Isolated interrupted inferior vena cava with azygos continuation mimicking paraesophageal lymph node enlargement

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We report a case of interrupted inferior vena cava with azygos continuation diagnosed as an isolated finding in a patient with lung carcinoma. Findings of the unopacified CT scan initially simulated a paraesophageal lymphadenopathy. The contrast-enhanced spiral CT scan showed a dilated azygos vein in the absence of definable inferior vena cava.


Keywords: Azygos vein, vascular anomaly, mimicking lymph node.

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Azygos vein dilation has been described in patients with portal vein hypertension, obstruction of superior or inferior vena cava, right heart failure and interruption of the inferior vena cava (IVC). Interrupted IVC with azygos continuation is a rare clinical condition but in this situation, the azygos system dilates to accommodate visceral and lower extremity of blood return to the right atrium. Although uncommon, these anomalies have been described as an isolated finding and can mimic a mediastinal mass [1, 2, 3, 4]. If isolated interrupted IVC with azygos continuation is together with lung carcinoma, it can be misinterpreted as a lymphadenopathy in a patient who has been evaluated with unopacified CT scans.

We present a case of isolated azygos continuation of the interrupted IVC mimicking a paraesophageal lymph node enlargement in a patient with a left hilar mass.

Case report

A 68-year-old man was admitted to our hospital presenting a left tumour mass and lymphadenopathy on unopacified computed tomography scan of the chest and metastasis of the first and fourth lumbar vertebrae on magnetic resonance imaging. The physical examination revealed a non-healthy man. He was febrile (37.5°C) and had a blood pressure of 150/100 mmHg, a heart rate of 100 beats/min. Breath sounds were diminished on both lungs. The heart and abdominal examinations were unremarkable. The neurological examination was significant for paralysis in both lower extremities. A posteroanterior chest x-ray revealed a left hilar mass. Contrast-enhanced spiral CT scan of the chest showed a tumour mass at the superior segment of the lower left lobe with invasion of the descending aorta and dilated azygos vein (figure 1), mild enlargement of the arch of the azygos, and enlargement of the retrocrural portions of these same veins in the absence of definable inferior vena cava (figure 2). Coronal (figure 3) and sagittal reconstructions showed that the azygos vein was as large as the descending aorta.

Fiberoptic bronchoscopy showed no endobronchial lesion except of narrowing and mucosal hyperemia of the superior segment of the lower left lobe. The cytopathologic examination of the brushing and washing specimens was benign.

In a routine ultrasound examination of the abdomen, the stomach, heart, liver and spleen were normally positioned and the gallbladder was present. A detailed ultrasound examination of the IVC was not carried out owing to the patient’s poor health. Diagnosis of our patient was accepted to be lung carcinoma with bone metastasis and palliative radiotherapy planned. However, our patient did not accept the treatment and was discharged.

Discussion

The azygos vein usually originates below the diaphragm at the level of the first two lumbar ver-
AZYGOS VEIN CONTINUATION

Azigos continuation is formed by the union of ascending lumbar vein and right subcostal vein. It may also be joined by a tributary of the right renal vein or IVC. Generally, the azygos vein ascends to the right mainstem bronchus to drain into the superior vena cava at the level of fourth thoracic vertebrae.

Interrupted IVC with azigos continuation is a rare congenital anomaly that results from a connection failure between the right subcardinal vein and right vitelline vein [5]. This malformation is considered to be excellent marker for the presence of visceral heterotaxy and polysplenia syndrome [6]. Van Praagh et al. [7] reported an interrupted IVC in 39 of 46 (85%) postmortem cases of visceral heterotaxy with polysplenia. But, isolated interrupted IVC with azigos continuation has been rarely described [8-10], comparable with the case we report.

Surgical resection has been the mainstay of curative treatment in lung carcinoma. The presence or absence of tumour cells in the mediastinal lymph nodes of these patients is a critical factor in determining their prognosis and treatment plans. CT scan is well entrenched as a tool in the armamentarium in the pre-operative stages of lung cancer. Unfortunately, the size of mediastinal lymph nodes does not always correlate with their tumour involvement [11]. Mediastinoscopy, mediastinotomy, Endo-esophageal ultrasound fine needle aspiration (EUS-FNA) and video-assisted thoracoscopic surgery (VATS) remain a definitive means by which tissue is obtained. EUS-FNA and VATS is an alternative method of assessing level 5 and 6 as well as the paraesophageal (level 8) and pulmonary ligament (level 9) nodes [12].

Azygos continuation may present in otherwise normal cases, but may also present in patients with lung carcinoma, comparable with the case we report. In this setting, dilated azygos vein that is identified along the paravertebral pleural reflection may be misinterpreted as a posterior mediastinal mass, a retrocrural mass or adenopathy. This might be a potential pitfall in the planning of the mediastinal nodal staging with invasive tests like VATS. Enlargement of the retrocrural portion of the azygos vein differentiates from lymphadenopathy in that continuous tubular structures are seen on contiguous slices and the marked enhancement after injection of contrast material [10]. In our case, the diagnosis of azigos continuation was initially misinterpreted as a paraesophageal lymphadenopathy because of the unopacified CT scan.

In daily practice, when administering contrast material, scans of the mediastinum were performed predominantly during the arterial phase like in our case. This might be a second potential pitfall in the diagnosis of an azigos continuation. This problem may be resolved by late contrast-enhanced scan on CT examination or by use of magnetic resonance imaging [9].

In conclusion, all physicians interested in the thoracic oncology should be aware of the interrupted IVC with azigos continuation. This finding can present in patients with lung carcinoma and can be mistaken for a mediastinal lymph node enlargement.
References