CASE REPORT

Rectus sheath haematoma: a serious complication of a commonly administered drug

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SUMMARY

Ten days after an above knee amputation, this 62-year-old woman became acutely anaemic (haemoglobin drop of 10.4 to 6.2). Clinically, she had no obvious source of bleeding; however, on examination, her abdomen was slightly distended and she was tender over the suprapubic area. A CT scan of her abdomen and pelvis was arranged which showed a large haematoma (17×11 cm) arising from the anterior abdominal wall from the deep aspect of the left rectus abdominus, extending across the midline to the right rectus abdominus and deep into the pelvis. This may have been spontaneous or may have been due to direct injury when injecting subcutaneous heparin.

BACKGROUND

Rectus sheath haematomas can be serious and potentially life threatening. They are most often managed conservatively, but sometimes require surgery. It is important to identify them early for this reason.

CASE PRESENTATION

A 62-year-old woman with a history of peripheral vascular disease and a right above knee amputation was admitted with a wet, gangrenous left foot. Her other comorbidities included insulin-dependent diabetes mellitus, a previous cerebrovascular accident and alcoholic liver disease. She was a current smoker of 10 cigarettes a day. On admission, she was started on thromboprophylactic, once daily subcutaneous low-molecular-weight heparin (LMWH). A full blood count done on admission showed haemoglobin of 8.8 g/dl. A CT angiogram showed no reconstructable option for her left leg; because of her left foot wet gangrene and the fact that she was wheelchair dependent from her previous right above knee amputation, she underwent a left above knee amputation.

Her amputation wound appeared healthy and she was generally well postoperatively. Her post-operative haemoglobin was 7.1 g/dl. She remained well, and was transfused 2 units of red blood cells. However, 3 days after her transfusion, her haemoglobin had dropped from a post-transfusion value of 10.4 g/dl to 6.2 g/dl. She was haemodynamically stable. There were no signs or symptoms of haematemesis, per rectal bleeding or melaena, PV bleeding, haematuria or haemoptysis. Her wound was dry and healing with no evidence of underlying haematoma. She complained of some vague abdominal pain. On examination, her abdomen

was slightly distended and tender over the suprapubic area.

INVESTIGATIONS

A plain abdominal film showed faecal loading only.

A coagulation screen showed a raised fibrinogen of 5.1, a prothrombin time of 11.3 and activated partial thromboplastin time of 43.2. Her platelets were normal throughout this episode. Plasma levels of LMWH or its metabolite were not assessed. Liver function tests showed a raised γ -glutamyltranspeptidase and alkaline phosphatase (442 and 709, respectively). This was due to her chronic alcoholic liver disease.

An ultrasound of the abdomen demonstrated a 14 cm echogenic mass in the right iliac fossa with no identifiable origin. The spleen was slightly enlarged at 13 cm, there was gross ascites and the liver had a coarse texture and irregular outline.

A CT was performed. Findings were of a large mixed attenuation mass measuring 17×11 cm. It arose from the anterior abdominal wall from the deep aspect of the left rectus abdominus and extended to the right rectus abdominus and deep into the pelvis. There were small flecks of air anteriorly within the mass, which were suggestive of inadvertently deep subcutaneous injections of heparin (figure 1).

DIFFERENTIAL DIAGNOSIS

- Rectus sheath haematoma
- Occult gastrointestinal (GI) bleed
- Coagulopathy related to her chronic liver disease

Figure 1 CT image of the rectus sheath haematoma with flecks of air anteriorly—suggestive of inadvertently deep injection of subcutaneous heparin.

To cite: Parkinson F, Khalid U, Woolgar J. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2012-008183

TREATMENT

When a diagnosis of rectus sheath haematoma was suspected, the heparin was discontinued and she was given replacement blood products. Once a haematoma was confirmed on a CT scan, antibiotics were given intravenously to prevent infection of the haematoma. Her haemoglobin stabilised after this further transfusion, and the abdominal tenderness settled.

OUTCOME AND FOLLOW-UP

Once her haemoglobin was stable, she was transferred to a medical ward where she was given albumin and supportive care for her liver disease and ascites.

The incident was reported on a Medicines and Healthcare products Regulatory Authority Yellow card, and discussed with the pharmaceutical company.

DISCUSSION

Approximately 70% of acute hospital admissions are at medium or high risk of venous thromboembolism (VTE),¹ and around 25 000 deaths a year are from preventable hospital acquired VTE.² In response to this, clinical guidelines from the National Institute for Health and Clinical Excellence (NICE) in 2010 outlined criteria for prescription of pharmacological thromboprophylaxis.³ This patient had five risk factors for VTE: reduced mobility, one or more significant medical comorbidities, age over 60 years, acute admission with inflammatory condition and surgical procedure involving the lower limb with a total anaesthetic and surgical time of more than 60 min. She did not have any risk factors for bleeding that would outweigh the benefit of thromboprophylaxis, such as active bleeding, concurrent use of anticoagulants or an inherited bleeding disorder. NICE also advises that mechanical thromboprophylaxis (ie, compression stockings) is considered in all patients, but this is not appropriate in patients with peripheral vascular disease.

LMWH is used as a thromboprophylactic agent. It works by altering the coagulation cascade: by binding to antithrombin, it accelerates inhibition of key factors in the intrinsic, extrinsic and final common pathways of coagulation (thrombin and activated factor X). It can be given subcutaneously and does not require monitoring.

Complications of LMWH are bleeding, allergic reactions, injection site complications (irritation, haematoma) and increases in liver enzyme assays. Bleeding can occur at the site of injection or at a distal site secondary to impaired coagulation—GI and retroperitoneal bleeds are the most common sites of bleeding.⁴ There are a few reports of rectus sheath haematoma as a consequence either of impaired coagulation due to administration of LMWH or as a direct consequence of inadvertently deep administration of the heparin.^{5–8} The Naranjo algorithm score (for determining the likelihood of whether an adverse drug reaction is actually due to the drug) was 4 (possible ADR). There was a positive improvement after the discontinuation of LMWH and a plausible time frame between the onset of LMWH therapy and the occurrence of the haematoma.

The few other case reports were of patients of a similar age and presented in similar ways—abdominal tenderness and distension, and a drop in haemoglobin after starting injections of LMWH. The direct mechanism could be of inadvertent intramuscular injection or disruption of the epigastric vessels. One

case required coil embolisation of the inferior epigastric artery in order to control the bleeding,⁷ and the other case was fatal.⁶

Usual management, however, is conservative, with discontinuation of the heparin, correction of the anticoagulative state and replacement of blood products. If the patient is unstable and there is evidence of continued bleeding, angiographic-selective embolisation or surgical ligation of the bleeding vessel can be attempted.⁸

Risk factors for extraperitoneal haematoma during anticoagulant therapy have been described as advanced age, impaired renal function and concomitant use of antiplatelet drugs.⁸ It has been suggested that in thin patients, where inadvertently deep subcutaneous injections are more likely, then deltoid region is a safer site for injection.⁶ However, this is not a licenced route of administration.

Learning points

- ▶ Pharmacological thromboprophylaxis of venous thromboembolism is a necessity for most hospitalised patients. The risk of bleeding must be countered by the benefit of anticoagulation.
- ▶ Rectus sheath haematoma is a serious but uncommon complication of low-molecular-weight heparin injection. Presentation is characteristic, and clinicians should have a high index of suspicion for this diagnosis to be made promptly.
- ▶ Subcutaneous injections must be administered safely by trained nursing staff aware of the potential complications.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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