Marmara Medical Journal 2016; 29: 55-59
DOI: 10.5472/MMJcr.2901.11

CASE REPORT / OLGU SUNUMU

Conservative management of a progressively growing rectus sheath hematoma presented in a patient with chronic renal failure: A case report

Kronik böbrek yetmezliği olan hastada gelişen rektus kılıf hematomunun konservatif tedavisi: Olgu sunumu

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ABSTRACT

Introduction: Rectus sheath hematoma is a rare but an important clinical entity in the differential diagnosis of abdominal pain. It is often a self-limiting condition that can be managed successfully in conservative measures. If not recognized, it can lead to unnecessary emergency surgical procedures. A 55-year-old male patient suffering from chronic renal failure and cardiomyopathy presented with a progressively growing abdominal mass diagnosed to be a bilateral rectus sheath hematoma. Despite many complications related to alteration of general status, electrolyte imbalance and coagulation problems, conservative management proved successful, while prompt surgical intervention could have ended in death in such a fragile patient.

The advent of radiology and computer tomography has noticeably increased the diagnosis rate of rectus sheath hematoma. Despite the classic opinion that surgery should be reserved only for those patients with hemodynamic instability or complications such as infection or free intraabdominal rupture, the trend to treat conservatively with great patience is emphasized.

Keywords: Rectus sheath hematoma, Acute abdomen, Computed tomography.

ÖZ

Rektus kılıf hematomu, akut karın bulgularını taklit eden nadir bir klinik durumdur. Konservatif yaklaşım ile hastalık başarılı bir şekilde tedavi edilebilir. Tanının geciktiği durumlarda, gereksiz acil cerrahi müdahaleye neden olur.

Özgeçmişinde böbrek yetmezliği ve kardiyomiyopati tanıları olan 55 yaşındaki bir erkek hastada giderek büyüyen abdominal kitle, bilateral rektus kılıf hematomu olarak tanı almıştır. Acil bir cerrahi müdahale, komorbiditelerin yol açtığı elektrolit ve pıhtılaşma bozuklukluklarına sahip olan hastamızda, ani ölümle son bulabilirdi. Bu hastada konservatif tedavi,başarı ile uygulanmıştır. Bilgisayarlı tomografinin yaygın kullanımı ile rektus kılıf hematomunun tanı oranı farkedilir derecede yükselmiştir. Cerrahinin, sadece hemodinamik bozukluğu ya da enfeksiyon ve serbest karın içi rüptüründe kullanılmasına yönelik klasik bilgiye rağmen, tedavide konservatif yöntemler ilk seçenek olmalıdır.

Anahtar kelimeler: Rektus kılıf hematomu, Akut karın, Bilgisayarlı tomografi

Introduction

Rectus sheath hematoma (RSH) has been a well-known clinical entity from the time of ancient Greece [1]. It is a relatively rare and unusual condition that may mimic acute abdominal disorders. It is defined as the accumulation of blood in the sheath of the rectus abdominis muscle, secondary to rupture of the epigastric vessel or muscle tear [2].

Adequate diagnosis is made in only 30-50% of cases at admission [3]. The failure rate to recognize this condition is responsible for a high rate of needless surgical interventions that may raise morbidity and mortality unnecessarily [2].

The use of imaging techniques such as ultrasonography

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Submitted/Gönderilme: 08.09.2015 **Accepted/Kabul:** 03.10.2015

(USG) and computed tomography (CT) in the evaluation of acute abdominal pain decreased the failure rate of diagnosing RSH to ≤ 30% [3,4]. This gave the chance for conservative management, considered nowadays to be the key treatment of RSH, to take place more frequently [5]. However, we still find in the literature that surgical intervention is recommended for RSH > 5cm in diameter [3].

In this paper we report a successful conservative management of an initially recognized, progressive and huge spontaneous RSH in a hemodialysed patient despite the alteration of his general status and the emergence of many complications related to his renal failure and cardiac problems. Special attention to serial ultrasonographic and CT scanning follow up during hospitalization as well as extreme supportive care played the most important role of the patient's cure.

Case Report

A 55-year-old male, known to be suffering actively from dilated cardiomyopathy and chronic renal failure, was admitted to the general surgical ward with severe abdominal pain and a concomitant sudden appearance of swelling in the left lower abdominal quadrant. He was taking cardiac medications together with oral anticoagulant therapy.

The patient was hospitalized one week ago because of chest pain, reproductive cough, dyspnea and fever. After the exclusion of a cardiac origin, he was diagnosed to be suffering from bacterial pneumonia. Appropriate antibiotic treatment was given. He was discharged with the recommendation of chest physiotherapy and continuation of medications on an outpatient basis.

One day later, the patient felt spontaneous swelling in his abdomen together with an acute sudden onset of pain. Examination revealed a very tender, immobile and apyrexial mass below and to the left of the umbilicus. No skin discoloration was seen. His blood results demonstrated a fall in the hemoglobin value to 9.7 g/dl compared with 10.5 g/dl in his previous admission, marked leukocytosis of 18,500/dl, hyperkalemia of 7.6 meq/l, and creatinine of 10.02 mg/dl. The coagulation tests profile showed an elevation of partial thromboplastin time (PTT) value to 64 seconds (international normalized ratio (INR) 4.5), meanwhile prothrombin time (PT) value was within normal limits.

Ultrasonograpy performed in the emergency room showed a heterogeneous mass in the left paraumbilical region descending to the pelvic brim, but was unable to define it clearly. A CT scan confirmed the diagnosis of RSH with the exclusion of any particular intraabdominal pathology (Figure 1). Patient's hemodynamic stability and the absence of other intraabdominal pathology lead to the decision of conservative therapy.

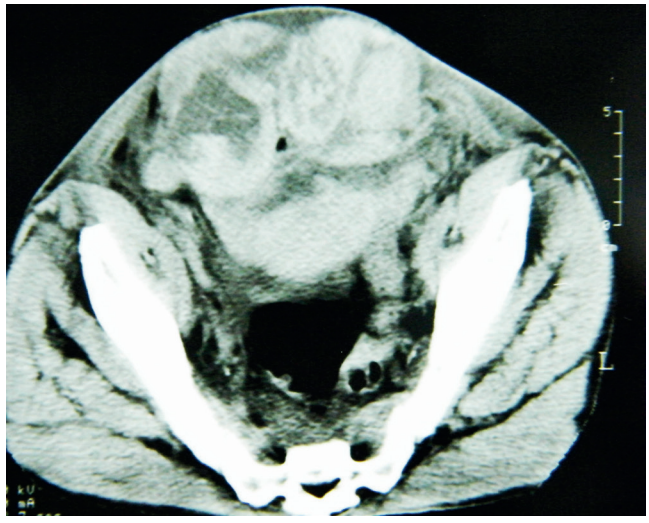

Figure 1. Hyperdense hematic collection of the right infra-umblical part of the anterior abdominal wall: rectus sheath hematoma.

The next morning, swelling increased in size to involve the infraumbilical region bilaterally. Control CT proved the expansion of hematoma to become bilateral and to reach the prevesical space of Retzius (Figure 2). The size of the left sided hematoma increased clearly and apparent alteration of the patient`s general status manifested itself with tachycardia, hypotension and malaise.

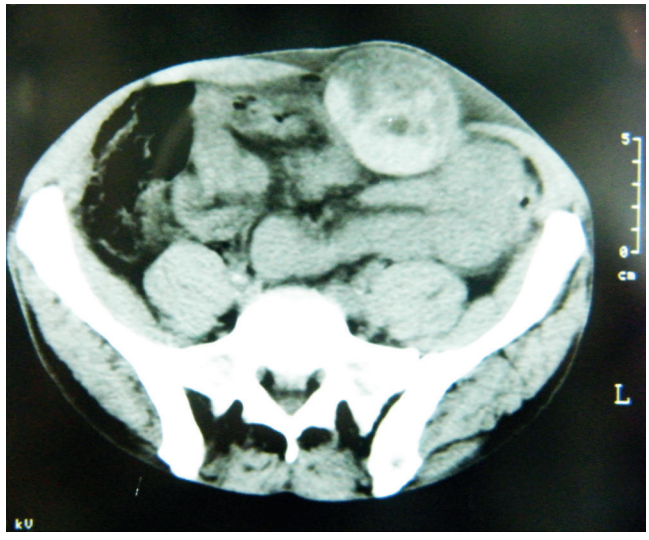

Figure 2. One day later, control CT scan: Bilateralisation of the same hematoma involving both the right and left aspects of the anterior abdominal wall.

A decrease of hemoglobin value to 6.5 g/dl, elevation of leukocyte count to 30,000/dl and marked hyperkalemia of 8.26 meq/l were noted. Bed rest in the intensive care unit, daily bed side hemodialysis, blood transfusion and appropriate correction of the coagulation and electrolyte profile together with other general nutritional and supportive measures were done.

Three days after admission, the patient's general condition improved markedly. Daily hemodialysis managed excellent control of persistent hyperkalemia observed during hematoma liquefaction. Hemoglobin value raised to 8.9 g/dl, leukocyte count decreased to 10,200/dl, and most importantly, PTT fell to 38 sec. (INR 2.7) considered to be within normal limits.

The patient settled with conservative management. Abdominal swelling did not change dimensions, but demonstrated apparent softening in consistency. He was discharged after 9 days of hospitalization.

A control CT scan done after two months showed evident reabsorbtion of the hematoma without complete disappearance (Figure 3). The patient was followed-up for two years and did not manifest any complication or recurrence of his illness. However, he was diagnosed five years later to suffer from leukemia, and passed away shortly after this diagnosis.

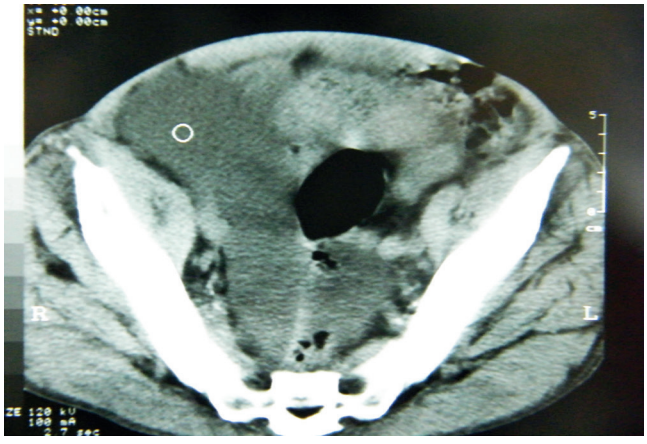

Figure 3. Two months later, control CT scan: Total regression of the hematoma seen before. Note of residual intra-peritoneal effusion.

Discussion

Rectus sheath hematoma is relatively rare to encounter in the clinical setting [1]. It is an important cause of abdominal pain that can go unrecognized until the patient is on the operating table [2]. The incidence rate was estimated to be 3.5 per 100,000 per year, with a frequency of approximately 0.9% in patients admitted with acute abdominal pain [6]. It is reported to be three times more frequent in women than in men, with a peak incidence found in the fifth decade [3].

RSH is usually caused by direct trauma or occurs spontaneously in association with anticoagulant therapy [7] or systemic diseases such as hemophilia, leukemia, collagen vascular diseases, hypertension or atherosclerosis [8- 10]. It is reported also to be a complication of conventional or laparoscopic operations [11], subcutaneous injection of low dose heparin [12] or insulin [13]. Still it may occur without obvious direct trauma or underlying systemic disease. In such cases, hematoma follows muscular straining as in sports, exercise, sneezing, coughing or childbirth [2, 3, 7]. The spontaneous occurrence of RSH in this case seems to multifactorial and mainly related to the chronic renal failure induced atherosclerosis as well as to the anticoagulation required for haemodialysis. Uremic bleeding associated with abnormal platelet function and coagulopathy can be counted among other possible predisposing factors.

RSH occurs most commonly in the lower abdominal wall and is said to be the most common non-neoplastic disease of that anatomic region [2].

The rectus abdominis muscle lies within an aponeurotic sheath together with the inferior and superior epigastric vessels; and is crossed by three transverse intersections. The lower most segment between the tendinous intersections is the longest; hence, muscle shortening with contraction is the greatest at this level [3, 9]. The inelasticity of the artery or vein within the rectus sheath prevents the vessels from accommodating to sudden marked variations in length that the rectus muscle undergoes during contractions, which sets up shearing forces at the branch points of the inferior epigastric vessels [2, 3, 9].

RSH has been mistaken for many acute abdominal diseases such as appendicitis [14], incarcerated inguinal hernia, perforated duodenal ulcer [3], acute cholecystitis, mesenteric vascular insult, dissecting aortic aneurysm, pregnancy, urinary obstruction and torsion of ovarian cysts. Differential diagnosis includes less frequently desmoid tumors, sarcomas and echinococchal cysts in the muscular layer [3, 9].

The most constant symptom of RSH is pain characterized by its sudden onset and progressive severity. Some patients complain of loss of appetite, nausea, vomiting and tachycardia [2, 3, 7, 9, 10]. These symptoms may be attributed to intense pain with increased activity of stretch

receptors seen in some cases.

In 1926, Fothergill described typical signs as painful palpable mass in the abdominal wall that does not cross the midline and remains palpable when the patient tenses the rectus muscle. This has been called "Fothergill's sign" [2, 3, 9]. Most of the reports described the mass to be in the lower right abdomen, although upper abdominal masses have also been reported, usually after direct trauma [9].

Discoloration of the skin over the hematoma may be present, but this sign takes between four to six days after the event. Cullen's sign (peri-umbilical ecchymosis) implies intraperitoneal rupture of the hematoma, whereas Grey Turner's sign (flank discoloration) suggests its extraperitoneal extension.

Mild pyrexia, leukocytosis, decrease of hemoglobin, in addition to alteration of coagulation tests profile in patients under anticoagulants have been frequently reported [9].

Radiological imaging is essential in determining the nature of the palpable mass. Ultrasound and computer tomography are the main imaging modalities [2-4, 7- 9, 15, 16]. Recently, magnetic resonance imaging (MRI) is considered to be the best modality for soft tissue masses. USG should be the device of choice because of its extreme accuracy that may reach 100% in experienced hands, in addition to its ready availability and absence of radiation exposure. It is also helpful in excluding other intraabdominal pathology and in monitoring the size of hematoma by serial examinations [15, 16]. Some authors recommend a CT scan for unclear abdominal disorders, and when the extent and anatomic landmarks of the hematoma need to be identified.

The failure rate to make diagnosis even when imaging techniques are used has been reported to be $\leq$ 30%. It is mostly due to clinical and radiological misinterpretation [3].

Treatment of RSH has changed over the years. In the literature, a diameter greater than 5 cm has been postulated to be associated with free intraabdominal fluid and increased pain intensity leading to more restriction of motility and breathing [3]. This can be added to increased need for analgesics and in-hospital follow up of the patient. Therefore, surgery was performed exclusively in those cases of large RSH thought to be associated with more complications as infection, and prone to perforate intraabdominally. It consists of an open evacuation of the hematoma and ligation of any bleeding vessel [9]. Placement of drains is contraindicated and regarded as a potential source of infection [2, 3]. Removal of the hematoma reduces pain sensation, diminishes the need for analgesics and promotes early patient mobility.

Conservative therapy including bed rest, liberal use of analgesics, local coolants, treatment of any predisposing factor and correction of hemodynamic status was limited to RSH of less than 5 cm [2,3]. Reabsorption of the hematoma depends on its extent and has been reported to take several weeks. All patients in both treatment modalities were satisfied with their final outcome. None experienced secondary inflammation or recurrence. In our case, bleeding was controlled with medical interventions only without surgery or vessel embolization. Taking the patient comorbidities in consideration and the lack of specific guidelines or randomized trials or registries addressing the management of rectus sheath hematoma, the management of this patient was based on anecdotal reports and personal experience. After optimizing our patient's general condition with serial sessions of hemodialysis in addition to medical support that corrected his coagulation profile, full recovery has been achieved within a relatively short period of time.

Conclusion

Rectus sheath hematoma is a rare condition that should be included as a differential diagnosis in all acute abdominal disorders. Prompt consideration of this uncommon cause of abdominal pain may prevent more expensive and invasive diagnostic tests and, in some cases, unnecessary hospitalization and laparotomy.

USG is a good screening technique that can be complemented with a CT scan when necessary. Non-surgical treatment is appropriate in the majority of patients with RSH despite alteration of general condition or emergence of controllable medical complications.

Emergent surgical intervention or angiographic embolization is required infrequently, but may be necessary and should be reserved for large and progressive hematoma associated with complications, mainly infection, free intraabdominal perforation and hemodynamic instability.

The single most important factor in the successful diagnosis and management of RSH is awareness of its existence. Surgical intervention must be avoided as much as possible since conservative management is the gold standard method of treatment.

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