CASE REPORT

Pulmonary mycotic aneurysm secondary to left-sided infective endocarditis treated with detachable coils


Departments of aRadiology, and bCardiology, Derriford Hospital, Plymouth, Devon, UK

Introduction

Pulmonary artery pseudo-aneurysms are rare and usually secondary to right-sided endocarditis. They have a high mortality due to rupture and catastrophic haemoptysis. Standard treatment is open thoracotomy and resection, usually by lobectomy. We describe the rare occurrence of a pulmonary artery pseudo-aneurysm associated with left-sided endocarditis and the first use of detachable coils in the treatment of such a lesion.

Case report

An 84-year-old man was admitted to hospital with a 6 week history of increasing shortness of breath, fever, weight loss and back pain. His past medical history included long-standing pneumoconiosis. He had had a mitral valve repair with simultaneous coronary artery bypass 12 years previously. Bacterial endocarditis was suspected. Blood cultures grew Streptococcus sullivarious (a Streptococcus viridans-like organism). Transthoracic echo was normal but transoesophageal echo confirmed a 1.3 cm vegetation on the mitral valve leaflet. Of note there were no right-sided vegetations. Antibiotic therapy was commenced and there was rapid improvement with inflammatory markers returning to normal, and anorexia and lethargy resolving. A chest radiograph at this time demonstrated no change in the pneumoconiosis but a new, coin-shaped lesion was present in the left mid zone. This was investigated with contrast-enhanced computed tomography (CT), and was shown to represent a left pulmonary artery branch aneurysm. In view of the history of endocarditis and the recent development of the aneurysm, the diagnosis of mycotic pseudo-aneurysm was made. In view of the significant co-morbidity with pneumoconiosis and previous bypass surgery, surgical treatment was considered to be of extremely high risk. Angiography with a view to embolization was performed. Angiography confirmed a pseudo-aneurysm (Fig. 1). An attempt was made to cross the aneurysm to deploy coils within the arterial tree beyond the aneurysm, but this proved to be impossible. It was therefore elected to deploy coils both within the aneurysm sac and the feeding artery to minimize the risk of aneurysm reperfusion. The Guglielmi detachable coil micro-cast system (Boston Scientific, UK) was used to allow six large coils (20 mm × 30 cm) to be placed within the aneurysm in a stable position (Fig. 2) followed by three smaller coils (10 mm × 30 cm) in the feeding vessel. This system consists of micro coils that are soldered onto the delivery wire. This allows the coils to be deployed and re-deployed as necessary before detachment depending on a stable and suitable position. Only when an electric current has passed through the wire is the solder melted and the coils deployed. This system allowed accurate positioning of coils of a large enough size to occlude the aneurysm sac. After embolization there was complete occlusion (Fig. 3). Subsequent CT examinations showed thrombosis of the aneurysm. The patient is well on follow-up at 6 months.

Discussion

Mycotic pulmonary artery aneurysms are most commonly seen after right heart endocarditis often associated with congenital heart disease. The development of a pulmonary artery aneurysm in the context of left heart endocarditis in our case is very rare, but no other explanation for the development of this aneurysm was forthcoming. We can only presume that there was a right-sided endocarditis, although this was not evident on the echo cardiography. Up to 50% of patients with mycotic pulmonary aneurysms have been shown to die as a result of bleeding complications and the need for urgent treatment is established. Previous reports of the management of mycotic pulmonary aneurysms have concentrated on the surgical management of these lesions. There have been
numerous reports of the use of coil or balloon embolization in the management of pulmonary artery aneurysms associated with catheter trauma and also in the context of Rasmussen aneurysms in cavitating tuberculosis, but only one previous report of the management of mycotic pulmonary artery aneurysms by embolization has been recorded; these authors used conventional steel coils in the management of two mycotic pulmonary aneurysms associated with a candida septicaemia with a good outcome. In our case we elected to use a Guglielmi detachable coil system to allow us to deliver large (20 mm x 30 cm) coils into the aneurysm sac with the ability to check stability before release. Using this system, the procedure was straightforward with good packing of the aneurysm sac and of the arterial branch supplying the aneurysm being easily achieved.

Embolization of mycotic aneurysms in the peripheral vascular system has been established as an acceptable treatment method accompanied by intensive antibiotic therapy. It has been felt by other authors that it is important to achieve eradication of infection by intensive antibiotic treatment before intervention, and in the present case the patient had received a full course of intensive antibiotic therapy and was felt to be free of infection at the time of deployment of the coils. There is no evidence in the literature to date that deployment of coils within a mycotic aneurysm leads to re-infection. Our experience with the present case would indicate that the technique of embolization can be extended to the management of pulmonary mycotic aneurysms, and we support
the suggestion by Ghaye et al.⁷ that urgent embolization should be the management of choice in these rare lesions, being both safe and effective without the morbidity associated with surgery. This case also demonstrates that mycotic pulmonary aneurysm may be associated with left-sided endocarditis.

References