Transcatheter embolisation of inferior epigastric artery for spontaneous rectus sheath haematoma

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Section: Interventional radiology
Area of Interest: Abdominal wall Arteries / Aorta
Procedure: Diagnostic procedure
Procedure: Contrast agent-intravenous
Procedure: Embolisation
Imaging Technique: CT
Imaging Technique: CT-Angiography
Imaging Technique: Catheter arteriography
Special Focus: Haemorrhage Case Type: Clinical Cases
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Patient: 66 years, female

Clinical History:

A 66 year-old female developed left-sided abdominal pain five days after initiation of treatment dose of low-molecular-weight heparin subcutaneous injections for deep vein thrombus. The pain was described as radiating from left loin to the groin and was associated with abdominal distension and an episode of vomiting.

Imaging Findings:

A non-contrast CT KUB was initially performed to exclude renal tract calculi but a biphasic scan was performed due to finding a large rectus sheath haematoma, which extended inferiorly into the extraperitoneal space, displacing bowel loops. Arterial phase imaging revealed active bleeding in a branch of the left inferior epigastric artery (IEA) (Fig.1). No renal calculi were identified. Serial blood tests revealed a marked drop in haemoglobin over the previous 24 hours, associated with the onset of significant tachycardia and hypotension. The patient thus proceeded directly to angiography. Percutaneous access via right common femoral artery allowed selective angiography of the left IEA. Here, an area of angiopathy with active haemorrhage was identified and embolised using multiple coils. No haemorrhage was identified post-embolization (Fig.2). The patients' symptoms improved post procedure and the patient was discharged. On the follow-up CT, 12 days post embolization, the haematoma had markedly reduced in size (Fig.3).

Discussion:

Spontaneous rectus sheath haematomas are a rare but often overlooked cause of acute abdomen. Such haematomas are often associated with anticoagulant therapy [1]. Most of these spontaneous haemorrhages are self-limiting, due to tamponading of the arterial leakage by the haematoma, which is why they are usually treated conservatively. Nevertheless, an extended haemorrhage can lead to marked hypovolemia and hemodynamic instability. Active treatments include transcatheter embolization or surgery.

Interventional radiology plays a significant role in the management of patients with arterial haemorrhage.
demonstrated on CT and their early involvement in the patient management pathway is vital. A discussion between the clinical team, interventional radiology and surgical team is essential in order to proceed to the best treatment option for these patients, taking their symptoms, haemodynamic status and comorbidities in consideration. Although surgical evacuation of haematoma and ligation of bleeding vessel can be performed in cases of extensive blood loss, percutaneous treatment with selective arterial embolization is an effective, quick and safe alternative treatment [2]. Dual phase contrast-enhanced CT performed before angiography has a high diagnostic accuracy in identifying active arterial haemorrhage and assessing the extent of the haematoma and this will provide a roadmap for the subsequent embolization [3]. Transcatheter arterial embolization using coils is a safe and effective procedure to control the source of arterial bleeding in large spontaneous thoraco-abdominal haematomas and has to be considered as a second treatment option when conservative management is not successful in stabilizing the haemodynamic status. Transcatheter embolization is specially recommended in patients with significant comorbidities, which put them at high risk due to general anaesthesia. It is difficult to determine when surgery is necessary as there are very limited data provided in the scientific literature. As a result, the decision to use surgery can be suggested when embolization is unsuccessful or when it is necessary to evacuate a complex huge fluid mass in the peritoneal cavity [4].

**Differential Diagnosis List:** Spontaneous rectus sheath haematoma treated with transcatheter coil embolization, Rectus sheath haematoma due to arterial bleeding, Rectus sheath haematoma due to venous bleeding

**Final Diagnosis:** Spontaneous rectus sheath haematoma treated with transcatheter coil embolization

**References:**


Figure 1

Description: Axial CT image showing the rectus sheath haematoma at the level of maximum size. There are areas of different attenuation raising the suspicion of recent or active bleeding. Origin: Radiology Department, King’s College Hospital, London, UK
Description: Sagittal reformatted CT image demonstrating the full extent of the haematoma, which caudally extended to the extraperitoneal space. Note is also made of extravasated contrast (arrowhead).

Origin: Radiology Department, King’s College Hospital, London, UK
Description: Arterial axial CT image at a lower level showing the haematoma, without the presence of extravasated contrast. Origin: Radiology Department, King's College Hospital, London, UK

Description: Venous phase of the same level as in previous figure, where there is evidence of extravasated contrast (arrowhead), indicating active bleeding. Note the inferior epigastric artery (arrow), which represents the origin of bleeding. Origin: Radiology Department, King’s College Hospital, London, UK
Description: Second venous phase axial CT image confirming the presence of extravasated contrast (arrowhead) adjacent to the inferior epigastric artery (arrow). A direct connection may not always be seen due to compressive effects of the haematoma. Origin: Radiology Department, King’s College Hospital, London, UK
**Description:** Axial CT image showing marked reduction in the size of the haematoma. The angiographic particles are identified normally (arrow). **Origin:** Radiology Department, King's College Hospital, London, UK
Description: Axial CT image showing marked reduction in the size of the haematoma. Origin: Radiology Department, King’s College Hospital, London, UK
**Description:** Microcatheter used to selectively catheterise the IEA from the external iliac artery (asterisk). Selective angiography identified contrast extravasation from the IEA distally indicating active bleeding (arrowhead). Arrow: common iliac artery. **Origin:** Radiology Department, King's College Hospital, London, UK.
Description: Left IEA selective angiography identified active bleeding (arrowhead). Oblique views should be used if clear haemorrhage or the bleeding vessel is not identified on the AP view. Arrow: common iliac artery, Asterisk: external iliac artery. Origin: Radiology Department, King's College Hospital, London, UK.
Description: The artery was then selectively embolised distally and proximally using small coils (arrowheads). Embolisation coils remain the best endovascular option for treating inferior epigastric artery haemorrhage. Origin: Radiology Department, King's College Hospital, London, UK.