Pulmonary arteriovenous malformation mimicking a pulmonary tumour on ^{18}F-fluorodeoxyglucose positron-emission tomography/computed tomography

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Pulmonary arteriovenous malformations are rare congenital abnormal connections between the pulmonary arteries and veins. The patients are usually asymptomatic [1]. Although their aetiology is unclear, it is presumed that genetic abnormalities constitute a predisposition [1, 2]. An arteriovenous malformation might cause serious complications if it remains undiagnosed and untreated [3].

We report a unique case of focal ^{18}F-fluorodeoxyglucose (^{18}F-FDG) uptake in a pulmonary arteriovenous malformation mimicking a mass lesion. A 74-year-old female patient with cyanosis and clubbing in her fingers and toes was referred to the Nuclear Medicine Department for positron-emission tomography (PET)/computed tomography (CT) imaging to assess a solitary pulmonary nodule with irregular margins in the right upper lobe detected on CT (Figure 1 A). The CT appearance suggested a malignant lesion. On ^{18}F-FDG PET/CT, there was increased focal uptake in the pulmonary nodule, suggesting a mass lesion, possibly malignant (Figure 1 B). There is no described typical uptake pattern for arteriovenous malformations in FDG PET/CT images. ^{18}F-FDG accumulation in a pulmonary mass suggests malignancy in most cases, although FDG accumulates in several benign conditions. Pulmonary angiography revealed afferent and efferent vessels with high contrast accumulation. Based on these findings, a pulmonary arteriovenous malformation was diagnosed. Subsequently, the patient underwent right video-assisted thoracoscopic surgery, a mini-thoracotomy, and wedge resection. The specimen confirmed the diagnosis of pulmonary arteriovenous malformation (Figure 2).

Pulmonary arteriovenous malformations are often diagnosed radiologically [4–6]. A chest X-ray might reveal a solitary nodule or be completely normal. Thorax CT is usually the second diagnostic tool in a patient with a suspected pulmonary arteriovenous malformation [7, 8], which causes dyspnoea and cyanosis in most cases [1, 3]. Pulmonary angiography gives the ultimate diagnostic information [4, 8]. The CT appearance of our patient's arteriovenous malformation suggested a malignant solitary mass. The moderately increased FDG uptake also caused diagnostic confusion. There is no typical uptake pattern of arteriovenous malformations in FDG PET/CT images.

Conflict of interest

The authors declare no conflict of interest.

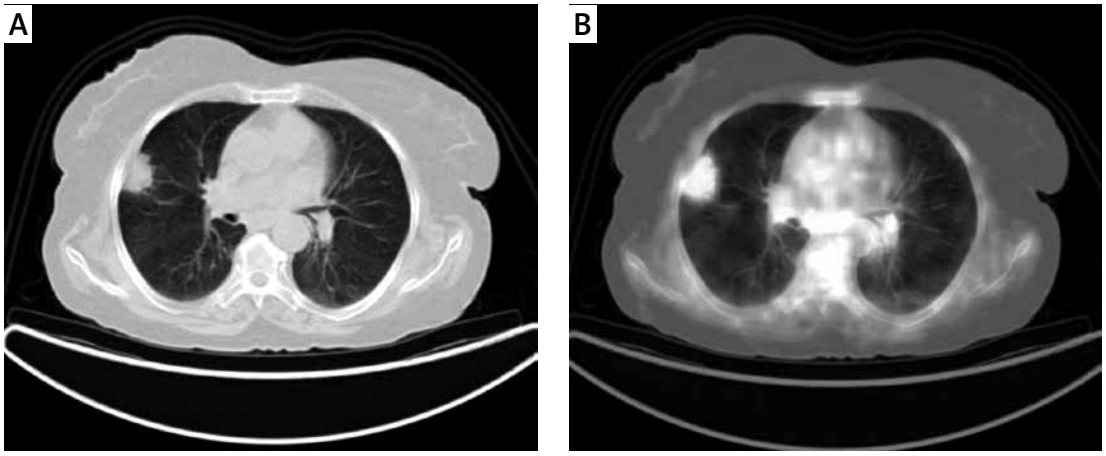

Figure 1. A – CT image showing a solitary pulmonary nodule in the anterior segment of the upper pole of the right lung. **B** – On ^{18}F-FDG PET/CT, increased focal uptake was seen in the pulmonary nodule, suggesting a malignancy (SUVmax 4.2 kBq/ml)

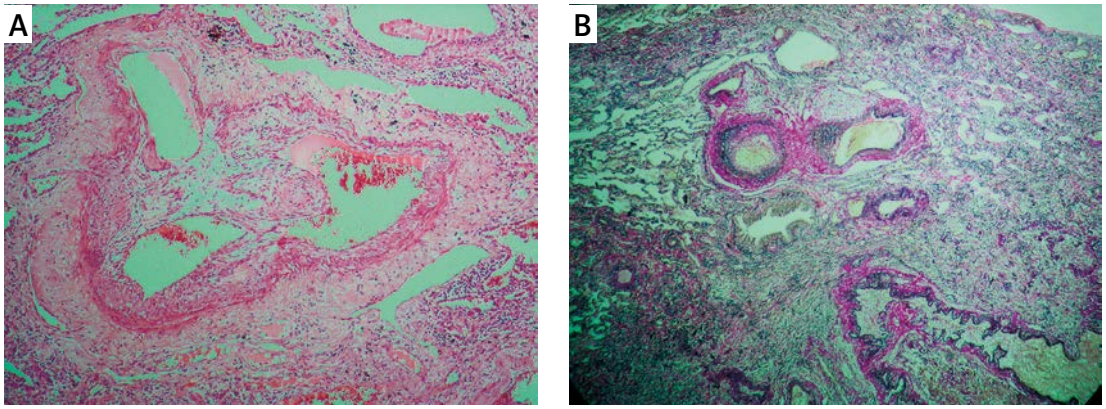

Figure 2. The specimen was stained with (**A**) haematoxylin and eosin and (**B**) Elastica van Gieson, which showed large and small vessels, confirming the diagnosis of pulmonary arteriovenous malformation

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