

Case Report

# Rectus sheath haematoma

R T Skelly, S T Irwin, B E Kelly

Accepted 10 April 1999

Rectus sheath haematoma is an unusual, though well recognised condition. It is the most common non-neoplastic condition of the rectus abdominis muscle and sheath.<sup>1</sup> It may mimic acute intra-abdominal pathology and should therefore be considered in the differential diagnosis of the acute abdomen. The diagnosis is easily confirmed using computerised tomography or ultrasound scanning. In this report we present a case of rectus sheath haematoma and a review of the literature.

**CASE REPORT** A 67 year old lady presented to a district general hospital with an infective exacerbation of chronic obstructive airways disease and congestive cardiac failure. She had a past history of hypothyroidism, diverticular disease and early dementia. She responded well to medical therapy. No anticoagulants were given.

Six days after admission the patient developed sudden severe left lower abdominal pain, radiating to her back. There were no other associated gastrointestinal or genitourinary symptoms. Her temperature was normal. Her pulse was 120 beats per minute. On abdominal examination, she was markedly tender in the left iliac fossa with localised guarding and rebound.

Haematological and biochemical investigations were normal. These included: haemoglobin 12.4g/dl, white cell count  $9.2 \times 10^3/\text{ul}$  and serum amylase of 48 U/l. A chest X-Ray showed no sub-diaphragmatic air, and a plain abdominal film was unremarkable. The patient was treated conservatively with a presumptive diagnosis of acute diverticulitis. However she failed to settle over the next 24 hours and it was felt that she should undergo a laparotomy for a presumed localised perforation of diverticular disease.

On transfer to our unit a CT scan of the abdomen was performed in the light of the clinical findings and lack of leucocytosis.

This demonstrated a 10 x 6 x 15 cm mass in the left side of the abdomen. The mass was well demarcated and separate from the underlying peritoneal contents. The rectus abdominis muscle could not be identified separately (Figure 1).



Fig 1. CT scan of abdomen showing:

1. Rectus haematoma
2. Small bowel
3. Psoas
4. Vertebral body
5. Iliac vessels
6. Ilium

The radiological appearances were suggestive of a rectus sheath haematoma. An ultrasound scan confirmed that the mass was cystic and contained

Departments of Colorectal Surgery and Radiology, The Royal Victoria Hospital, Grosvenor Road, Belfast BT12 6BA.

R T Skelly, MB, BCh, BAO, Senior House Officer.

S T Irwin, MD, FRCS (Eng), FRCS (Ed), Consultant Colorectal Surgeon.

B E Kelly, MD, FRCS, FRCR, FFRRCSI, Consultant Radiologist.

Correspondence to Mr Irwin.

septations. Aspiration confirmed the diagnosis. (Figures 2a & 2b).

The pain remained severe for several weeks before settling.

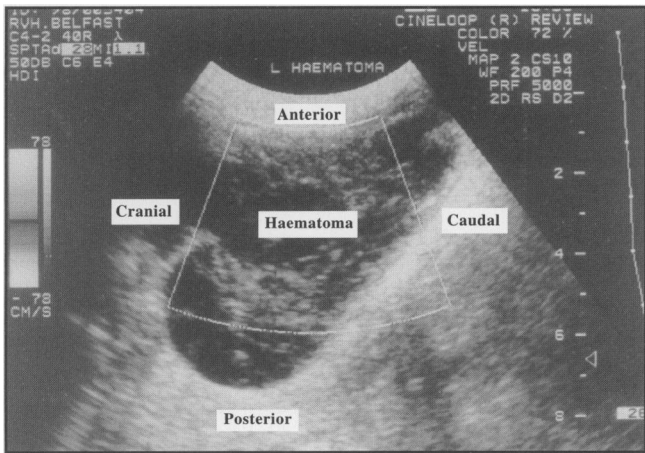


Fig 2a. Longitudinal view of haematoma showing multiple internal echoes consistent with a complex fluid collection.

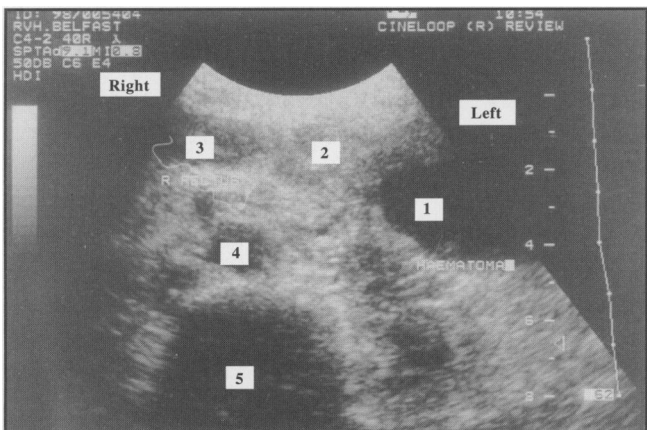


Fig 2b. Transverse section of haematoma showing:  
 1. Haematoma  
 2. Left rectus abdominis muscle  
 3. Right rectus abdominis muscle  
 4. Aorta  
 5. Spine

## DISCUSSION

This case report illustrates the classical presentation of rectus sheath haematoma. The condition is easily confused with other intra-abdominal catastrophes. The reported accuracy of clinical diagnosis alone in this condition is 17-40%.<sup>2, 3</sup> As a result of diagnostic uncertainty, unnecessary laparotomy is often performed with significant concomitant morbidity.<sup>4</sup> There are a number of causes of the condition and an aetiological classification based upon normal and

abnormal musculature was described by Hilgenreiner in 1923.<sup>5</sup> He divided the causes into two groups. Those with normal musculature may sustain a rectus haematoma as a result of either direct or indirect abdominal wall trauma. Alternatively the condition may arise in pregnancy and labour, secondary to other disease and spontaneously in elderly patients.

The adult rectus muscles are 35 cm long, 7 cm wide and 0.8-1.0 cm thick. Each is enclosed within a fascial sheath derived from the anterior abdominal wall muscles; external oblique, internal oblique and transversus abdominis. The rectus sheath is complete anteriorly but posteriorly it is deficient below the arcuate line. Here it is separated from the peritoneum by the transversalis fascia. The muscles are divided by three or four transverse tendons into independent muscle masses each of which has its own motor nerve supply. The blood supply is derived from the superior and inferior epigastric arteries which anastomose at the midpoint of the muscle. It has been suggested that spontaneous rectus sheath haematoma may follow pathological rupture of the muscle and/or the epigastric vessels.

The condition presents with an acute onset of well-localised abdominal pain and there may be associated nausea and vomiting. Examination of the abdomen usually reveals marked tenderness at the site of the lesion. There may be a palpable mass or fullness which can be felt even with the abdominal musculature tensed. However tensing the abdominal wall also accentuates the pain on palpation. The classical features of a rectus muscle mass were described by Fothergill as being one which does not cross midline and which remains palpable when the recti are tense.<sup>6</sup> Rectus sheath haematoma is more commonly seen in women, usually in the fifth to seventh decades of life. Recognised risk factors include straining, coughing, anticoagulant therapy, arterial hypertension, trauma, childbirth and scars on the anterior abdominal wall.<sup>4, 7</sup> This patient had pre-existing respiratory disease with a chronic cough. This is believed to result in vascular engorgement within the rectus sheath, predisposing to haematoma formation.

Cross-sectional imaging techniques such as CT and ultrasonography play a key role in establishing the diagnosis. CT delineates the position of the haematoma with reference to the rectus sheath and peritoneal structures. Ultrasound determines

the internal architecture and therefore the two complementary techniques should be regarded as complementary. Characteristic features on CT are a hyperdense mass posterior to the rectus abdominis muscle with ipsilateral anterolateral muscular enlargement.<sup>8</sup>

Sonographically, rectus sheath haematomas are seen to be well defined superficial trans-sonic masses. They appear spindle shaped on longitudinal section and ovoid on transverse section. Internally they are multilocular lesions with septations.<sup>9</sup>

Once the diagnosis is made conservative management is considered the treatment of choice since surgery carries significant risk of morbidity and mortality. The overall mortality is 4%, which rises to 18% following surgery and to 25% if the patient is anticoagulated.<sup>10</sup>

#### REFERENCES

1. Lambroza A, Tighe M K, DeCosse J J, Dannenberg A J. Disorders of the rectus abdominis muscle and sheath: a 22 year experience. *Am J Gastroenterol* 1995; **90**: 1313-7.
2. Teske J. Haematoma of the rectus abdominis muscle. *Am J Surg* 1946; **71**: 689- 95.
3. Titone C, Lipsius M, Krakauer J S. 'Spontaneous' haematoma of the rectus muscle: critical review of 50 cases with emphasis on early diagnosis and treatment. *Surgery* 1972 ; **72**: 568-72.
4. Verhagen H J, Tolenaar P L, Sybrandy R. Haematoma of the rectus abdominis muscle. *Eur J Surg* 1993; **159**: 335-8.
5. As quoted by: Hilgenreiner H. Das spontane Bauchdeckenhamatoma des vorgeruckten lebensalters; ein Beitrag zur spontanruptur des musculus rectus abdominis. *Beitr Klin Chir* 1923; **129**: 700.
6. Fothergill W E. Haematoma in the abdominal wall simulating pelvic new growth. *Brit Med J* 1926; **1**: 941-42.
7. Moreno Gallego A, Aguayo J L, Flores B, Soria T, Hernandez Q, Ortiz S, Gonzalez-Costea R, Parilla P. Ultrasonography and computed tomography reduce unnecessary surgery in abdominal rectus sheath haematoma. *Br J Surg* 1997; **84**:1295-7.
8. Fukuda T, Sakamoto I, Kohzaki S, Uetani M, Mori M, Fujimoto T, Hayashi K, Matsuo S. Spontaneous rectus sheath haematomas: clinical and radiological features. *Abdom Imaging* 1996; **21**: 58-61.
9. Kaftori J K, Rosenberger A, Pollack S, Fish J H. Rectus sheath hematoma: ultrasonographic diagnosis. *Am J Roentg* 1977; **128**: 283-5.
10. Ducatman B S, Ludwig J, Hurt R D. Fatal rectus sheath haematoma. *JAMA* 1983; **249**: 924-5.