

## Case Report

# Acute abdomen secondary to dependent rectus sheath hematoma: a case report

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## ABSTRACT

The rectus sheath hematoma as a rare clinical entity and self-limited, resulting from the accumulation of blood within the sheath of the rectus abdominis, secondary to breakage the epigastric artery higher or lower, or direct damage by fiber tear of rectus abdominis muscle. Female patient, 37 years old, enters the service of emergencies by refer abdominal pain of sudden onset, diffuse, with 5 hours of evolution with irradiation to lumbar region ipsilateral. In the CT scan in single stage and with IV contrast, it was reported an asymmetry in the thickness of the muscles of the anterior wall at the expense of a lesion of occupying space dependent anterior rectus muscle, as diagnostic impression is concluded a intramuscular injury dependent of the right anterior abdominal straight; likely bruising of the sheath of the straight abdominal by what is being decided its income to operating room to perform surgical drainage and epigastric vessel ligation. for the general doctor, specialist and it is important to take into account the pathology, symptoms, diagnostic and therapeutic strategy for a hematoma dependent of the rectus abdominis muscle, due to the high percentage of error diagnosis in patients who are admitted to the emergency department with acute abdominal pain, because you can Confused with other abdominal pathologies, which shows the importance of an appropriate differential diagnosis, and treatment prescribed, which optimize and reduce unnecessary intervention as well as morbidity and mortality of this disease.

**Keywords:** Acute abdomen, Hematoma of the rectus abdominis, Hematoma of the rectus sheath

## INTRODUCTION

The rectus sheath hematoma is a rare clinical entity and most of the times self-limited depending on the degree of presentation. This hematoma results from the accumulation of blood within the rectus abdominis sheath, secondary to the rupture of the superior or inferior

epigastric arteries or due to tears of the rectus abdominis muscle, which in most cases is mild and uncomplicated.<sup>1</sup>

This condition is difficult to diagnose because the presentation is similar to another acute abdominal entities, having as a main risk factor, the use of anticoagulant therapy. The exact incidence is unknown,

however, several risk factors have been identified (Table 1). The age of onset is from 38-86 years with a mean of 57 years,<sup>1,2</sup> and is more common in older women than in men with a ratio of 2: 3. Some factors i predispose to this clinical scenario such as: aging, use of anticoagulants or NSAIDs (with an increase in the mortality rate of 25%),<sup>3</sup> haematological disorders (often deficit of factors VII and X)<sup>4</sup>, closed abdominal trauma, obesity, and pregnancy, due to excessive tension on the abdominal wall, violent muscle contraction (labor, coughing, urinating and defecating), vascular malformations, muscle malformations, and impaired renal function (especially in patients being treated with low molecular weight heparin by accumulation of it).<sup>5</sup>

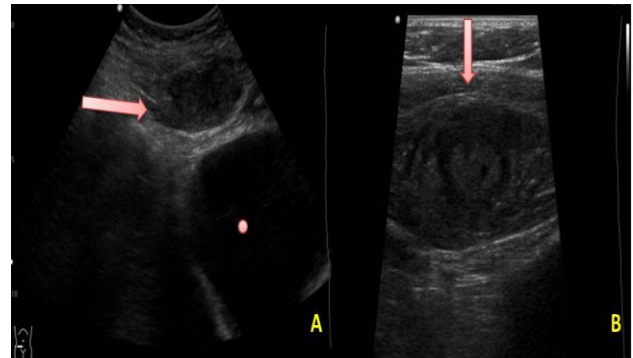
Spontaneous presentation is uncommon, and most of the times, there is a previous surgery as the genesis of it, blunt abdominal trauma (vehicle accident) or injury to the epigastric vessel during trocar insertion in procedures such as laparoscopic cholecystectomy. The clinical features are a palpable abdominal mass ranging from 4.2 to 18cm in diameter, severe acute abdominal pain in 80% of cases, bruising of the abdominal wall, decreased hematocrit, Carnett's sign positive (increase in abdominal pain when the patient supine tightens the abdominal wall lifting his head and shoulders), Fothergill's sign (visible mass with abdominal contraction) and in severe cases, it may appear hemodynamic compromise.<sup>6</sup> The interval between the onset of symptoms and imaging is 3-24 hours.

Obesity is an additional factor that can complicate the formation of a hematoma in the abdominal wall; compared to non-obese patients, the subcutaneous tissue in presence of obesity is considered dysfunctional and has a vascular structure and a composition in different extracellular matrix, which reduces the process of plugging and hematoma resorption.<sup>7</sup> The importance of this entity lies in detecting complications and fatal consequences that might occur, if progresses to hypovolemic shock, abdominal compartment syndrome, SIRS or secondary multiple organ failure as well as the therapeutic employed to prevent and treat these clinical situations.<sup>8</sup>

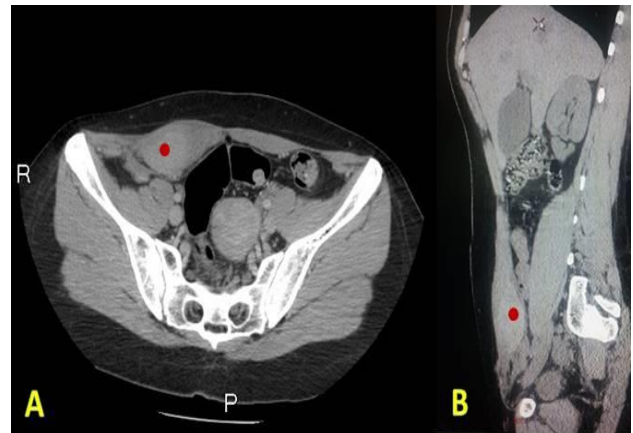
**CASE REPORT**

37 years old female with no history of chronic degenerative diseases, surgeries or allergies, practices martial arts since 16 years old. She arrived to the emergency department due to a sudden onset and diffuses abdominal pain Visual Analogue Scale (VAS) 8/10, with 5 hours of evolution with irradiation to ipsilateral lumbar region and aggravated with physical effort and not improved with rest. Pain then migrated to the right iliac fossa. Patient referred nausea without vomit. Physical examination with soft abdomen with normal peristalsis and a presence of a non-pulsatile painful mass in the right iliac fossa, non-pulsatile. The lab tests reported hemoglobin: 10.5 g/dl; Hct: 31 %, platelets, leucocytes,

and coagulation times without alterations. Gynecological pelvic ultrasound was performed (Figure 1) and reported a space occupying lesion in the right external oblique muscle.



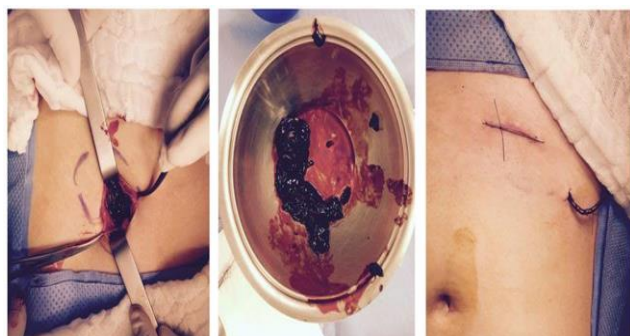
**Figure 1: (A) pelvic ultrasound that shows an heterogeneous collection (red arrow) with areas of greater and lesser echogenicity, in the thickness of the soft tissues of the hypochondrium, without apparent communication to the inside of the abdominal cavity (red dot: bladder) (B) ultrasound of the soft tissues that shows a nodular image, heterogeneous, with areas of greater and lesser echogenicity in the thickness of the anterior rectus muscle right, compatible with probably hematoma.**



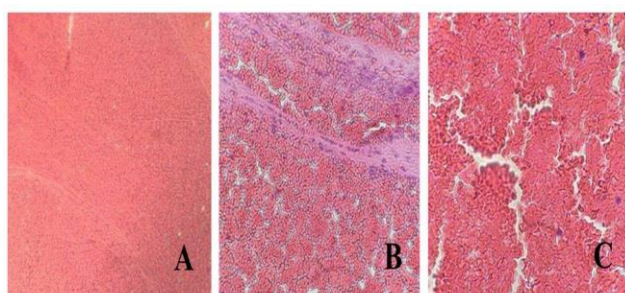
**Figure 2: Computerized tomography, single phase, axial section (A) and sagittal reformatted (B), that shows an asymmetry in the volume of the anterior rectus abdominis muscles, with presence of heterogeneous collection (red dots), predominantly hyperdense in hematic range in thickness, without communication to abdominal cavity, in relation with hematoma.**

CT scan with IV contrast (Figure 2), showed an asymmetry in the thickness of the muscles of the anterior wall due to a space occupying lesion dependent on the anterior rectus muscle. First diagnostic impression was an intramuscular injury dependent of the right anterior abdominal; likely due to a bruise of the sheath of the rectus abdominal muscle and the surgical team decided to

proceed with a surgical drainage and epigastric vessel ligation (Figure 3). Post-surgical procedure, sample of tissue obtained was sent for histopathological analysis, demonstrating to macroscopic level, fragments of color reddish-brown with appearance of hematic clot, soft, reddish and homogeneous; and in the microscopic description: showed formed elements of the blood (Figure 4).



**Figure 3: Surgical drainage of abdominal content with epigastric vessel ligation and probe placement for drainage.**



**Figure 4: Histopathology sample. (A) 40x (B) 60x (C) 100x. Erythrocytes, leukocytes and platelets (extravasation) are observed.**

**Table 1: Risk factors to spontaneous rectus sheath hematoma.**

Female	Advanced age	NSAIDS treatment
Blunt abdominal trauma	Blood disorders (deficit of factors VII and X)	Anticoagulation therapy
Excessive tension of abdominal wall (Obesity and pregnancy)	Hard muscle contraction (Birth, cough, defecation)	Muscle malformations

## DISCUSSION

The muscle hematoma is an uncommon condition, often ignored or poorly diagnosed; however, it is potentially dangerous for the patient, with mortality between 4-20%<sup>9</sup>,

with greater incidence in patients with acquired coagulopathy, affecting mainly the rectus abdominis sheath in the inferior portion,<sup>10</sup> and gluteal muscles.<sup>11</sup> Patients may present with unexplained tachycardia, hypotension, in addition to an acute onset of constitutional symptoms such as abdominal pain usually unilateral, severe and that increases with movement, fever, nausea, and vomit.<sup>12,13</sup>

The anterior rectus muscle and the epigastric vessels are supported in the transversalis fascia, with a close relationship with the parietal peritoneum, this justifying the peritoneal irritation observed in some cases. Nowadays, ultrasound confirms the diagnosis, however when a large hematoma is present or there is active bleeding, it is recommended to perform a CT scan with contrast for diagnostic confirmation. In positive case or doubtful, it is advisable to carry out an arteriogram to show the bleeding vessel and try the embolization.<sup>14</sup>

Magnetic Resonance Imaging (MRI) can be used in the differential diagnosis of a tumor of soft tissues and a hematoma, when the Computarized Tomography (CT) scan is not conclusive.<sup>15</sup> Titone et al. reported the most common diagnostic errors, such as strangulated hernia (12 %), ovarian cyst twisted (10 %), intestinal obstruction (8 %), abdominal neoplasm (4 %), perforated colon (4 %) and appendicitis (4 %).<sup>16</sup> The diagnosis of this disease remains elusive, because in the early stages it can simulate an acute abdomen with loss of blood and a lump. The percentage of suspected diagnosis of hematoma dependent of the rectus abdominis muscle, with medical history and physical examination in the best cases is 50 %, referred by the Mayo Clinic approximately 8.7 %, <sup>17</sup> therefore, a significant number of patients with spontaneous rectus sheath hematoma have been treated with exploratory laparotomy due to the difficulty of distinguish between this and other alterations.<sup>18</sup>

The most important factor to diagnose this condition is a high index of suspicious which is mainly referred by experienced doctors in previous diagnoses.<sup>17</sup> Ultrasound is a useful tool for follow-up of patients with rectus sheath hematoma due to its easy accessibility and the not invasiveness of study.<sup>18</sup> The shape of the hematoma may vary by location; over and above the arcuate line, tends to be ovoid and below the line arched, tends to be spherical due to hematomas can be expanded widely in the peritoneal space, extending inferiorly, laterally and posteriorly.<sup>19</sup> In spite of their low frequency, Núñez et al. found in his series of 17 patients a high submission of bilateral hematomas, possibly by the passage of blood from one side to the other through the arcuate line.<sup>17</sup>

Treatment depends on patient's hemodynamic stability and other comorbidities; conservative treatment in those hemodynamically stable patients with bruises of low grade consists in cryotherapy, bed rest, intravenous hydration, analgesia and the treatment of trigger factor. However, if the patient suffers from clotting disorders

will be necessary to administer vitamin K, fresh frozen plasma, clotting factors of protamine sulfate, recombinant gold in patients with treatment with heparin.<sup>20</sup> In a hemorrhage which does not cease spontaneously can be used, interventional radiology procedures such as angiography, or embolization of the vessel or by surgical drainage of the hematoma and ligation of the vessel.<sup>13, 21</sup> The embolization procedure has a high risk of muscular ischemia which produces a compulsory conversion to surgery, or bleeding that does not stop, as well as the suspicion of sepsis by hemodynamic instability.<sup>22</sup> The surgical treatment is indicated for those cases with lesions of grade III and bad evolution, which have been subject to bleeding or severe pain that results in restricted mobility and alteration of the mechanical ventilation. The surgical intervention includes vigorous hydration, blood transfusion, and evacuation of the hematoma and the ligation of the bleeding point from the upper or inferior epigastric artery.<sup>23</sup> The decision to transfuse depends on the hemodynamic situation and comorbid conditions such as coronary ischemia or severe anemia as one of the main complications, an infection of a muscle bruise can lead to sepsis, septic shock and systemic inflammatory response syndrome (SIRS).

## CONCLUSIONS

Currently the bruising dependent the rectus muscle in anterior wall is a rare entity, presented on an infrequent basis, approximately 1:10 000 emergencies<sup>24</sup> with predominant infraumbilical location, due to lack of cover on the back side of the rectus abdominis muscle below the navel, this facilitates the breakage of the epigastric vessels; mainly in patients with a history of anticoagulant therapy, trauma, surgery, exercise, episodes of coughing, sneezing, as well as physiological reasons such as the pregnancy. It is important to keep in mind the pathology, symptoms, diagnostic and therapeutic strategy for a hematoma dependent of the rectus abdominis muscle, due to the high percentage of error diagnosis in patients who are admitted to the emergency department with acute abdominal pain, because of the similarity with other abdominal pathologies, which shows the importance of an appropriate differential diagnosis, and treatment prescribed, which optimize and reduce unnecessary intervention as well as morbidity and mortality of this disease.

At present, the ultrasonography is the most widely used diagnostic method, however if it is not conclusive, it is recommended the use of computerized tomography, taking into account that always a physical examination with appropriate clinical history are fundamental pillars for a comprehensive diagnosis.

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