

中文題目：罕見肺癌相關上腔靜脈症候群其側支循環用膈靜脈擴增來表現：一病例報告

英文題目：Collateral circulation of phrenic venous pathway in the lung cancer associated superior vena cava syndrome: A case report

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Introduction

Superior vena cava (SVC) syndrome is common in malignancy including lung cancer patients. Facial congestion, neck and arm swelling, and shortness of breath are the major clinical presentations.[1, 2] SVC syndrome can lead to collateral circulations and the number of collateral pathways would depend on the severity of obstruction.[2] Here we present one rare case with collateral circulation of phrenic venous pathway in lung cancer associated SVC syndrome.

Case report

A 70-year-old never smoking woman came to chest medicine outpatient department due to right neck and right arm numbness for more than one month. On physical examination, there was no facial or arm swelling, no chest wall superficial vein engorgement. Chest computed tomography (CT) scans revealed lung tumor over right upper lobe with left neck lymph node metastasis. The histological diagnosis was adenocarcinoma, which was confirmed by left neck lymph node excisional biopsy and the epidermal growth factor receptor (EGFR) mutation test showed L858R. Due to stage IV disease, she received third generation EGFR tyrosine kinase inhibitor treatment with initial response for one year and then progressed. During progression, superficial vein engorgement over right side chest wall was noted and the chest CT scans showed collateral venous circulations over right anterior chest wall, right periscapular pathways. The uncommon route of phrenic venous pathway (Figure 1) can be seen prominently. The phrenic venous route finally drained into the inferior vena cava (Figure 2).

Discussion

Chest CT with contrast enhancement can detect the severity of SVC obstruction and collateral pathways.[2-4] Common collateral pathways are vertebral, azygos, periscapular, and anterior cervical venous pathways.[2, 5] Although collateral circulations are common in SVC syndrome, very rare cases reported the pericardiophrenic pathway and there is only 5% of cases in SVC obstruction. In most cases, multiple collateral pathways were presented simultaneously.[5] Plekker et al. stated that the correlation of clinical scoring and radiological scoring system can be determined the degree of SVC obstruction and formation of collateral circulation. A greater degree of SVC obstruction on CT should be clinically more severe if less collateral drainage is visible, and clinically less severe if more collaterals have developed. The rationale is that congestive symptoms of SVC obstruction are mitigated by the formation of collateral veins.[2] The main collateral circulation of our case is phrenic venous pathway. No remarkable features were found leading to the formation of only one collateral pathway or to a specific pattern depending on underlying cause or the level or the extent of obstruction.[5]

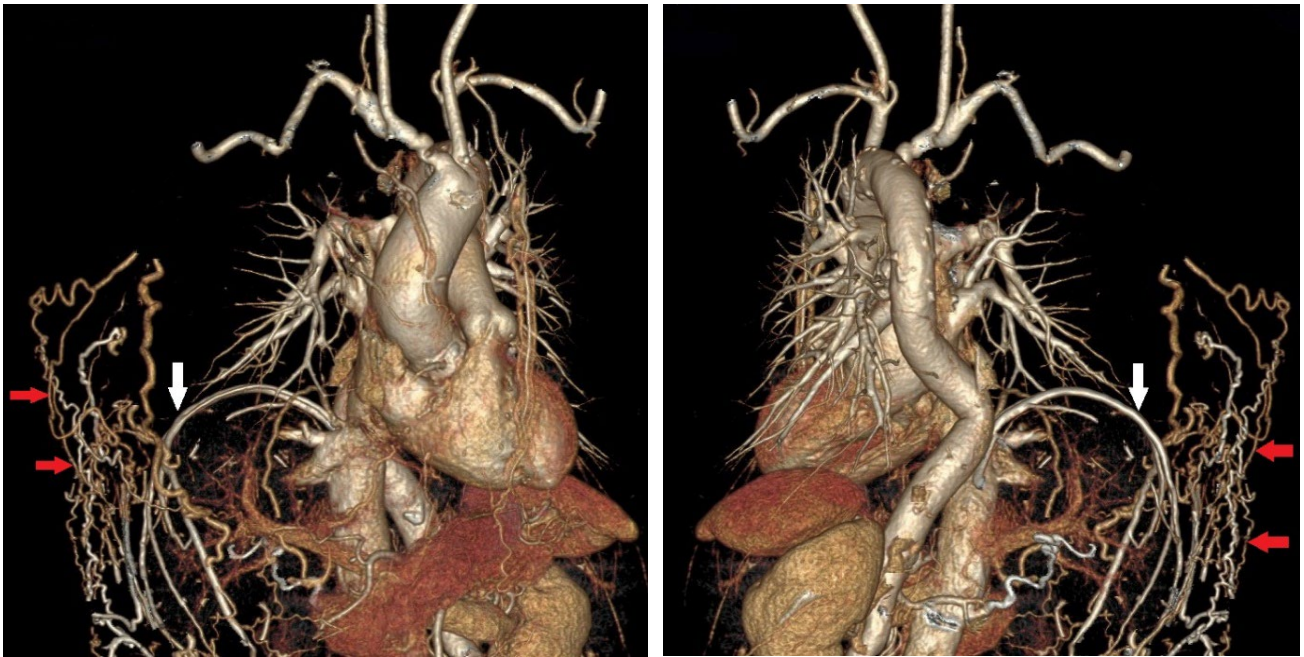


Figure 1A(Anterior view) and 1B(Posterior view): Three-dimensional (3D) reconstruction of chest CT image showed right phrenic collateral (White arrow) and chest wall collateral (Red arrows).

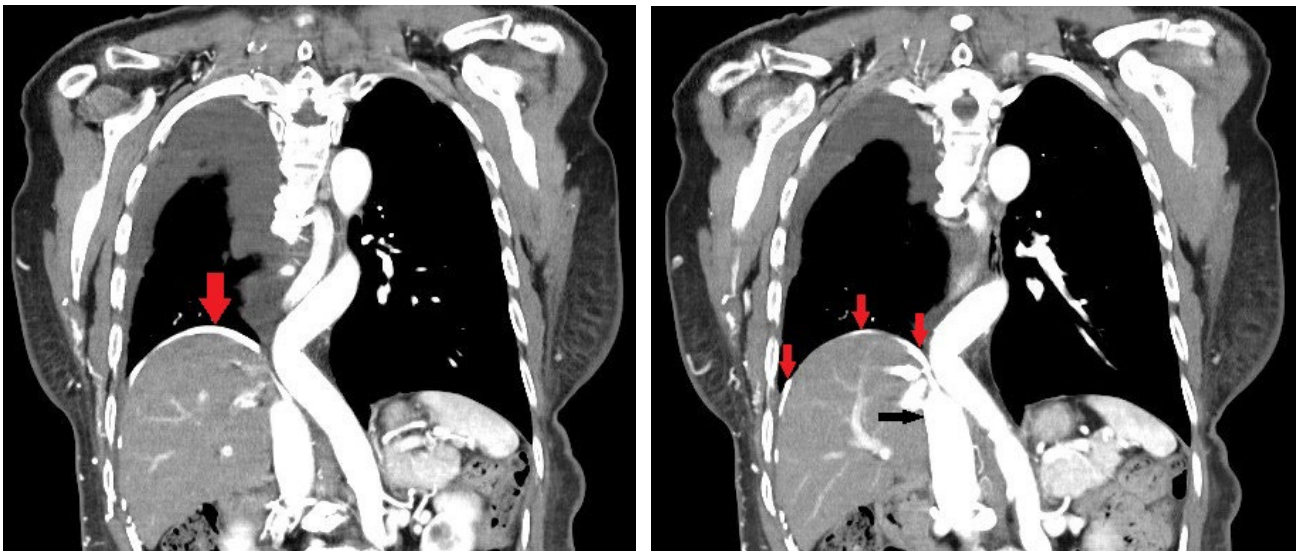


Figure 2A and 2B: Coronal view of the chest CT image showed right phrenic venous route (Red arrows) drained into the inferior vena cava (Black arrow).

References:

1. Higdon, M.L., C.J. Atkinson, and K.V. Lawrence, *Oncologic Emergencies: Recognition and Initial Management*. Am Fam Physician, 2018. **97**(11): p. 741-748.
2. Plekker, D., et al., *Clinical and radiological grading of superior vena cava obstruction*. Respiration, 2008. **76**(1): p. 69-75.

3. Kim, H.C., et al., *Collateral pathways in thoracic central venous obstruction: three-dimensional display using direct spiral computed tomography venography*. J Comput Assist Tomogr, 2004. **28**(1): p. 24-33.
4. Eren, S., A. Karaman, and A. Okur, *The superior vena cava syndrome caused by malignant disease. Imaging with multi-detector row CT*. Eur J Radiol, 2006. **59**(1): p. 93-103.
5. Meier, A. and H. Alkadhi, *Venous Collateral Pathways in Superior Thoracic Inlet Obstruction: A Systematic Analysis of Anatomy, Embryology, and Resulting Patterns*. AJR Am J Roentgenol, 2019. **213**(1): p. 200-210.