

# Rectus sheath haematoma — a complication of anticoagulation therapy

## A case report

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### Summary

A right-sided rectus sheath haematoma developed during heparin therapy for deep vein thrombosis. Computed tomography of the abdomen provided accurate pre-operative images of the size and extent of the haematoma, and surgical evacuation thereof resulted in uneventful recovery.

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Haematoma of the rectus sheath, although uncommon, can mimic an acute intraperitoneal emergency. The entity calls for the surgeon's diagnostic acumen rather than his operative skill; it is seldom diagnosed pre-operatively because it is seldom considered in the differential diagnosis. Jones<sup>1</sup> suggests that the first step in the diagnosis of a rectus sheath haematoma is to regard it as a possibility.

This report describes a patient with a rectus sheath haematoma complicating heparin therapy, which was correctly diagnosed by computed tomography (CT) of the abdomen.

### Case report

A 72-year-old White woman was admitted to Tygerberg Hospital with a 3-week history of progressive swelling of the right leg. She denied any serious past medical illnesses, bouts of coughing or recent trauma, but admitted to straining during defaecation because of constipation shortly before admission.

Physical examination revealed an afebrile, normotensive, obese female patient with a haemoglobin value of 8,5 g/dl and an erythrocyte sedimentation rate of 50 mm/1st h (Westergren). The respiratory and cardiovascular systems were normal. Abominal examination revealed no organ enlargement. Rectal and vaginal examination was negative. The right leg was swollen with associated calf muscle tenderness, and all peripheral pulses were palpable. The urine was chemically and bacteriologically normal.

A right-sided iliofemoral venous thrombosis was confirmed by ascending venography and intravenous heparin was adminis-

tered. The initial clotting profile was normal. Heparin therapy was monitored by measuring the partial thromboplastin time and whole-blood clotting time.

Forty-eight hours after commencing heparin therapy the patient complained of severe constant lower abdominal pain. A non-pulsatile, hard, tender mass measuring 15 x 15 cm was detected in the right lower quadrant of the abdomen, extending from the pubis to the umbilicus. The upper abdomen was soft on palpation and there was no skin discoloration over the mass. Upon voluntary contraction of the abdominal muscles the mass became fixed and was exquisitely tender. Bowel sounds were diminished and bimanual rectal and vaginal examination suggested that the mass was situated in the anterior abdominal wall. The patient remained normotensive but the haemoglobin level had dropped from 8,5 to 6 g/dl.

Radiographs of the abdomen suggested the possibility of a rectus sheath haematoma (Fig. 1) confined to the right rectus sheath, and this was confirmed by computed tomography of the abdomen (Fig. 2). Ultrasound examination of the abdomen revealed multiple scattered echoes within the mass, consistent with a haematoma. Needle aspiration of the mass was not attempted. Blood was administered, heparin therapy was discon-

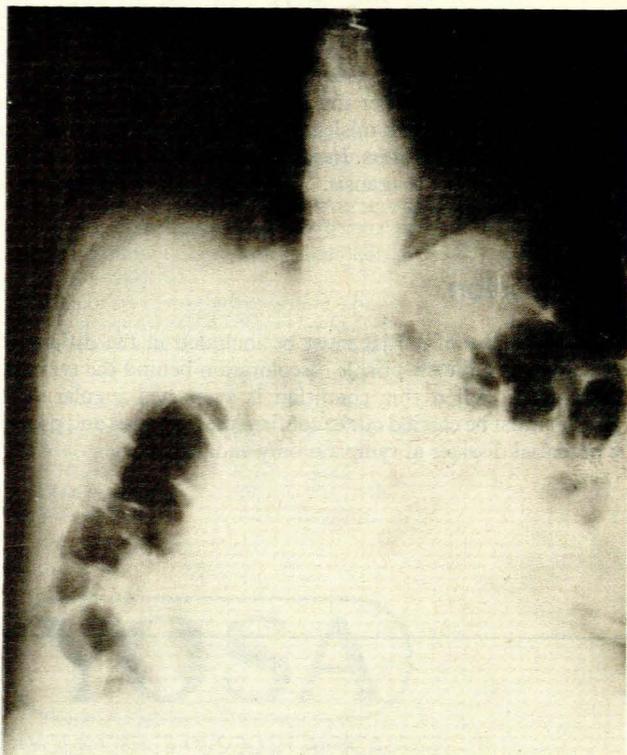


Fig. 1. Supine radiograph of the abdomen showing displacement of small bowel by a large rectus sheath haematoma.

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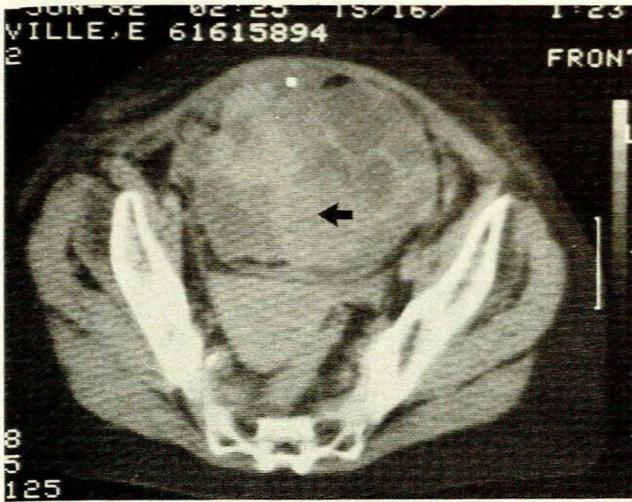


Fig. 2. CT scan (transverse image) showing a large right-sided rectus sheath haematoma (arrow).

tinued, and the patient was prepared for emergency exploration of the mass. Protamine sulphate, to neutralize the heparin, was not administered.

A short paramedian incision was made over the right lower rectus sheath. The anterior rectus sheath was tense and discoloured and a finger inserted behind the rectus muscle released 1 500 ml of fresh clotted blood. The rectus muscle and inferior epigastric vessels appeared normal. No bleeding point was identified and the incision was closed after a Redivac suction drain had been inserted. Anticoagulation therapy was not resumed and the patient made an uneventful recovery with complete relief of her abdominal pain.

## Discussion

Rectus sheath haematoma is a known complication of anticoagulation therapy<sup>2-5</sup> and the entity has previously been reviewed.<sup>1,4,6,7</sup> Anticoagulation therapy cannot be regarded as the sole cause, as it is presumably not responsible for the vessel rupture which initiates the haematoma. Trauma or a stretch injury with rupture of the inferior epigastric vessels is thought to be the most likely cause, and forceful contraction of the rectus muscle is probably the most common cause of haemorrhage into this muscle.<sup>3</sup> Once rupture of the vessels occurs, impaired coagulation due to anticoagulant therapy may potentiate haematoma formation. The ultimate size of the haematoma depends on the extent of the rupture and the nature of adjacent anatomical structures.

Factors that may predispose to rupture of vessels or muscle include direct trauma to the abdominal wall, bouts of severe coughing, straining during defaecation, sudden over-strenuous muscular effort, structural changes associated with pregnancy, obesity and previous abdominal operations.<sup>4,5</sup>

In a previous review it was reported that many of the patients with rectus sheath haematoma had received heparin, bis-hydroxycoumarin or sodium warfarin treatment.<sup>4</sup> Of special interest is that elderly women are associated with a 50% greater incidence of spontaneous bleeding during heparinization than the population at large.<sup>8,9</sup> The presence of congestive heart failure may further increase the chances of serious bleeding.<sup>9</sup>

The diagnosis of rectus sheath haematoma is made from careful history-taking, meticulous physical examination and consideration of rectus sheath haemorrhage in the differential diagnosis. Lateral soft-tissue radiographs of the abdomen may suggest the diagnosis, but non-invasive diagnostic investigations, including ultrasonography and CT, have earned a firm place in the diagnostic armamentarium.<sup>10</sup>

The choice of treatment depends on individual circumstances. Non-operative treatment including rest, analgesics, and discontinuation of anticoagulation therapy will usually suffice in the case of the patient with a small non-expanding haematoma with mild symptoms.<sup>4,6,7</sup> Exploration is indicated for the large progressing haematoma with peritoneal irritation, severe pain, and gastro-intestinal or urinary symptoms.<sup>4,6,7</sup>

In some series the mortality from this complication of anticoagulation therapy has been 25%; it is related to the patient's age and the nature of the disease for which anticoagulation was instituted.<sup>4</sup> For these reasons Hilldreth<sup>4</sup> suggested that in cases with a definite indication for anticoagulation therapy the regimen should be reinstated soon after the rectus sheath haematoma has been evacuated.

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## REFERENCES

1. Jones PF. *Emergency Abdominal Surgery*. 1st ed. Oxford: Blackwell Scientific Publications, 1974: 602-603.
2. De Laurentis DA, Rosemond GP. Hematoma of the rectus abdominis muscle complicated by anticoagulation therapy. *Am J Surg* 1966; **112**: 859-863.
3. Babb RR, Spittel JA, Bartholomew LG. Hematoma of the rectus abdominis muscle complicating anticoagulant therapy. *Mayo Clin Proc* 1965; **40**: 760-765.
4. Hilldreth DH. Anticoagulant therapy and rectus sheath hematoma. *Am J Surg* 1972; **124**: 80-86.
5. Musgrove JE, Ho WC. Hematoma of the rectus abdominis muscle during anticoagulant therapy. *Can Med Assoc J* 1966; **95**: 827-832.
6. Sabiston DC. *Davis-Christopher Textbook of Surgery*. 11th ed. Philadelphia: WB Saunders, 1977: 860.
7. Schwartz SI, Lillehei RC, Shires GT, Spencer FC, Storer EH. *Principles of Surgery*. 2nd ed. New York: McGraw-Hill, 1974: 1313-1315.
8. Vieweg WVR, Piscatelli RL, Houser JL, Proulx RA. Complications of intravenous administration of heparin in elderly women. *JAMA* 1970; **213**: 1303-1306.
9. Gervin AS. Complications of heparin therapy. *Surg Gynecol Obstet* 1975; **140**: 789-796.
10. Kaftori JH, Rosenberger A, Pollack S, Fish JH. Rectus sheath hematoma: ultrasonographic diagnosis. *AJR* 1977; **128**: 283-285.