Pseudoaneurysm of a branch of left internal mammary artery: a late and potentially fatal complication after redo-sternotomy

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Abstract

Post-sternotomy pseudoaneurysms of the internal mammary arteries (IMAs) and their branches are rare and often present with rupture-associated haemothorax and haemodynamic instability. In those cases, urgent surgical correction or embolization can be the treatment of choice. Traumatic chest injuries might lead to IMA branch injury as well; after cardiac surgery, injuries to these branches during sternal closure can be an extremely rare cause of pseudoaneurysm. We describe the case of a 78-year old lady with a left IMA branch pseudoaneurysm, arising from left sternal edge a few weeks after redo-sternotomy for mitral valve surgery. We also describe its non-surgical successful repair.

Keywords: Pseudoaneurysm • Mammary artery • Redo-sternotomy • Embolization

INTRODUCTION

We report a case of a pseudoaneurysm arising within the anterior chest wall and in left parasternal positions from an intercostal branch of the left internal mammary artery (IMA). Computed tomography angiography (CT angiogram) is ideal for the diagnosis of pseudoaneurysms of IMA and its branches. Selective angiography is essential to confirm the findings and open the way towards a transcatheter embolo-therapy, which is an effective non-surgical approach.

CASE REPORT

We describe the case of a 78-year old lady who underwent redo-sternotomy for mitral valve repair, tricuspid valve annuloplasty and left atrial appendage closure. Postoperative course was uncomplicated and the patient was discharged home in good condition. About 8 weeks after the operation, the patient was re-admitted for management of new onset atrial fibrillation, shortness of breath and congestive heart failure with peripheral oedema. Clinical examination also revealed a left parasternal swelling (Fig. 1A and B). Chest ultrasound showed a 3 cm × 3 cm pseudoaneurysm arising within the anterior chest wall and in left parasternal position; the neck of the aneurysm was seen to stretch into the chest wall measuring up to 6 mm and appeared to be arising from the left IMA. At that stage, a CT angiogram confirmed the presence of a false aneurysm in the anterior chest lying adjacent to the left side of the sternum and at the level of the first sternal segment. The aneurysm was fed by a very small intercostal branch of the left IMA, it was ovoid and its maximum diameter was 36 mm with a rather extensive thrombus within it (Fig. 1C and D).

The patient was then referred to cardiologists and embolization of pseudoaneurysm was performed (Fig. 2).

A postembolization chest ultrasound confirmed that the communication between the pseudoaneurysm and the left IMA was no longer present and the pseudoaneurysm was almost completely thrombosed.

The patient was then discharged home and followed up 6 weeks later in our outpatient clinic where she presented in good condition and the parasternal swelling was reduced in calibre.

DISCUSSION

Post-sternotomy pseudoaneurysms of the IMAs are rare and often present with rupture associated with haemothorax and haemodynamic instability [1, 2].

The presence of a parasternal mass should raise suspicions of a false aneurysm or arterio-venous fistula of an IMA to an internal mammary vein [3]. Even if the most frequent causes of pseudoaneurysm are iatrogenic [4], a spontaneous false aneurysm of IMA has been reported once [5]. To the best of our knowledge, pseudoaneurysm of a branch of left IMA after redo-sternotomy has never been reported. Evaluation with angiography or computed tomography scan with 3D reconstruction can establish the diagnosis and lead the way towards treatment. In the presence of haemothorax, surgical exploration should be performed immediately.

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to avoid bleeding, anaemia and correlated consequences. The treatment is recommended in all cases because of the risk of the pseudoaneurysm increasing in size and eventually rupturing. Surgical options are presternal incision and thoracotomy. A non-surgical option is endovascular embolization with selective thrombosis of the mammary artery and its branches.

Finally, failure to identify and treat these complications may result in rupture, bleeding and death.

Conflict of interest: none declared.

REFERENCES