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Diagnostic evaluation and management of patients with rectus sheath hematoma. A retrospective study

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ABSTRACT

Introduction: Rectus sheath hematoma (RSH) is an uncommon cause of acute abdominal pain. It may mimic a wide variety of intraabdominal disorders thus frequently leading to delay in treatment, increased morbidity or even in an unnecessary surgery.
Patients and methods: This is a retrospective study of 10 patients with RSH who were treated in our department over a five-year period. There were 6 (60%) men and 4 (40%) women ranging in age from 38 to 86 years, with a mean age of 57.1 years.
Results: The most common clinical presentation was a palpable abdominal mass associated with abdominal pain. Computed tomography (CT) established the diagnosis in 100% of the cases. 4 patients had type I hematoma, 3 had type II hematoma and 3 had type III hematoma. Anticoagulation therapy was the most common predisposing factor. Conservative treatment was effective in 90% of the cases and in all cases of spontaneous RSHs in patients under anticoagulation therapy. One patient, who developed a very severe RSH following an abdominal injection of low-molecular-weight heparin (LMWH), underwent surgery. All patients with type III hematoma required blood transfusion.
Conclusions: RSH should be considered in the differential diagnosis of the elderly patients under anticoagulation therapy presenting with acute abdominal pain and a palpable mass. CT is the diagnostic modality of choice. Conservative treatment is feasible in most cases. Early diagnosis is mandatory in order to avoid morbidity or unnecessary surgery. In order to prevent a traumatic RSH, trocar insertion under direct vision during laparoscopic surgery and careful attention in the abdominal administration of LMWH are essential.

1. Introduction

Rectus sheath hematoma is the most common primary non neoplastic disorder of the rectus abdominis muscle.[1] It is an uncommon clinical entity resulting from accumulation of blood within the sheath of the rectus abdominis muscle secondary to tearing of the epigastric vessels or their branches or from direct tearing of the rectus abdominis muscle fibers. RSH may mimic a number of acute intraabdominal disorders thus posing a diagnostic dilemma on clinical examination. In the era before the advent of CT and ultrasonography a correct preoperative diagnosis was made in less than 30% of the cases.[2] Although the exact incidence is not known,[3] Klingler et al. found an incidence of 1.8% of RSH among 1257 patients who underwent ultrasonography for acute abdominal pain or unclear acute abdominal disorders.[4] In a recent literature review, an increasing prevalence and severity of RSH was observed largely due to the increased use of anticoagulation in the elderly.[5] In this study we describe our experience in the diagnostic evaluation and management of patients with RSH who were treated in our department over the past five years.

2. Materials and methods

We retrospectively reviewed the medical records of patients with documented RSH who were treated in our department over a 5-year period (from January 2005 to November 2009). Demographic characteristics, mode of presentation, comorbid conditions, anatomic characteristics of RSHs, methods of diagnosis, laboratory data, treatment, hospital stay, and outcome were analyzed.

3. Results

During the study period we identified 10 patients with documented RSH. There were 6 (60%) men and 4 (40%) women ranging in age from 38 to 86 years, with a mean age of 57.1 years.

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In 2 patients the RSH was secondary to an epigastric vessel injury during trocar insertion for laparoscopic cholecystectomy, whereas 2 other patients developed a traumatic RSH due a car accident and a fall from a horse. All the above mentioned patients had no comorbid conditions. The remainder 6 patients with RSH were all receiving anticoagulation therapy. Out of those, 5 suffered a spontaneous RSH while 1 developed a RSH shortly after an abdominal injection of low-molecular-weight heparin (LMWH). The indications for anticoagulation therapy with warfarin were atrial fibrillation and coronary heart disease in 3 patients while 3 patients were receiving LMWH for deep vein thrombosis prophylaxis.

All patients presented with a palpable abdominal mass ranging from 4.2 to 18 cm in diameter. Severe acute abdominal pain occurred in 8 (80%) of the cases while in the postcholecystectomy patients the abdominal pain was mild. One patient had typical manifestations of acute abdomen at presentation. He was admitted with a sudden onset of severe abdominal pain associated with nausea and vomiting. On physical examination, his abdomen was distended with diffuse tenderness, guarding and rebound tenderness. The interval between the onset of symptoms and imaging ranged from 3 to 24 h.

CT of the abdomen and pelvis established the diagnosis of RSH in all patients (100%), while ultrasonography was performed in 5 patients but was inconclusive in 2 of the cases. According to the classification based on CT findings proposed by Berna et al,[6] 4 patients had type I hematoma, 3 had type II hematoma and 3 had type III hematoma (Figs. 1–3).

Six RSHs (60%) were right-sided: 4 in the right lower abdominal quadrant and 2 in the right hypochondrium. Of the 4 left-sided RSHs 3 located in the left lower quadrant and 1 in the left hypochondrium. In 2 cases the hematoma extended across the midline.

Leucocytosis (white blood cell count greater than 10.000/mm^3) was detected in 3 patients. Both hemoglogin and hematocrit levels declined in all patients but blood transfusions were necessary in all 3 patients with type III hematoma and in 1 patient with type II hematoma. Coagulation parameters were in therapeutic ranges in 5 patients but excessive warfarin anticoagulation was detected in one patient.

Nine out of 10 patients (90%) were treated conservatively with complete bed rest, adequate analgesia and discontinuance of anticoagulant therapy. Emergency reversal of excessive anticoagulation was achieved by administration of fresh frozen plasma and vitamin K.

Emergency surgery was performed in one patient who was receiving LWMH on an outpatient basis and presented with typical manifestations of an acute abdomen and signs of hypovolemic shock. The severe abdominal pain had started shortly after an abdominal wall administration of LMWH. Laboratory data revealed a hematocrit of 18%. CT revealed a large type III RSH associated with massive hemoperitoneum. After resuscitation, the patient underwent surgical exploration of rectus sheath and abdomen. The bleeding vessel was ligated and the hematoma was evacuated.

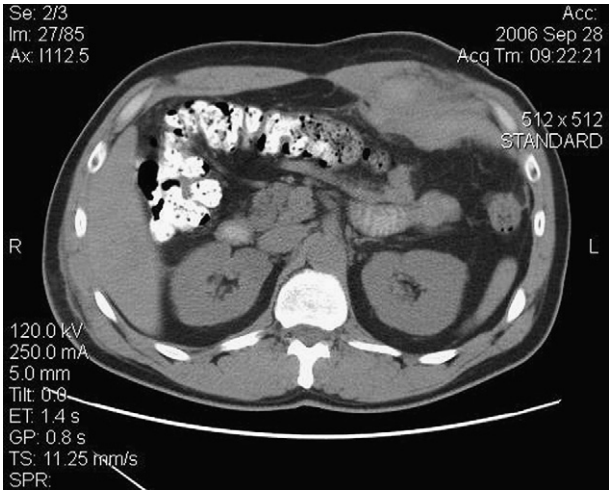

Fig. 2. Computed tomography scan of the abdomen demonstrating a left-sided type II RSH in a 38-years old man after laparoscopic cholecystectomy.

In the group of patients on anticoagulants, the anticoagulation therapy was reintroduced after the stabilization of the patient's hemodynamic condition, by adjusting the dose of heparin or LMWH according to coagulation status and the judged risk of thromboembolism. Oral anticoagulation was reinstated 6–7 days after the start of heparin therapy. We did not observe any recurrent RSH after the reintroduction of anticoagulation therapy.

Mean hospital stay was 6.5 days (range 3–15 days). There was no mortality or thromboembolic complications.

4. Discussion

RSH is an uncommon clinical entity that was first accurately described in antiquity by Hippocrates and mentioned by Gallen. The first case in the United States was reported by Richardson in 1857.[7]

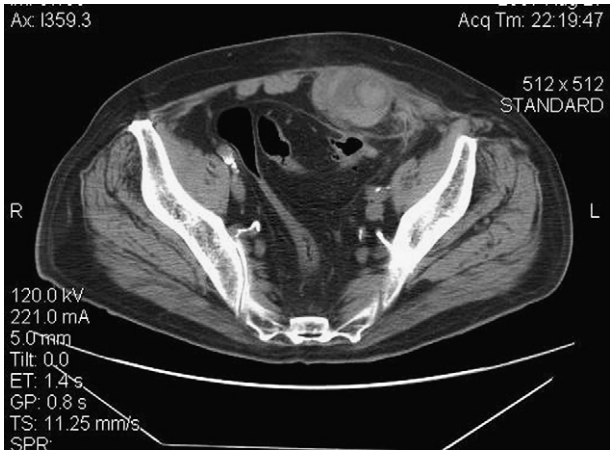

Fig. 1. Computed tomography scan of the pelvis demonstrating a left-sided type I RSH measuring 4.2 × 4.4 × 11 cm in a 78-years old man under anticoagulation therapy.

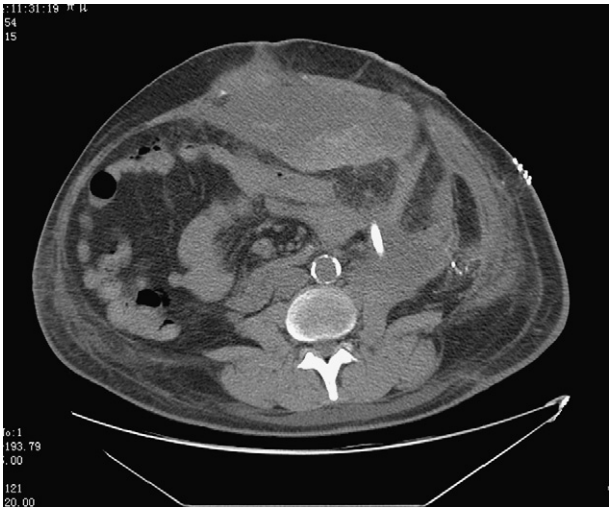

Fig. 3. Computed tomography scan of the abdomen demonstrating a large left-sided type III RSH measuring 18 × 17 × 7 cm in a 46-year old man with chronic renal failure.