the scarcity of cases, its management and prognosis are not fully established. This singular case highlights the necessity for a clinician to have a wide differential forunusual causes of free pelvic fluid after blunt abdominal trauma.

Keywords: Benign cystic mesothelioma; Blunt trauma; Laparoscopy.

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Introduction

The majority of blunt trauma is secondary to motor vehicle crashes,especially in those wearing seat belts or sitting in the front or passenger seat location. Hollow viscus gastrointestinal injuries occur more frequently in small bowel, followed by colorectal, duodenum, stomach and appendix[1]. Most frequently injured solid organs include liver, spleen, kidney, mesentery and reproductive organ injury. Differential diagnosis of free pelvic fluid after blunt abdominal trauma include injuries to both hollow and solid organs. Herein, we present a case of a 25-year-old male presenting after blunt abdominal trauma with free pelvic fluid who subsequently developed peritonitis, thereby emphasizing the need for wide differential for unusual causes of free pelvic fluid after blunt abdominal trauma.

Case Report

The patient provided appropriate consent for this case presentation. A 25-year-old male with history of seizures presents to the Emergency Department after being involved in a motor vehicle accident with questionable loss of consciousness complicated by subsequent seizure activity. Upon presentation, initial vital signs were blood pressure 159/83 mmHg, heart rate 98 bpm, 20 breaths/min on 99%room air. Primary survey did not reveal any abnormalities, and secondary survey was significant for right lower extremity tenderness. In the trauma bay, FAST (Focused Assessment with Sonography for Trauma) scan was negative for any free fluid. However, due to the mechanism of injury, computed tomography (CT) of head, cervical spine and abdomen/pelvis were performed. Imaging was negative with the exception of moderate amount of pelvic free fluid and a curvilinear, cystic like structure in the pelvis (Figure 1). Right foot x ray showed a Lisfranc injury (dislocated metatarsal fractures). The patient was admitted for observation and serial abdominal exams. Upon first serial abdominal exam, new onset lower abdominal tenderness with voluntary guarding and rebound was noted. He was taken to the operating room for a diagnostic laparoscopy.

Intraoperatively, multiple cystic nodules were identified arising from the peritoneum and moderate amount of free pelvic fluid (Figure 2). Several cystic structures were carefully harvested and sent for histological examination. Pelvis was copiously irrigated and free fluid was aspirated. Pathology was consistent with benign cystic mesothelioma (BCM) (also known as mesothelial cysts or multi cystic peritoneal mesothelioma). Postoperative course was unremarkable with complete resolution of abdominal pain. Patient was discharged on postoperative day 4 with close follow-up after fixation of Lisfranc fracture.

Discussion

BCM is an extremely rare condition consisting of mesotheliallined, variably sized,fluidfilled cysts that arises from the serous, pericardial or peritoneal lining[2,3]. Thenatural history of disease is poorly understood. Pathogenesis may include chronicinflammatory conditions including previous surgery, endometriosis, uterine leiomyomaand possibly female sex hormones consideringa 5:1 female to male ratio[4]. It has also been reported 8 cases reported in the pediatric population [5,6].

Fig. 2. Intraoperative findings. Multiple cystic structures incidentally identified arisingfrom the peritoneum and moderate amount of free serous fluid in the pelvis.

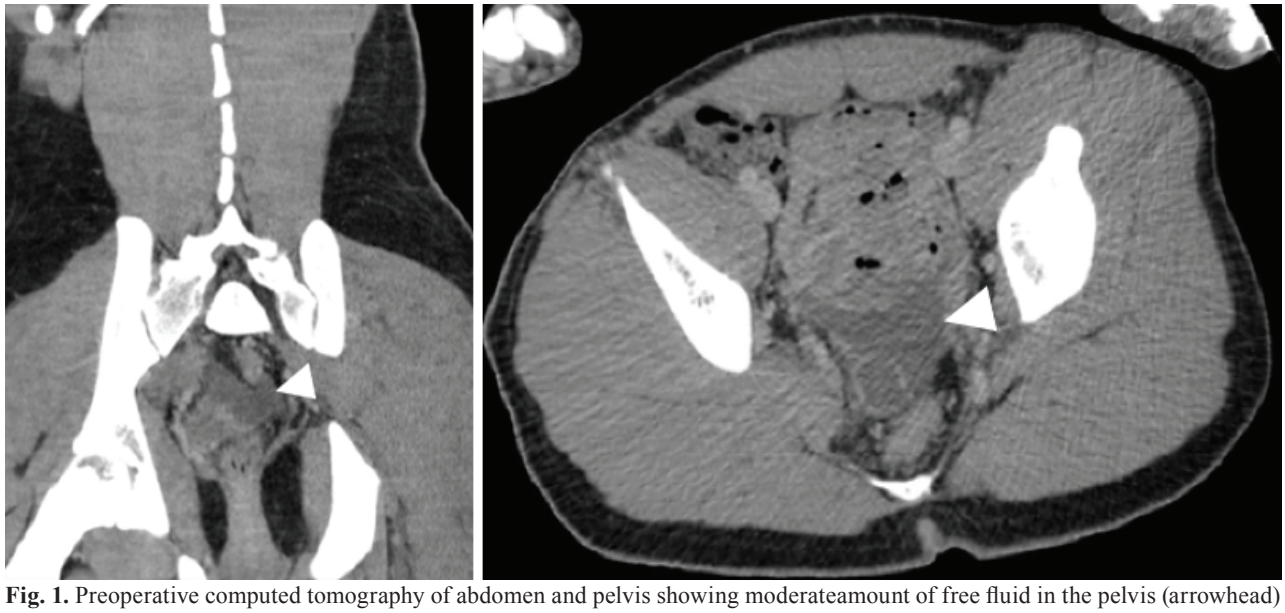

Fig. 1. Preoperative computed tomography of abdomen and pelvis showing moderateamount of free fluid in the pelvis (arrowhead)

In this case, the patient had no prior history of trauma or surgery.On the other hand, BCM can be considered as neoplastic in origin as it is associated with highlikelihood of recurrence, and potential for malignant transformation[4].The differential diagnoses include cystic lymphangioma, mucinous cystadenoma, mesenteric cysts, and hydatid disease. Cystic lymphangiomas typically affect the mesentery, omentum, retroperitoneum, and mesocolon, whereas BCM tends to affect the pelvis predominantly, with occasional involvement of the upper abdomen and retroperitoneum [6]. In comparison, cystic lymphangiomas occur more commonly in males and in children [6].

Typical presentationincludes progressive chronic vague abdominal pain, increasing abdominal girth andweight loss over several months[7].Herein, we present the first case of BCM diagnosed after a blunt trauma. The presentation is unique because of acute abdominal pain withperitoneal signssecondary to cystic rupture and peritonealirritation. There is a wide differential diagnosis of peritonitis after blunt abdominaltrauma including but not limited to injuries to intraperitoneal organs, vessels ormesentery. In particular, some childhood tumors such as Wilms' tumor can be ruptured and can cause life-threatening conditions by a minor trauma. Therefore, abdominal masses should be kept in mind in children admitted with history of trauma [8].It is of utmost importance appropriate serial abdominal examsduring nonoperative managementafter blunt trauma. Even in the presence of distracting injuries, the sensitivity and negativepredictive value of abdominal exams are 90% and 97%, respectively[4].

Currently, no standardized treatment algorithm has been established for BCM, howeversurgical resection is considered the mainstay treatment[9,10].Image-guided aspiration provides fluid for cytological evaluation and it can lead to resolution of symptoms, however recurrence occurs in the majority of cases [11]. Observation with serial imaging is a feasible option for asymptomatic patients with an incidentally discovered BCM, however the potential for peritoneal carcinomatosis makes this approach controversial. In our case, the patient developed peritonitis, which mandated surgical exploration. BCM has also been reported in the pediatric population [5,12-14]. The preferred treatment modality in these cases is also excision and the prognosis is uncertain because high recurrence rates and malignant degeneration. Lifelong follow-up is recommended with serial physical examinations and imaging. Re-excision should be reserved for symptomatic relief of severe recurrences [12].

The surgical management varies from conservative adhesiolysis to radical tumor debulking and cytoreductive resection.The surgical approach may be via laparoscopy or laparotomy. Definitive treatment is defined as complete resection of the entire macroscopically visible cyst wall. Even with complete surgical removal, halfof cases experience local tumor recurrence [15]. It is unknown if cystic rupture, such as in our case, is associated withincreased risk of such complications. Systemicchemotherapy and heated intraoperative intraperitoneal chemotherapy (HIPEC) to reducerecurrence and in cases of peritoneal dissemination remains controversial [2].

In conclusion, this is a singular case of a patient presenting after blunt abdominal trauma diagnosed with ruptured BCM managed with laparoscopic excision. This case highlights the importance of serialabdominal exams after trauma, especially in the presence of distracting injuries. Everyclinician should be aware of wide differential diagnosis of free pelvic peritoneal fluidafter blunt abdominal trauma.

Conflict of Interest: None declared.

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