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Case Report

Multidisciplinary Treatment of Aorto-Pleural Fistula after Lung Resection Surgery for Pulmonary Aspergilloma

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ABSTRACT

Lung resections represent the treatment of choice for symptomatic pulmonary aspergilloma. Surgical resection carries a non-negligible risk of postoperative complications, which include postoperative bleeding. Massive postoperative bleeding is often a lethal complication. Here we report the case of a postoperative bleeding arising from an aorto-pleural fistula after pulmonary segmentectomy for aspergilloma, successfully treated with a multimodal approach.

Keywords: Aspergilloma, Haemorrhage, Segmentectomy, TEVAR.

Introduction

Pulmonary aspergillosis can manifest with a wide range of clinical scenarios, usually in patients with a predisposing lung disease, the most common being lung tuberculosis. The colonisation of a tuberculosis cavity by Aspergillus creates a lung lesion commonly defined as aspergilloma. One of the most common and worrisome symptoms of aspergilloma is haemoptysis, which can manifests with variable frequency and degree of severity and can lead to death in up to 26% of this population1. As surgical resection can dramatically reduce long-term mortality in symptomatic patients2, surgical treatment is usually offered in this scenario, together with appropriate antimicrobic treatment. Since the dimension and the complexity of these lesions is highly variable, lung resections adopted for aspergilloma range from sub lobar resections (wedge resections or anatomical segmentectomies) to lobectomy or pneumonectomy; postoperative morbidity and mortality risk usually increases with the extent of the resection adopted3. Postoperative bleeding is one of the complications most commonly described after surgery 4. We report the case of a patient who aspergillosis, and can have an incidence as high as 48% suffered from postoperative bleeding after left upper lobe segmentectomy for aspergilloma, caused by fistulisation of the descending thoracic aorta with the pleural space. The bleeding was successfully treated with emergent surgical re-exploration and subsequent thoracic endovascular aortic repair (TEVAR).

Case Report

A 59-year-old patient presented to our institution with worsening moderate haemoptysis caused by a recurrent aspergilloma in his left upper lobe (fig. 1). He had a background relevant for previous pulmonary aspergilloma that had been treated with a left thoracotomy and wedge resection of the lower lobe 18 years before. He had a good performance status at his presentation. He was offered surgical treatment with a re-do left thoracotomy and upper lobe upper division segmentectomy, which was performed with no major intraoperative complications and with a blood loss of around 600 ml. He was put on Voriconazole anti fungal treatment from early and for three months post discharge. The postoperative period was initially complicated by prolonged air leaks and pneumonia. On postoperative day 15, the patient acutely developed hypotensive shock with sudden discharge of blood-stained drainage from the chest drain (around 350 ml in less than 1 hour). The chest drain was promptly clamped and, while fluid resuscitation and 3 units of blood were administered, an urgent chest radiography was obtained which confirmed a retained collection in keeping with haemothorax. At that point it was decided to perform an emergency thoracotomy and re-exploration of the pleural space. At surgery, the bleeding source was found to be coming from a 3 mm fistula connecting the lateral wall of the descending thoracic aorta to the pleural space. Since the arterial tissue around the fistula was deemed too frail to sustain direct closure with stitching, the bleeding source was initially controlled with haemostatic patches (Veriset™ Haemostatic Patch, Medtronic© Limited, Watford, UK) and packing of the pleural space with large gauze swabs. Immediately after the surgery, an angio-CT scan was performed and confirmed the presence of an irregular outpouching of the descending aorta corresponding to the known source of the bleeding (fig. 2a).

To achieve better long-term control of the aorto-pleural fistula, the patient subsequently underwent an urgent TEVAR (GORE® TAG® Conformable Thoracic Stent Graft, W. L. Gore & Associates (UK) Limited, Livingston, Scotland) (fig. 2b). After this procedure, the patient successfully underwent surgical unpacking of the chest 24 hours later, where no signs of active bleeding were found.

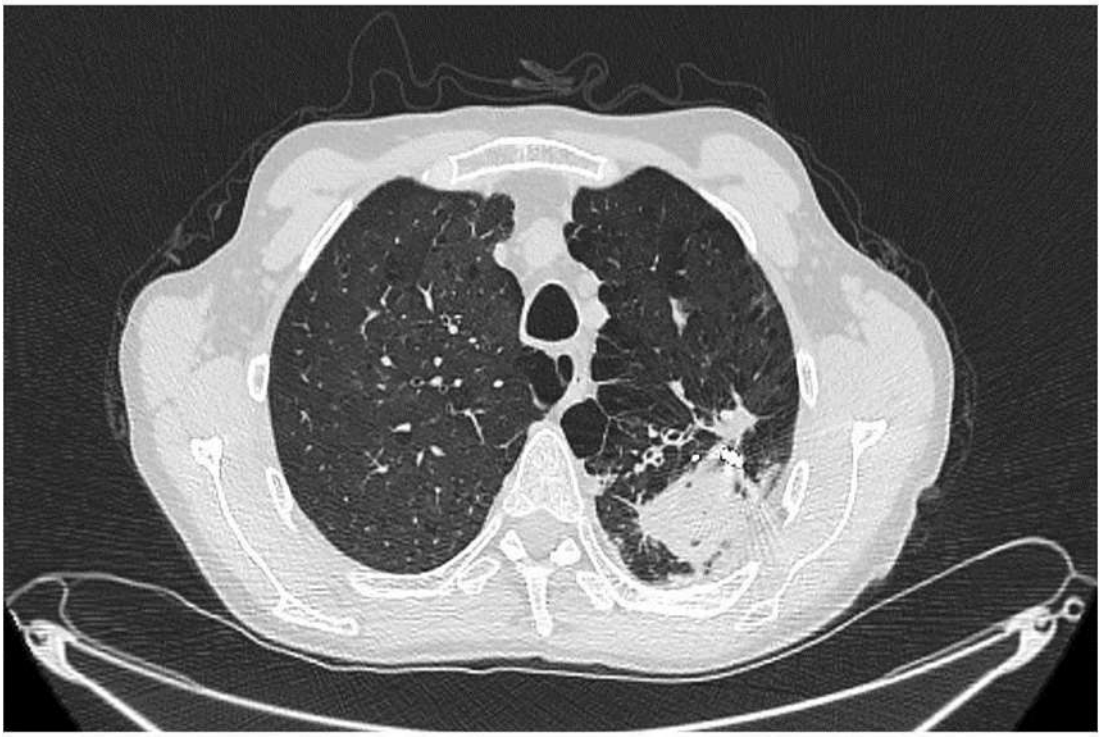

Fig. 1 Pulmonary Aspergilloma

Discussion

Surgical treatment for pulmonary aspergilloma has historically been associated with high perioperative morbidity and mortality2,4. More recent series have demonstrated improved outcome after surgery5. However, complication rate after surgery continues to appear relatively higher compared to lung resection surgery performed for different indications. As worse outcome is related to older age, preoperative performance status and more extensive lung resection, careful patient selection and thorough surgical planning are paramount when surgical treatment is offered to these patients. Postoperative bleeding is a well-known complication after lung resection for aspergilloma and can at times presents with variable delay after surgical treatment. This could be a consequence of inflammation or infection erosion involving branches of bronchial arteries or pulmonary arteries. It is possible that pleural space contamination and consequent empyema might play a role as risk factor. Especially in patients presenting with severe haemoptysis, preoperative embolisation can be adopted and might reduce the risk of postoperative bleeding as well.

In our case, the patient developed a severe bleeding more than two weeks after surgery. Aortopleural fistula

was not suspected at the onset of the complication but was easily identified at surgical re-exploration. It must be emphasized that prompt clinical response and low threshold for surgical re-exploration of the pleural space are key elements when facing postoperative bleeding after aspergilloma surgery. Considering the poor tissue quality typical of this disease, however, the surgeon must carefully evaluate the most appropriate technical strategy in order to achieve the intended treatment minimizing the surgical harm at the same time. In our case, effective treatment was achieved with a combinate treatment consisting of an emergent surgical re-exploration followed by definitive endovascular repair with an aortic graft. We believe that this multidisciplinary approach was essential to deliver effective treatment for this uncommon clinical scenario. This is, to our knowledge, the first reported case of aortopleural fistula after lung resection for aspergilloma. Although extremely rare, we believe that this report can raise awareness about the variety of complications that can follow surgical treatment for pulmonary aspergilloma and highlight the importance of a multidisciplinary approach in achieving successful treatment of complex lethal complications.

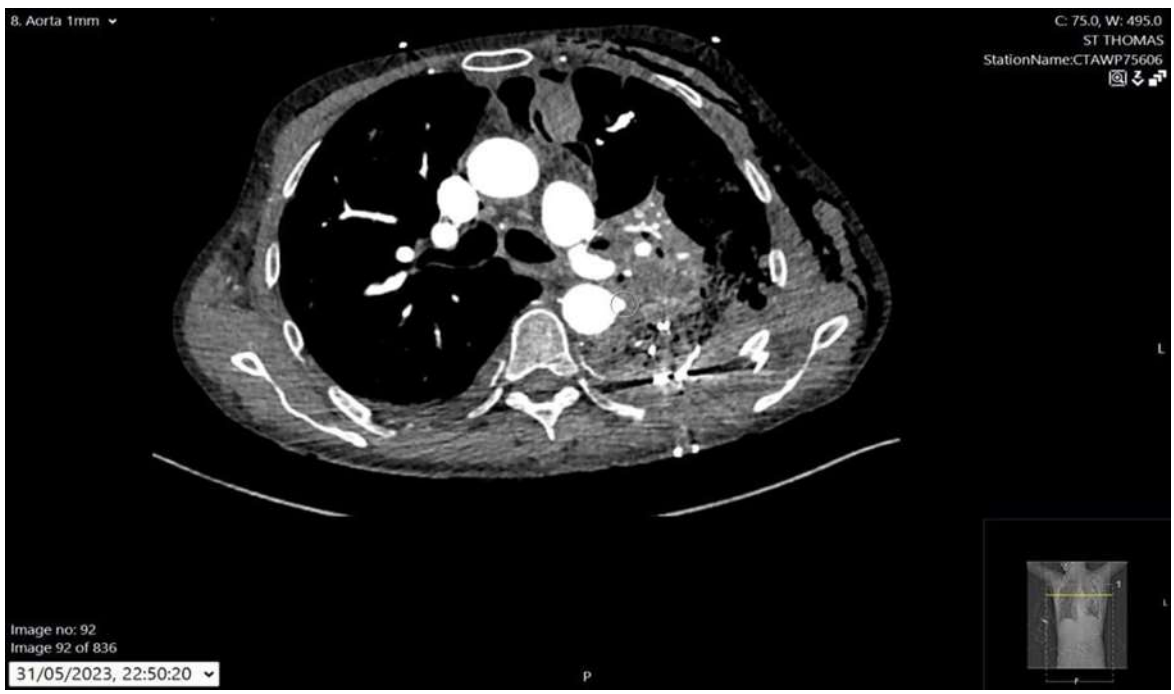

Fig 2a: Angio-CT scan was performed and confirmed the presence of an irregular outpouching of the descending aorta- circled.

Fig. 2b X-ray showing TEVAR

Conclusion

Aorto-pleural fistula can be a rare but potentially lethal complication after lung resection for pulmonary aspergilloma. Prompt clinical response and urgent treatment are essential for effective management of this critical complication. A multidisciplinary approach is a valuable strategy in order to minimise surgical trauma and achieve a satisfactory clinical outcome.

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