

Meticulous observations essential before and after coil embolization of pulmonary arteriovenous malformation; lessons learned from two case

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Case Report

Abstract

BACKGROUND: Endovascular coil embolization is an approved treatment for pulmonary arteriovenous malformation (AVM) but it brings high rate of thromboembolic complications with subsequent morbidity and mortality. Hereby, we report two cases of AVM coil embolization and management of their complications.

CASE REPORT: The first case was a 57-year-old male with five implanted coils in the lower lobe of right lung in which two of them were migrated soon after implantation. On exploration, a large atrial septal defect was detected and then repaired successfully. The next day, he was transferred for fluoroscopy. Two embolized coils were found at the site of the left iliac artery which was extracted via snare through sheath implanted in the left femoral artery. Coil migration to the left atrium and subsequently to the left iliac artery is reported for the first time. The second case was a 45-year-old male with central cyanosis and clubbing of upper and lower extremities from childhood. On computed tomography angiography (CTA), a vascular lesion was found. The patient underwent coil embolization for closure of AVM. The patient was still symptomatic after successful closure of AVM. On CTA, two feeding arteries were detected. He underwent second coil embolization procedure.

CONCLUSION: AVM coil embolization is a tentative procedure, which should be performed on its real indications by an expert centers who can handle complications of this procedure. The performance of CTA seems beneficial in some cases to confirm complete embolization of AVM.

Keywords: Arteriovenous Malformation, Computed Tomography Angiography, Atrial Septal Defect, Coil Embolization, Endovascular

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Introduction

Pulmonary arteriovenous malformation is a potentially dangerous vascular abnormality.¹ This lesion needs an early aggressive therapeutic approach.^{1,2} Endovascular coil embolization is an approved treatment for arteriovenous malformation (AVM) but it brings high rate of thromboembolic complications with subsequent morbidity and mortality.³ Hereby, we report two cases of AVM coil embolization and management of their complications.

Case Report

The first case was a 57-year-old male with five implanted coils in the lower lobe of right lung in which two of them were migrated soon after implantation. Fluoroscopic examination revealed

migration of two of them into the left atrium. He underwent surgical extraction of embolized coils but no coil was found. On exploration, a large atrial septal defect (ASD) was detected and then repaired successfully. The next day, he was transferred to catheterization laboratory for fluoroscopy. Two embolized coils were found at the site of left iliac artery which was extracted via snare through sheath implanted in the left femoral artery. Coil migration to the left atrium and subsequently to the left iliac artery is reported for the first time. After 10 days, he was discharged without any complication (Video 1).

The second case was a 45-year-old male with central cyanosis and clubbing of upper and lower extremities from childhood. Recently, he experienced gradual worsening of prolonged and repetitive coryza, cough and sputum. A continuous

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murmur was audible on lower lobe of the right lung from both front and back sides. On chest X-ray, consolidation was seen exactly on the side of audible murmur. On computed tomography angiography (CTA), a vascular lesion was found. The patient underwent coil embolization for closure of AVM. After initial coil embolization, O₂ saturation was increased from 78% to 86%. Pulmonary artery pressure was 30 mmHg. The patient was still symptomatic after successful closure of AVM. Due to remained cyanosis, CTA was taken to confirm closure of AVM. On CTA, two feeding arteries were detected. He underwent second coil embolization procedure. After successful closure of remained feeding arteries, O₂ saturation reached to 92% and the patient became asymptomatic completely. He was discharged without any complications and on serial follow-up; he was acyanotic and free of symptom.

Discussion

Despite low prevalence (10-20 percent) of all congenital vascular malformations, AVM is the most common limb-threatening vascular abnormality.⁴ Preliminary diagnosis and assessment should be commonly performed using non-invasive or minimally invasive methods as magnetic resonance imaging (MRI)/magnetic resonance angiography (MRA) and CTA, but the gold standard diagnostic method is angiography.⁵

Current therapeutic strategies are associated with high rate of complication and morbidity which needs a multi-disciplinary team approach and integration of surgical and non-surgical cares and appropriate trained physicians with sufficient experience for management of probable complications.⁴

As a conclusion, AVM coil embolization is a tentative procedure, which should be performed on its real indications by an expert centers who can

handle complications of this procedure. We suggest through inspection for other sources of embolization like ASD or ventricular septal defect. Indeed, the performance of CTA seems beneficial in some cases to confirm complete embolization of AVM.

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Conflict of Interests

Authors have no conflict of interests.

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