CASE REPORT

Idiopathic Internal Thoracic Artery (ITA) Pseudoaneurysm treated with endovascular embolization

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SUMMARY

A 44-year-old female was diagnosed with an ITA pseudoaneurysm in the right supraclavicular fossa. She was successfully treated with endovascular embolization. The challenges of diagnosis and treatment are discussed.

KEY WORDS:
Internal thoracic artery pseudoaneurysm, endovascular embolization, internal thoracic artery

INTRODUCTION

Idiopathic ITA pseudoaneurysms are exceedingly rare, with only a few case reports in the literature. Spontaneous rupture can be devastating, and diagnosis can be challenging. Intervention has to be carefully planned and executed. Here we report a case that was successfully treated via endovascular embolization.

CASE REPORT

A 44-year-old female presented with a slow-growing right supraclavicular mass for three years. She had no previous history of trauma to the region, and no significant infectious disease contact. Initial work-up was in a non-tertiary centre. Fine-needle aspirate identified only blood and related cellular components. Ultrasonography showed a well-defined hypoechoic, heterogeneous mass with a necrotic core, measuring 7.1 x 5.5 cm. A computed tomography (CT) scan was arranged, revealing a well-delineated soft tissue density in the right supraclavicular fossa, measuring 5.8 x 5.0 x 5.6 cm. Prominent vascularity was seen during the arterial phase, and a conspicuous feeding vessel was seen inserting infero-posteriorly into the mass. Delayed films showed significant washout of contrast. There were also multiple sub-centimetre lymph nodes. An initial impression of a haemangioma was given, and she was subsequently referred to the Vascular Surgery Unit at our centre.

By this time, she had developed paraesthesia in the upper arm. Further examination of the right arm demonstrated diminished pulse volumes, as well as colder peripheries when compared to the left arm. The supraclavicular mass was found to be pulsatile, with restricted mobility. It was non-tender, mildly compressible, and had no overlying skin changes. There was an audible bruit.

Upon re-examination of the CTA (Figure 1), we diagnosed her with an idiopathic arterial pseudoaneurysm, likely arising from the right subclavian artery or the right vertebral artery. The scans were not conclusive in localizing the origin of the pseudoaneurysm, and she was therefore planned for an angiogram.

Access was obtained via ultrasound-guided right brachial artery puncture, with a 5f sheath. A guide wire was passed uneventfully into the Right Subclavian Artery. Initial digital subtraction angiography (DSA) runs clearly demonstrated the pseudoaneurysm (Figure 2a), but not the origin. Vanschie-3 catheter-aided cannulation of the Vertebral Artery and the Thyrocervical Trunk did not aid in diagnosis. Only after cannulation of the ITA did we clearly see the origin of the feeding vessel, which was a branch of the ITA just inferior to the level of the Angle of Louis (Figure 2b), looping posteriorly around the clavicle and ascending superiorly into the supraclavicular fossa. The origin was successfully embolized with a 6 x 5 mm platinum coil (Figure 2c). Haemostasis was via local pressure.

She did not develop any post-procedural complications. The mass was no longer pulsatile, and the bruit had disappeared. She was discharged on the same day, and given a clinic appointment within a month.

DISCUSSION

typically courses inferiorly, supplying the anterior chest wall and ending as the Musculophrenic and Superior Epigastric Arteries. Pseudoaneurysms are caused by disruptions of the vessel wall, with blood dissecting in and around the site of injury. Sustained arterial pressure forms a well-perfused sac that communicates with the arterial lumen.[1] Pseudoaneurysms of the ITA are exceedingly rare, a literature search only revealed a mere handful of reported cases. Most cases are infective in origin, or post-traumatic.[2] Idiopathic pseudoaneurysms are even rarer, with most diagnosed after resection or incidentally found on thoracotomy.

Rupture of these pseudoaneurysms can be catastrophic, with subsequent control of haemorrhage made challenging due to the anatomical location. Accurate diagnosis via multi-slice enhanced CT scan is vital, both for identification of the relevant aetiology as well as delineating the anatomy.[3] Only then can appropriate treatment be administered.

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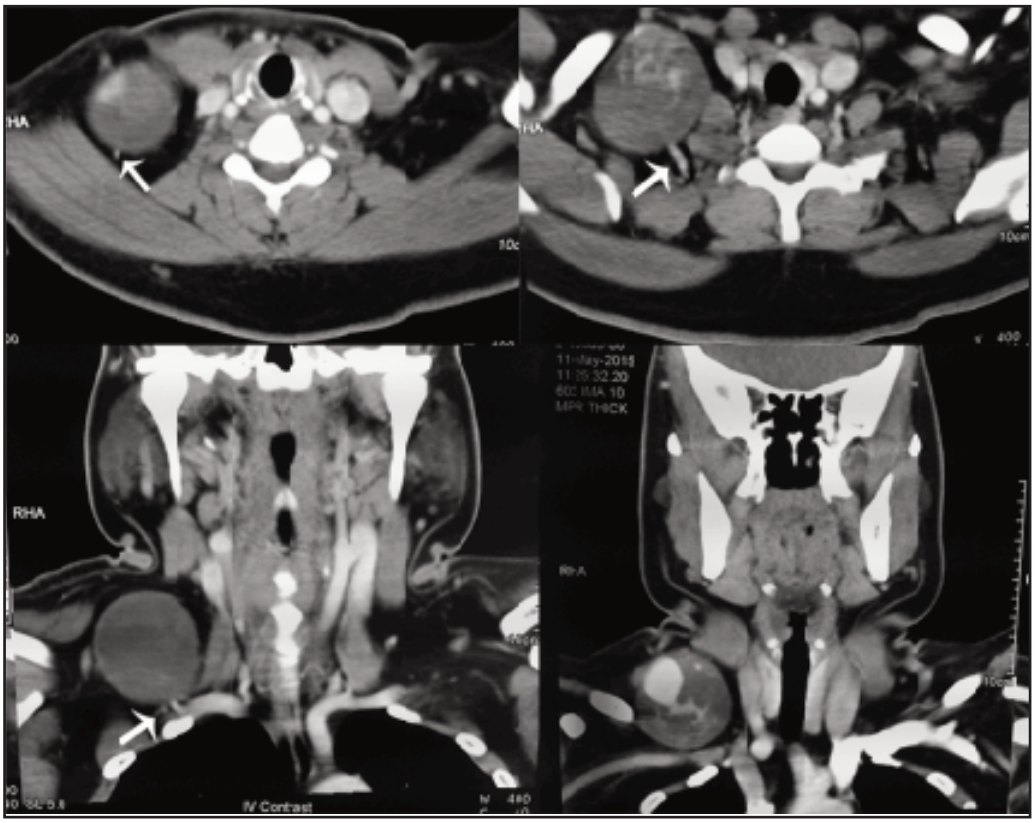

Fig. 1: CT films showing a distinct soft tissue mass with heterogeneous enhancement during the arterial phase, and clear washout on delayed phase. There appears to be a feeding vessel (white arrow) into the mass originating postero-inferiorly.

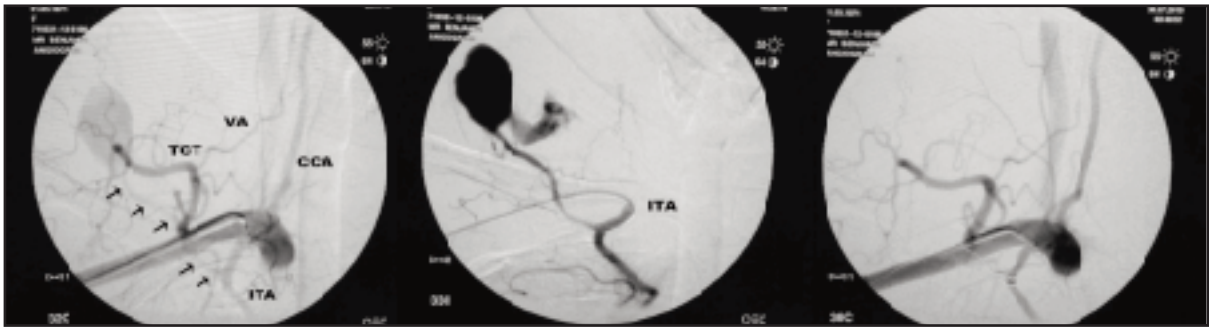

Fig. 2a **Fig. 2b** **Fig. 2c**

Fig. 2: DSA runs showing (left to right, figure 2a, 2b, 2c), [Fig. 2a], diagnostic run clearly demonstrating a blush in the top-left hand corner, with a feeding vessel (black arrows) arising inferiorly. The right vertebral artery (VA) is seen clearly arising superiorly, and the ITA branching inferiorly. The thyrocervical trunk (TCT) is also seen. [Fig. 2b], after cannulation of the ITA, contrast seen clearly filling the pseudoaneurysm. The feeding vessel is seen branching just after the origin of the ITA from the subclavian artery. [Fig. 2c], successful embolization of the pseudoaneurysm. The coil is seen deployed at the origin of the feeding vessel, and there is no more blushing of contrast.

Treatment options include open resection and endovascular intervention. Due to the location of her pseudoaneurysm, we decided that endovascular intervention would confer the most benefit, remove the risk of rupture, and negating the associated risks of dissecting into the supraclavicular fossa and potentially injuring the many significant structures in that region. Complications such as wound infection, bleeding, prolonged hospital stay and other anaesthetic-related risks are nullified.

CONCLUSION

ITA pseudoaneurysms remain a rare clinical entity that requires adequate pre-intervention work up. An index of suspicion must be present when approaching a pulsatile mass. Endovascular intervention provides a safe and satisfactory clinical outcome, while negating the risks of open surgery.

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