A PATIENT PRESENTED WITH HAEMOPTYSIS AND ABNORMAL CHEST RADIOGRAPH

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THE CASE

A sixty-five-year-old man (retired sales director) was referred to the chest clinic due to a persistent cough for 3 months, mainly dry, which started as flu like illness. He had one episode of haemoptysis and was given a course of antibiotic. No chest pain, shortness of breath, fever or weight loss. He gave a past history of epistaxis, type 2 diabetes mellitus, hypertension, transient ischemic attach and angina. He never smoked and had no history of asbestos exposure. He was on Diltiazem, candasartan, lansoprazole, gliclazide and simvastatin. His spirometry was normal. Figure 1 shows his chest X-ray (a) and computerized tomography (CT) scan of the chest (b, c, and d). Figure 2 shows the lower part of the face of the patient.

Questions

1) Describe the abnormality shown on his chest X-ray.  
2) Describe the abnormality seen on CT scan of the chest.  
3) Describe the abnormality seen on his face.  
4) What is your diagnosis?  
5) What other test needs to be organised to guard against more serious complications?

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Figure 1. Shows a chest X-ray of the patient (a) and his computerized tomography (CT) scan of the chest (b, c and d).

Figure 2. Shows the lower part of the face of the patient.
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ANSWERS
1) The chest X-ray shows multiple nodules; 2 seen clearly in the right side, while the 3rd nodule was in the lower lobe of the lung seen with difficulty behind the left dome of the diaphragm just lateral to the stomach air (Fig. 1a).

2) The CT scan showed serpiginous lobulated masses with afferent and efferent vessels (Fig. 1b, c and d) suggesting pulmonary arterial venous malformation (PAVM)

3) The lower lip shows an area of telangiectasia; just to the right of the midline, suggesting hereditary haemorrhagic telangiectasia (Fig. 2a)

4) Diagnosis: Hereditary haemorrhagic telangiectasia and PAVM.

5) Magnetic resonance imaging (MRI) should be arranged to make sure this patient does not have cerebral AVM, which may be amenable to treatment. Although, cerebral CT scan can be useful in identifying acute hemorrhage and can demonstrate vascular calcifications associated with AVMs. This imaging modality can easily miss an underlying AVM, and in the abences of active bleeding MRI would be a better screening test. Our patient had MRI, which showed no evidence cerebral arteriovenous malformation.

DISCUSSION OF THE CASE
Pulmonary arteriovenous malformation (PAVM) is an abnormal communication between the pulmonary artery and the pulmonary vein[1]. Although, in many cases, usually congenital in origin; many conditions including hepatic cirrhosis, schistosomiasis, mitral stenosis, trauma, actinomycosis, and metastatic thyroid carcinoma may lead to acquired PAVM[1,2]. Hereditary hemorrhagic telangiectasia (HHT), which is also known as Osler-Weber-Rendu syndrome is an autosomal dominant condition that is closely related to PAVM, and about 70% of PAVMs are associated with this syndrome[2]. Conversely, 15-30% of individuals with Osler-Weber-Rendu syndrome have a PAVM[2], as demonstrated in this patient.

Clinically, PAVM can present as an incidental finding of a solitary or multiple pulmonary nodules on chest radiographs with or without mucocutaneous telangiectases[1-3]. Alternatively, the patient may complain of epistaxis and hemoptysis due to bleeding from the arteriovenous malformation. The large left to right shunt can cause hypoxemia, shortness of breath, clubbing and secondary polycythemia[1-3]. Platypnea (improvement in breathing on reclining) is very suggestive of PAVM and could be secondary to a decrease in the blood flow through PAVM in the dependent portions of the lungs when the patient is supine. However, platypnea may also occur in hepatopulmonary syndrome, pulmonary embolism or pneumonectomy[1,2].

Our patient was presented with epistaxis and hemoptysis as well as multiple nodules seen on chest X-ray. However, he did not complain of dyspnoea and his oxygen saturation at room air was satisfactory, indicating that his shunt was not large enough to compromise his breathing. Life threatening hemoptysis can be caused by either a ruptured PAVM or to a ruptured endobronchial telangiectasia. Another serious respiratory complication of this condition is hemothorax from rupture of a subpleural PAVM[1].

Paradoxical embolization may occur, resulting in neurologic complications such as stroke or cerebral abscess. In fact, our patient did suffer from a stroke in the past and his CT scan of the head confirmed old infraction. Other causes of stroke in these patients include bleeding from coexisting cerebral AVM, which was not demonstrated in our patient. Radiologically, the initial indication of the presence of PAVM is 1-5 cm round or oval mass of uniform opacity with sharp or lobulated borders. It may have linear shadows adjacent to it, and represent the feeding vessels[4]. In about half of the patients have 2-8 lesions and usually present in the lower lobes, as seen in our patient. However, patients with microvascular telangiectases may have normal chest radiograph[5]. Though, contrast-enhanced CT scanning is the imaging modality of choice for confirming the diagnosis of PAVM[4]. Indeed, CT scan sensitivity for PAVM was found to be 98%, which was much better than pulmonary angiography sensitivity (60%). Similarly, three-dimensional (3D) spiral CT, which produces images of vascular structures that are continuously reconstructed, was also shown to have better sensitivity (95%) in identifying PAVM than unilateral pulmonary angiography[5]. Findings on CT included a single or multiple pulmonary nodules with feeding vessels/draining vessels, or it may appear as a serpiginous mass with vascular connections[4].

Presently, pulmonary angiography is only indicated if embolization is contemplated. Surgical treatment has a higher complication rate than embolization and is only necessary in unusually large or complicated PAVM[6]. In either form of treatment, it is very important to follow up the patient at least every 3-5 years to check for growth of new PAVM. Our patient opted for no further intervention.
REFERENCES


