A rare case of multiple pulmonary arteriovenous malformations (PAVMs)

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Section: Chest imaging
Area of Interest: Lung
Procedure: Computer Applications-3D
Procedure: Diagnostic procedure
Imaging Technique: CT
Imaging Technique: Conventional radiography
Special Focus: Arteriovenous malformations Case Type:
Clinical Cases
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Patient: 56 years, male

Clinical History:

A 56-year-old female patient with past history of hypertension presented to emergency following a minor trauma with right-sided chest pain at the midclavicular line. On physical examination she was afebrile, eupnoic (12 breaths/minute) with bilateral vesicular murmur and saturation rate of 97%.

Imaging Findings:

She underwent chest X-ray that showed no traumatic bone lesions; however, a single rounded nodule at the apex of the upper right lobe was seen. CT was then performed. Two additional nodules were seen: one in the right middle lobe and one in the left lingular paracardiac region (maximum diameter 36x25 mm). After contrast injection there was rapid opacification and wash out of all three lesions, simultaneously with the main pulmonary artery and right ventricle. All had irregular shape and sharp edges and each of them was fed by one artery and drained by one vein.

Discussion:

Pulmonary arteriovenous malformations (PAVMs), also known as arteriovenous fistulae, are abnormal connections between the pulmonary arterial and venous circulation.

Their prevalence is 38/100000 individuals with a predilection for females. Up to 70% of cases of PAVMs are associated with Rendu-Osler-Weber disease (hereditary haemorrhagic telangiectasia-HHT), but in some patients they are incidental findings; they can be multiple in 35% and bilateral in 10% of cases [1, 2].

Symptoms relate to PAVM’s size: lesions with diameter > 2 cm are more likely symptomatic. The most common symptoms are cyanosis, dyspnoea and haemoptysis, and the major complications are rupture and paradoxical embolisation. Dyspnoea and cyanosis are the expression of a right to left shunt between pulmonary veins and
arteries that causes left-heart overload. Pregnant women with PAVMs are at increased risk of haemorrhage [3]. PAVMs can be simple, with just one feeding artery and one draining vein, or complex (less common), which have more than one feeding artery.

Diagnosis is performed by contrast-enhanced CT, and treatment is based on embolisation [4].

Our patient had no cardiac symptoms and didn’t show any clinical signs of Rendu-Osler-Weber disease (according to Curacao criteria: recurrent epistaxis; teleangiectasias at typical sites: oral cavity, nose, fingers; visceral lesions: GI, CNS and lung; and family history of a HHT-affected first-degree relative. Diagnosis is based on presence of at least 3 of these 4 criteria) [5]. In order to evaluate the risk of future complications, the patient was addressed to the Pulmonology department and she is currently followed-up.

**Differential Diagnosis List:** Pulmonary arteriovenous malformations, Sporadic PAVMs, PAVMs associated with Rendu Osler Weber syndrome, Hypervascular parenchymal mass

**Final Diagnosis:** Pulmonary arteriovenous malformations

**References:**

Description: Chest X-ray in PA projection shows a rounded nodular lesion in the apex of the right upper lobe. Origin: Gauglio C, Ospedale Policlinico San Martino, Genova, Italy.
Description: Chest X-ray in LL projection. Origin: Gauglio C, Ospedale Policlinico San Martino, Genova, Italy
Description: Chest CT scans show irregularly-shaped masses in the left lingular paracardiac region characterised by fast c.e. simultaneously with the main pulmonary artery and right ventricle, thus suggesting PAVMs.-Lung window- Origin: Gauglio C, Ospedale Policlinico San Martino, Genoa, Italy
Description: Chest CT scans show irregularly-shaped masses in the right upper lobe.
-Lung window- Origin: Gauglio C, Ospedale Policlinico San Martino, Genova, Italy
**Description:** Chest CT scans show irregularly-shaped masses in the right middle lobe and in the left lingular paracardiac region.

-Lung window- **Origin:** Gauglio C, Ospedale Policlinico San Martino, Genova, Italy
Description: Chest CT scans show irregularly-shaped masses in the left lingular paracardiac region and right middle lobe. Origin: Gauglio C, Ospedale Policlinico San Martino, Genova, Italy
Description: Chest CT scans show irregularly-shaped masses in the right upper lobe.

-Tissue window- Origin: Gauglio C, Ospedale Policlinico San Martino, Genova, Italy
Description: Three-dimensional reconstruction of CT scans has been performed in order to give the surgeons clear data about morphology, position, afferent and efferent vessels. Origin: Gauglio C, Ospedale Policlinico San Martino, Genova, Italy