Rectus sheath haematoma is a well documented clinical entity, but its diagnosis remains elusive. A haematoma within the rectus sheath produces a painful, tender swelling that can mimic an intra-abdominal mass with features of an acute abdomen. Two patients with rectus haematomas presenting after bouts of prolonged coughing are reported. In both cases, clinical features and ultrasound findings suggested the presence of intraperitoneal pathology. However, in both cases consistent findings in the history and examination pointed towards the diagnosis of a rectus haematoma. It is proposed that these simple clinical criteria are diagnostic of a rectus sheath haematoma, and can thereby avert an unnecessary laparotomy.

**CASE 1**

A 72 year old woman presented with severe abdominal pain after a bout of severe coughing. On examination, she was found to have generalised peritonitis and a mass in the right lower abdomen that did not cross the midline, and seemed to be confined by the linea semilunaris. Carnett's sign was found to be positive with the tenderness in the right lower abdomen worse, and additionally, the mass became less pronounced on elevation of her head.

An abdominal ultrasound revealed an 8 × 5 × 7 cm irregular cystic intraperitoneal mass seen superficially in the right iliac fossa, suggestive of an abscess collection (fig 1).

An exploratory laparotomy was performed which revealed a haematoma of the right rectus muscle, 8 cm in diameter. No tumour or pus was identified and the inferior epigastric artery was intact. The haematoma was evacuated and the patient recovered uneventfully.

**DISCUSSION**

In 1926, Carnett described a test to differentiate pain originating from the abdominal wall versus pain arising from intra-abdominal pathology. The test involves placing the patient supine and the site of maximal abdominal tenderness at the identified site causes increased tenderness, the test is said to be positive, that is, the cause of the abdominal pain and tenderness is located in the abdominal wall. If the tenderness on palpation of the site in question is alleviated then the pathology is likely to arise from the abdominal viscera as the contracted rectus muscle now protects the intra-abdominal contents. Causes of abdominal wall tenderness producing a positive Carnett's sign include myositis,
muscle strain, and nerve entrapment. Thomson and Francis assessed this test in 120 patients and found it to be a reliable means of identifying abdominal wall pathology, saves the expense and dangers of investigation, and even the risk of unnecessary surgery.\(^1\) The presence of a rectus haematoma also produces a positive Carnett’s test as observed in both cases. Contraction of the rectus muscle compresses the haematoma and exacerbates the pain and tenderness.

We wish to make an addition to Carnett’s test. With intra-abdominal masses, contraction of the rectus muscle will lead to disappearance or at least a reduced appreciation of it, as the contracted muscle will conceal the mass. For masses arising within the rectus sheath, contraction of the musculature will also make the mass more difficult to palpate, since the anterior rectus sheath becomes taut. We found this sign to be consistent in our cases.

Ultrasonography can be used to differentiate intraperitoneal lesions from extraperitoneal lesions. However, such testing is subject to error, both in obtaining an accurate scan, which may be limited by probe induced tenderness on the acute abdomen, and in interpretation of the images. This is demonstrated by case 1, in which two qualified ultrasonographers identified the lesion as being “intraperitoneal”.

This report also highlights another important point. Violent coughing is a well recognised cause of rib fractures.\(^13\) The association with rectus haematoma is less recognised. Coughing causes intense contraction of the rectus muscle with tearing and bleeding from the perforating branches of the inferior epigastric vessels within the muscle substance. The occurrence of sudden abdominal pain after severe straining—for example, coughing and sneezing—should alert the clinician to this possibility.

In addition, the condition of rectus haematoma should be suspected in such a patient with the following signs: a mass that is confined by the linea alba and the linea semilunaris, and a positive Carnett’s test. Furthermore, the diminution of the mass brought on by contraction of the rectus is diagnostic of any mass arising from or involving the rectus sheath or its contents. These simple features in the history and examination could be used to aid in diagnosis of a rectus haematoma in developing countries where ultrasonography and computed tomography are not readily available. Even in developed countries, where limitations on investigative procedures in not a significant problem, these simple clinical criteria may be used as an adjunct to diagnosis and is particularly attractive as a method of cost containment.

References