

LETTER / *Thoracic imaging*

Opacification of a lung vessel during superior vena cavography: A case report

Y. Benhamou-Setbon*, C. Delcour

Department of Medical and Interventional Imaging, Charleroi University Hospital, U.L.B, boulevard Paul-Janson, 92, 6000 Charleroi, Belgium

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We discovered a case of accessory pulmonary vein drainage filling centripetally and originating from the superior vena cava in a case of superior vena cava (SVC) syndrome due to small cell lung cancer.

A 65-year-old man was admitted as an emergency with dyspnea with a SVC syndrome. A standard radiograph showed a right upper lobe infiltrate consistent with pulmonary tuberculosis or malignancy. Samples taken during bronchoscopy confirmed the diagnosis of small cell lung cancer.

In view of the malignancy with a SVC syndrome, we planned to place a metallic stent in the SVC. Superior phlebocavography was performed (Fig. 1) and a right upper lobe blood vessel was opacified unexpectedly, originating from the lateral wall of the SVC. The opacification appeared to develop centrifugally in the lung parenchyma. A diagnosis of acquired arteriovenous fistula between the SVC and the right pulmonary artery (RPA) due to malignant degeneration of the vascular walls was suggested and the patient had therefore no stent placement and was given chemotherapy.

A CT scan performed immediately after cavography showed a bulky mass invading the entire height of the mediastinum and surrounding the SVC, causing a 90% stenosis. After an initial course of chemotherapy, further CT scan showed regression of the hilar mass and of the right mediastinal invasion with marked regression of the vascular stenosis (superior vena cava, SVC and right pulmonary artery, RPA).

Phlebography of the right arm showed that the opacification of the right pulmonary branch originating from the SVC had disappeared and the SVC had returned to almost normal diameter.

* Corresponding author.

E-mail address: setbon.yael@gmail.com (Y. Benhamou-Setbon).



Figure 1. Venography and cavography: pulmonary vein filling from the superior vena cava.

The chemotherapy courses were continued and a pulmonary angiogram was performed via a right femoral approach in order to establish the origin of the vessel. The SVC was found to be of normal diameter when superior vena cavography was performed and the lung vessel was no longer opacified. A local high flow injection showed slight reflux of contrast medium to its origin and hyperselective injection of a branch of the upper lobe pulmonary artery opacified the venous return which led conventionally to the left atrium via a pulmonary vein but secondly from a vein originating from the SVC and therefore representing the accessory pulmonary vessel initially opacified (Fig. 2).

Discussion

SVC syndrome is a syndrome involving compression of the mediastinum, which is common in small cell lung cancer.



Figure 2. Pulmonary angiography: conventional venous drainage into the left atrium associated with atypical drainage into the superior vena cava: left to right shunt.

It can be treated by anticoagulation and oxygen therapy although the most effective and rapid treatment of benign or malignant SVC obstructions is still stenting after angioplasty [1].

In this case, apparent centrifugal filling of the lung vessel posed a problem. The tumor was surrounding the right pulmonary artery and the intra-arterial pressure was unusually low. The pressure in the SVC was unusually high in view of the vena cava syndrome. This hemodynamic situation therefore explains the possibility of retrograde filling of the accessory pulmonary vein. In addition, after the tumor bulk had reduced after chemotherapy the blood vessel no longer filled in cavography as the intravascular pressures had been restored.

In the last angiogram, what we thought to have been an arteriovenous fistula was found to be an atypical accessory vein draining into the SVC, producing a left to right shunt.

This was an incidental discovery independent of the context of malignancy although in which the entirely abnormal direction of opacification is explained by simultaneous compression of the SVC and RPA.

Partial anomalous pulmonary venous return is a rare congenital abnormality. The few cases published describe atypical left pulmonary venous drainage into the innominate or left sub-clavicular vein or right atrium. Most of the right-sided accessory veins drain into the inferior vena cava [2,3].

A recent case of drainage of the right upper pulmonary vein into the SVC, discovered fortuitously when a Port-a-Cath was being implanted to manage ovarian cancer, has been described [4].

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

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