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Full Length Research Paper

Rectus sheath hematoma of the abdomen an uncommon diagnostic challenge.

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Rectus sheath hematoma of the abdomen (RSH) is accumulation of blood in the sheath of the rectus abdominis muscle as a result of disruption of the epigastric vessels or from a direct tear of the muscle itself. It is a well-documented clinical entity; though uncommon and often clinically misdiagnosed cause of lower abdominal pain. It encompasses a wide spectrum of severity some self-limiting and others fatal depending on its size, aetiology, and the development of complications. Common historical features of RSH include acute abdominal pain, fever, nausea, and vomiting. The nonspecific nature of these symptoms combined with the low incidence of the disorder lead to difficulty in diagnosing it pre-operatively. The haematoma usually occurs in the lower quadrants of the abdominal wall, difficult to diagnose clinically and often radiologic imaging is required for its definitive pre-operative diagnosis. They could be caused by local trauma, coagulopathies, coughing, hypertension, and peripheral vascular disease. The authors present this thirty two (32) year-old female who presented with acute painful lower abdominal mass few days post caesarean section. It is presented to raise the awareness in considering this entity in the differential diagnosis and management of acute lower abdominal pain with probable palpable tender mass. RSH early diagnosis and appropriate treatment may help to prevent complications including correction of hemodynamic instability, the abdominal compartment syndrome or multi-organ dysfunction or even death.

Keywords: Rectus, Muscle, Sheath, Haematoma.

INTRODUCTION

Hematoma of the rectus muscle is an acute or chronic collection of blood lying within the muscle or between the muscle and its sheath.

Hippocrates, Galen and Leonardo da Vinci described rectus abdominis muscle hematomas a long time ago, but the first reported case in the United States was by Richardson in 1857 (Richardson 1857).

The arterial supply to the rectus sheath is derived from the superior and inferior epigastric arteries. During contractions of the rectus abdominis muscle, the length of

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the muscle changes and the arteries must glide with the muscle to avoid tearing.

However the inferior epigastric artery especially is prone to damage because the combination of its loose attachment coupled with the stabilization of its perforating branches fixed to the muscle belly makes it prone to shearing stresses at branching sites during strong muscular contractions.

The resultant haematoma from such damaged artery can either remain as a mass within the muscle, or be located posteriorly to the muscle and if this is below the arcuate line can mimick an intra-abdominal pathology giving rise to peritoneal irritation, abdominal rigidity and gastro-intestinal symptoms (Cullen 1937; Khan et al., 2005; Klingler et al., 2000).

In some instances the haematoma can communicate with the pre-vesicular space of Retzius behind the bladder masquerading as a pelvic tumor or irritate the bladder, resulting in urinary complications (Thia et al., 2003; Fothergill 1926; Cordero et al., 1974).

The haematoma usually occurs in the lower quadrants of the abdominal wall infra-umbilical in position, sometimes crossing the midline.

The aetiology of RSH includes trauma, abdominal operations (Graham Jet et al., 1991), trocar site injury after laparoscopic operations (Chatzipapas and Magos 1997), subcutaneous drug injections (Luyx et al., 2001), anticoagulant therapy (Denard et al., 2007; Adeonigbagbe et al., 2000; Barry et al., 2000), hematological diseases, hypertension, coughing (Lee et al., 1986), physical exercise (Auten et al., 2010), pregnancy (Humphrey et al., 2001; Sheehan 1951), but can also occur spontaneously (Chi et al., 1995; Titone et al., 1972).

With the advent of computed tomography (CT) scanning misdiagnosis is now less common; however, a number of recent case reports suggest the frequency and severity of cases of rectus sheath haematoma is increasing (Maharaj et al., 2002).

This case report is that of a thirty two (32) year-old female who presented with acute painful lower abdominal mass few days post caesarean section after bouts of serious post-operative coughing which had commenced pre-operatively. She was noticed to have developed a palpable tender mass in her lower abdomen.

Exploratory laparotomy was considered and carried out in view of the findings on clinical, abdominal ultrasound and abdominal CT scan and her relatively haemodynamic instability.

Case Report

This is the case of a thirty two (32) year-old female who presented with acute painful lower abdominal mass three (3) days post caesarean section. She had been well until

three weeks before admission for caesarean section, when she developed an upper respiratory tract infection with cough which became more severe in her immediate post-operative period and she noticed that it was associated with relatively severe lower abdominal pain. She also had associated fever, nausea, and emesis.

In her past medical history was the fact that she had just had a caesarean section carried out three days earlier and some cough pre-operatively.

Physical examination revealed fever, mild tachycardia, pale conjunctivae, and mild abdominal distention and a tender palpable mass at the left lower quadrant of the abdomen with some muscular rigidity and rebound tenderness. There was also mild ecchymosis around the left flank.

Temperature was 38.8°C; BP 80/50mmHg; Pulse 100/min; RR 40/min Bowel sounds were found to be sluggish.

A complete blood count revealed a hematocrit of 19%. Kidney, liver function tests and coagulation profile were all within normal limits. Plain abdominal X-ray was unremarkable.

Ultrasound (US) examination of the abdomen confirmed a non-mobile heterogeneous mass of the lower abdomen. Further imaging study of computerized tomography (CT) revealed a hematoma on the abdominal wall as shown on figures 1 and 2 below.

A provisional diagnosis of abdominal wall mass/hematoma was made.

In view of the haemodynamic instability as well as the low haemoglobin of the patient, a decision was taken to explore her surgically.

The patient was then taken to the operating room and the old caesarean scar incision was re-opened.

Below the arcuate line behind the rectus muscle and the transversalis fascia with the parietal peritoneum was a hematoma amounting to 750 ml. This was evacuated, several bleeding points related to the inferior epigastric vessels were ligated and the abdominal wound irrigated, closed in layers and two haemovac drains left in-situ (see figures 3 and 4 below).

She was transfused with two units of blood; given combination intra-venous antibiotic therapy continued; her cough was controlled with suppressants and her post-operative period was uneventful.

DISCUSSION AND CONCLUSION

Rectus sheath hematoma is a rarely seen distinct entity often misdiagnosed clinically as acute abdomen. In 1999 Klingler et al found an incidence of 1.8% among 1257 patients admitted to the hospital with abdominal pain (Klingler et al., 1999).

Although usually a benign self-limiting condition, RSH may be fatal, overall the mortality rate is reported to be 4%. RSH is 2-3 times more common in females than in males. The higher incidence in women has been attributed to their decreased muscle mass and pregnancy is a risk factor in younger females.



Figure 1



Figure 2



Figure 3



Figure 4

The peak age of incidence is in the fifth decade of life as reported by (Teske 1946). Incidence increases with age as the protection provided by the rectus sheath becomes compromised by decreased muscle mass. The effects of arteriosclerosis and hypertension also render the vessels more susceptible to injury.

Common clinical features of RSH include acute abdominal pain, fever, nausea, and vomiting.

Anorexia, nausea, vomiting, diarrhea, constipation, tenesmus, and bladder irritability are all compatible with the

diagnosis of rectus sheath hematoma. The severity of symptoms is related to the degree of peritoneal irritation.

The onset of pain may be sudden, but more often, it develops over a period of several hours; it is typically sharp and severe with an associated palpable abdominal mass. Pain is usually worse with movement and is often unilateral.

In atypical cases, the pain may develop insidiously, making the abdominal mass difficult to differentiate from an abdominal wall neoplasm.

Symptoms of hypovolemic shock with weakness, confusion, pallor, and diaphoresis can develop in patients with a large rectus sheath hematoma.

The clinician needs to have rectus sheath hematoma in the differential, or the diagnosis will be easily overlooked.

Several risk factors of RSH such as anticoagulation, severe coughing, previous minor surgical procedures like acupuncture, follicle aspiration, diagnostic or therapeutic paracentesis (Ko et al., 2010), can be obtained in the history. However in some cases RSH could be spontaneous.

Rarely a hematoma may cause extraperitoneal compression of the abdominal cavity and cause abdominal compartment syndrome, or even rupture into the peritoneum, causing a chemical peritonitis.

Peri-umbilical ecchymosis as seen in our case is associated with retroperitoneal or abdominal wall hemorrhage which can occur as a primary sign or related to the initial elective caesarean section.

When the history and physical examination findings raise suspicion for RSH, ultrasonography and CT scanning are commonly used to help confirm the diagnosis.

Ultrasonography can be used as a first-line diagnostic test for rectus sheath hematoma, or it can be used to monitor the evolution of a known hematoma.

In 1996, Berna used the appearance of rectus sheath hematomas on CT scans to differentiate three (3) levels of severity with disposition and therapeutic implications (Berna et al., 1996).

Three types of RSH (I-III) can be distinguished by way of the severity of hemorrhage as delineated on computed tomography scans.

CT may be used as a first-line diagnostic procedure in the evaluation for rectus sheath hematoma, or it may follow non-diagnostic ultrasonographic findings.

CT permits a precise determination of the location, the size, and the extension of the hematoma. Information is also obtained about the rectus abdominis muscle and the perimuscular tissue (Gocke et al., 1981).

MRI is also useful in differentiating chronic rectus sheath hematoma from other anterior abdominal wall masses when CT findings are not specific.

Measuring intra-abdominal pressure by using indwelling catheter manometry of the bladder may be considered if there is clinical suspicion of abdominal compartment syndrome.

Clinical signs of abdominal compartment syndrome include oliguria, decreased cardiac output, alterations in minute ventilation, intracranial hypertension, and altered splanchnic blood flow.

Treatment may be either conservative or invasive. Conservative treatment (Berna et al., 2000), is appropriate for patients who are hemodynamically stable and have small non-expanding hematomas in which symptoms are mild and the diagnosis is certain. It includes rest;

analgesics; hematoma compression; ice packs; treatment of predisposing conditions; and if necessary, more aggressive therapies of intravenous fluid resuscitation, reversal of anticoagulation, and blood transfusion.

Surgical treatment (James 2005), includes evacuation of the hematoma, ligation of bleeding vessels, repair of the rectus sheath, drainage when indicated, and closure of the abdominal wall as was carried out in this case. Recurrences following surgical therapy have not been reported.

Patients who are undergoing invasive procedures and those with hemodynamic instability, expanding hematomas, or symptomatic anemia should be considered for anticoagulation reversal. It is often necessary to suspend anticoagulation in the acute setting for those caused by anticoagulant therapy.

In 1980, Levy first described the transcatheter Gelfoam embolization technique in the treatment of rectus sheath hematoma (Levy et al., 1980; Rimola et al., 2007). This invasive therapy can produce hemostasis, reduce the size of the hematoma, decrease the need for blood product transfusion, and prevent rupture into the abdomen.

Embolization with thrombin, Gelfoam, or coil is an alternative to surgery for conditions not responding to conservative management.

The changing nature of RSH, together with the variable clinical courses it may take; clinicians must treat this condition expectantly and be aware of complications that may result (Perry and Phillips 2001; Osinbowale and Bartholomew 2008; Casey et al., 2000; Costello and Wright 2005; Luhmann and Williams 2006).

We therefore recommend clinical awareness of RSH, early diagnosis and appropriate treatment should be undertaken to prevent complications such as, hemodynamic instability, the abdominal compartment syndrome, multi-organ dysfunction or even death.

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