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CASE REPORT

RADIOLOGICAL PRESENTATION OF A-V MALFORMATION IN LUNGS AS AN INCIDENT

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Abstract

Pulmonary arteriovenous malformation (PAVM) is rare, and it is often associated with Osler-Weber-Rendu syndrome. Clinical manifestations may be absent or present as chest pain, cough and hemoptysis. In our case, we are dealing with an asymptomatic patient. The diagnosis of this condition involves chest X-ray, CT scan of the chest, and in some institutions transthoracic contrast ultrasound. We present a case of 73-years-old patient with an incidental finding of pulmonary arteriovenous malformation.

Key Words: *AV malformation, chest radiograph, CT lung.*

Introduction

Pulmonary arteriovenous malformation (PAVM) is a rare condition characterized with bridging between an artery and a vein, which results with right-to-left shunt. This condition is most commonly a congenital anomaly of pulmonary arteries and veins. PAVM occurs in 20%-50% of patients with hereditary hemorrhagic telangiectasia (Osler-Weber-Rendu syndrome).
Besides being a congenital anomaly, this condition can also occur as a consequence of surgical interventions, trauma, infections, hepatopulmonary syndrome, congenital heart diseases and metastases. The diameter of the feeding artery is an important parameter in the treatment of these patients. Transcatheter embolization with coils or plugs is possible in feeding arteries with a diameter of 3mm or more. If such finding is incidentally discovered, it requires follow-up with an appropriate protocol.
Clinically, some patients may present with hypoxemia, hemoptysis and nodules in the lungs. Rarely, this condition is asymptomatic.

Etiology and Epidemiology

This anomality is quite rare, with the Mayo Clinic reporting an incidence of 4.3 cases per year. In one study analyzing 21,000 MDCT scans capable of visualizing even very small nodules, the prevalence was 1 in 2,600 individuals. This condition is more common in

females, with a ratio of 1.5-1.8 times higher compared to males. It is the most commonly accompanied by Osler-Weber-Rendu syndrome.
AV malformations grow slowly and rarely spontaneously disappear.
Clinical Findings: Symptoms caused by AV malformations are insidious due to their slow growth. Dyspnea, especially on exertion, may be present for an extended period. In severe cases, dyspnea at rest in an upright position may occur. Cyanosis may be present to a significant extent. Occasionally, hemoptysis may occur, although it is rare for it to be massive.
Sometimes patients may have headache, dizziness, syncope, tinnitus, diplopia, breast pain and cough. These symptoms are not clearly understood, but may be associated with hypoxemia, polycythemia or paradoxical embolization of AV malformations.

Differential Diagnosis

AV malformations need to be separated from other radiological findings, such as extravascular changes: granulomas, inflammations, hamartomas, metastases, as well as vascular changes: mediastinal fibrosis with venous collaterals, arteriovenous collaterals, hepatopulmonary syndrome, serpiginous blood vessels in pulmonary hypertension, tortuous venous vessels, venous varices. For example, granulomas appear as nodular shadows with small arterial blood vessels but lack venous vessels. They tend to calcify, and satellite granulomas may be present around them which is important in differential diagnosis with AV malformations.

Material and Methods

We present a case of 73-years-old patient who underwent MDCT of the lungs due to visualization of a lobulated shadow right paracardial on preoperative chest radiography. The patient did not exhibit signs of dyspnea, bleeding, or any occlusive changes of the blood vessels. Laboratory analyses were within normal limits.
On the chest radiograph, a shadow was visualized in the paracardial right area with lobulated contours. The surrounding parenchyma appeared normal, and the hila were unremarkable.

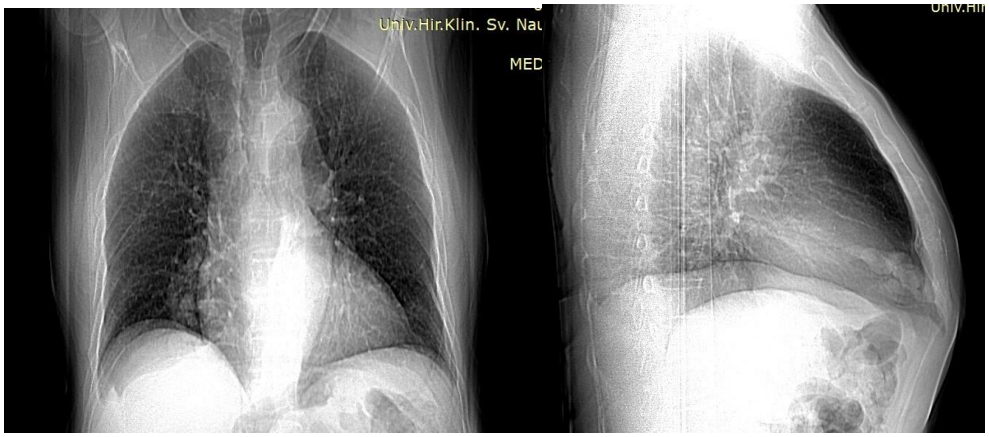

Image 1. Chest radiograph (PA and lateral view) showing a lobulated shadow in the right paracardial area.

On the performed lung MDCT in the arterial phase, a fistula connecting arterial to venous vessels is clearly demarcated, with bridging of the normal capillary bed between them. The arterial blood vessel measures 3.47mm in diameter and may be a candidate for coil embolization.

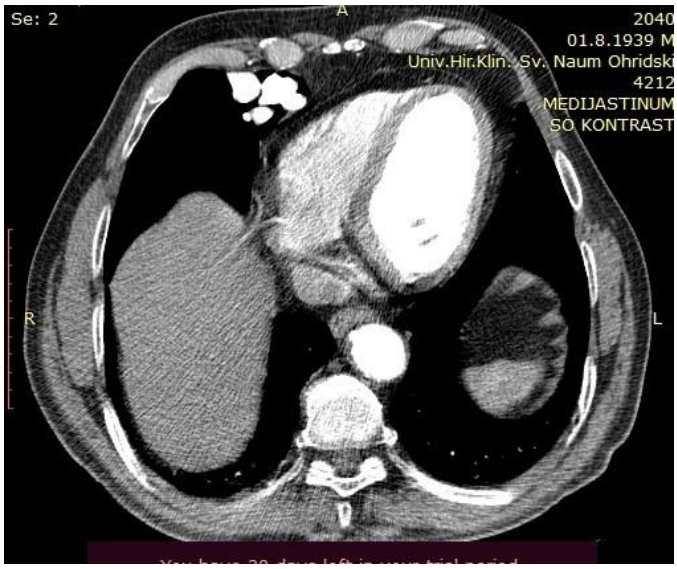

Image 2. Lung MDCT exam, axial section, arterial phase, showing blood vessels in the right paracardial area.

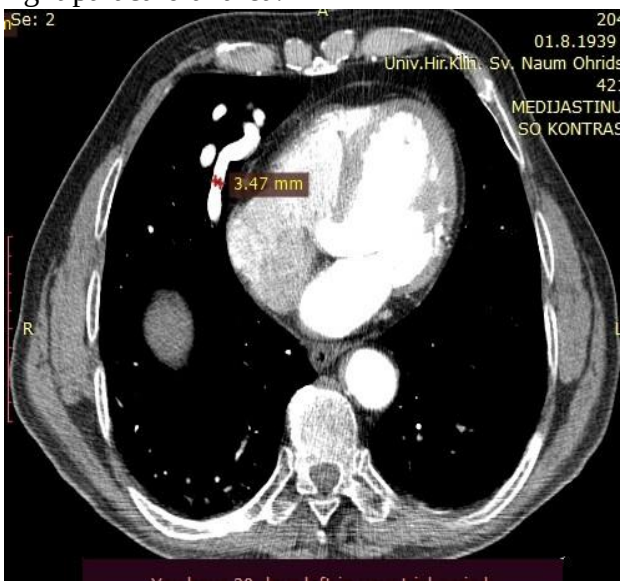

Image 3. MDCT of the lungs, arterial phase, showing the pulmonary artery with a diameter of 3.47mm.

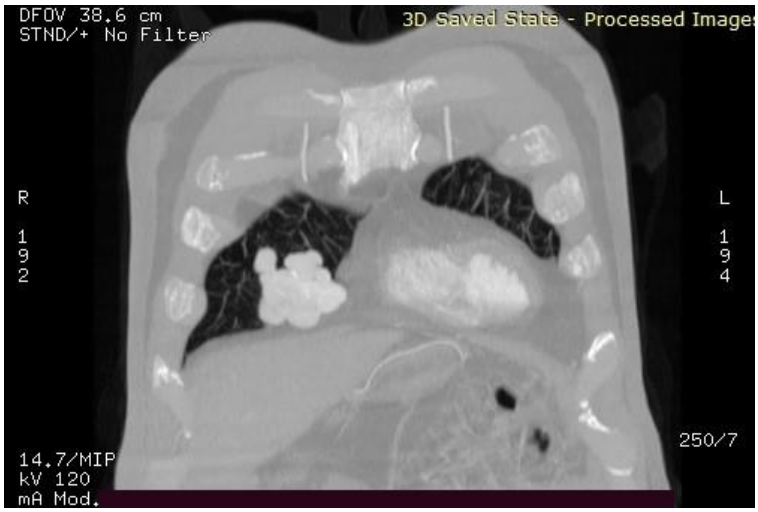

Image 4. MDCT of the lungs, contrast series in the coronal plane, showing a cluster of blood vessels.

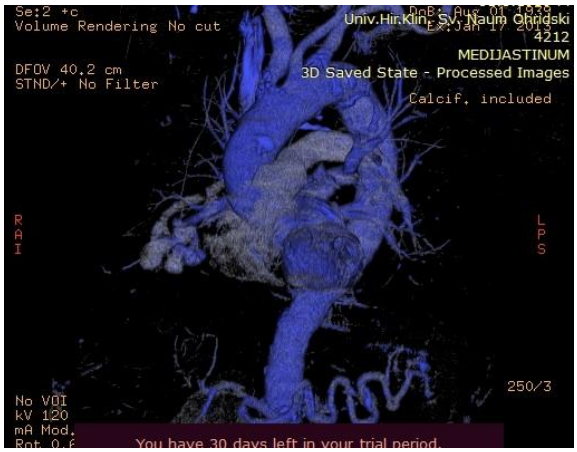

Image 5. Maximum Intensity Projection (MIP) reconstruction of the AV fistula at the level of arterial and venous blood vessels in the right lung.

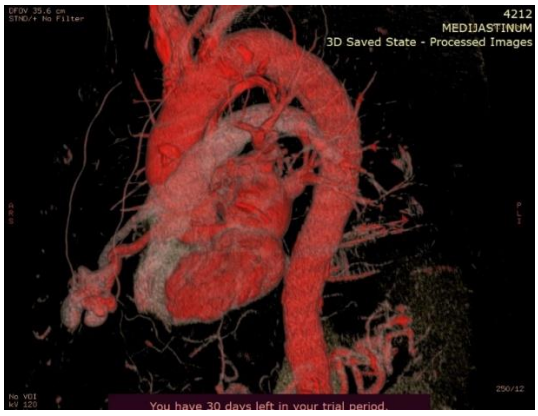

Image 6. Maximum Intensity Projection (MIP) reconstruction showing AV shunting into the pulmonary arteries.

Conclusion

Pulmonary A-V malformation is rare condition as incidental finding. It the most often occurs with hereditary hemorrhagic telangiectasia. If there is any doubt about the extension of this condition, the correct diagnosis is essential for implementing an appropriate therapeutic procedure and avoiding complications such as the discharge of blood clots in distant organs.

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