CASE REPORT

Ruptured intercostal artery pseudoaneurysm: a rare cause of acute back pain

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SUMMARY

A 63-year-old man with no relevant medical history presented with acute non-traumatic back pain and was found to have a T8 intercostal artery pseudoaneurysm associated with haemomediastinum on CT of the chest. He was taken to angiography with interventional radiology and the aneurysm was coiled without complication.

BACKGROUND

Intercostal aneurysms, or pseudoaneurysms, are not usually high in the differential of acute low back pain or chest pain. Rupture of such aneurysms can cause haemomediastinum, as in our case, or haemothorax, and can be potentially life-threatening. Risk factors may make aneurysms more likely; however, providers must remain suspicious even without these risk factors and obtain appropriate imaging with contrast for diagnosis.

CASE PRESENTATION

A 63-year-old man with no significant medical history awoke from sleep with severe back pain. He reportedly had been tossing and turning with 'fitful' sleep and awoke with severe back pain that he localised to an area just inferior to the tip of his right scapula. He presented to the emergency department shortly thereafter. He denied recent falls or other trauma, shortness of breath, chest pain, paraesthesias or weakness in his extremities, vomiting and abdominal pain. His personal medical history included psoriasis, obstructive sleep apnoea and a hip replacement for osteoarthritis. He had no personal history of intravenous drug use, valvular heart disorders, tobacco use, hypertension, thoracic surgical procedures or chest

trauma. He had no family history of aneurysms or hereditary or vascular disorders. His examination was significant for normal vital signs, no midline spine or paraspinal tenderness, lungs clear to auscultation without respiratory distress, no abdominal tenderness and absence of heart murmurs or muffled heart tones.

INVESTIGATIONS

Laboratories were significant for normal haematocrit of 47% and negative troponin, and were otherwise unremarkable. CT angiography of the chest was performed, which showed a right T8 intercostal pseudoaneurysm measuring $1.4 \times 1.2 \times 1.6$ cm with evidence of rupture into the mediastinum, but without signs of active bleeding (figures 1 and 2). No other aneurysms or anatomic abnormalities were found.

DIFFERENTIAL DIAGNOSIS

Initially, we were concerned for thoracic aortic dissection, pulmonary embolism, acute coronary syndrome and disc herniation.

Figure 1 The right thoracic intercostal artery aneurysm is identified in this axial cut of the CT of the chest.

Figure 2 The right thoracic intercostal artery aneurysm is identified in this three-dimensional reconstruction of the arterial vasculature from the chest CT.

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Figure 3 Precoiling anteroposterior chest X-ray highlighting the aneurysm during angiography.

TREATMENT

The case was discussed with interventional radiology (IR) and vascular surgery, and given that the patient was haemodynamically stable, it was decided that endovascular coiling was the best treatment method to use. This was performed without complication and the patient was admitted to the intensive care unit thereafter (figures 3–6).

OUTCOME AND FOLLOW-UP

The patient was discharged home on postoperative day 2. He followed up in thoracic surgery clinic and with primary care, and no further complications occurred. Given that he had no obvious personal or familial risk factors, further work-up for rheumatological or genetic conditions, or other causes of the pseudoaneurysm, was not pursued.

Figure 4 Anteroposterior chest X-ray while coiling with angiography.

Figure 5 Anteroposterior chest X-ray after coiling during angiography.

DISCUSSION

Intercostal artery aneurysms and pseudoaneurysms are very rare, and have mostly been described through case reports. A pseudoaneurysm is a haematoma contiguous with a defect in an arterial wall, versus a true aneurysm, which is a dilation of the

Figure 6 Postcoiling anteroposterior chest X-ray showing resolution of the aneurysm during angiography.

arterial wall. Aneurysms have been associated with a history of type I neurofibromatosis,^{1 2} aortic coarctation,¹⁻³ Kawasaki disease^{2 4} and trauma.¹ Pseudoaneurysms are more often associated with penetrating or blunt trauma,⁵⁻⁸ and iatrogenic aetiology during lung biopsy or resection, nephrectomy, thoracentesis or thoracoabdominal aortic repair.⁹⁻¹² Haemothorax was most often reported with pseudoaneurysm or aneurysm rupture, but ours is the first case reporting haemomediastinum. Treatment most often involves endovascular embolisation or coiling by IR, but may involve open excision if endovascular treatment fails or is difficult due to anatomy, or if other complications require open intervention.

Learning points

- ▶ Intercostal aneurysms and pseudoaneurysms are a rare cause of back, flank or chest pain.
- ▶ Rupture of most aneurysms causes haemothorax, but this is the first reported case causing haemomediastinum.
- ▶ Treatment usually involves endovascular embolisation or coiling, though it may involve open resection if endovascular techniques fail or are difficult, or if open operative management is otherwise warranted.

Contributors EJ and RU initially saw the patient in the Emergency Department. EJ tracked the patient through chart review and RU met with the patient after definitive management for repeat interview. EJ and RU contributed to the manuscript and the selection of images.

Competing interests None declared.

Patient consent Obtained.

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