

Hepatopulmonary Syndrome

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Section: Chest imaging

Imaging Technique: CT

Case Type: Clinical Cases

Authors: Kraus GJ, Flueckiger F

Patient: 54 years, male

Clinical History:

Patient with liver cirrhosis and intermittent dyspnea

Imaging Findings:

A patient with liver cirrhosis was admitted because of intermittent dyspnea. There is known smoking-related emphysematous diffuse lung disease. Arterial blood-gas analysis showed a decreased pO₂ (59mmHg) and pCO₂ (26mmHg) on room air. A conventional chest roentgenogram (Figure 1) demonstrates reticulonodular opacities predominantly in the lower lobes. A thin-section CT demonstrates dilated vessels (Figure 2a) with an increased number of terminal branches extending to the pleura (Figure 2b).

Discussion:

Hepatopulmonary syndrome is a process associated with end-stage liver disease. The diagnosis is established with three criteria: chronic liver disease, increased alveolar-arterial gradient and evidence of intrapulmonary vascular dilatation [1, 3]. Especially the peripheral vasculature is significantly larger whereas the central pulmonary arteries are spared [2]. In cirrhotic patients the clearance of many circulating mediators is reduced which is believed to be the etiopathogenesis for hepatopulmonary syndrome. However the principal vasoactive substance that causes hepatopulmonary syndrome has not been identified. Hypoxemia is seen in one-third of decompensated cirrhotic patients and is believed to result from an inability of oxygen to diffuse to the center of the massively dilated peripheral vessels. CT is useful in the differential diagnosis as it rules out other causes of hypoxemia such as pulmonary fibrosis. Typical CT features are dilated peripheral vasculature and bibasilar reticulonodular opacities [3].

Differential Diagnosis List: Hepatopulmonary Syndrome

Final Diagnosis: Hepatopulmonary Syndrome

References:

Meyer CA, White CS, Sherman KE: Diseases of the hepatopulmonary axis. Radiographics 2000; 20(3):687-98. (PMID: [10835122](#))

McAdams HP, Erasmus J, Crockett R, Mitchell J, Godwin JD, McDermott VG: The hepatopulmonary syndrome: radiologic findings in 10 patients. AJR 1996, 166(6): 1379-85. (PMID: [8633451](#))

Ki-Nam Lee, Ha-Jong Lee, Woo Won Shin, and W.Richard Webb: Hypoxemia and Liver Cirrhosis (Hepatopulmonary Syndrome) in Eight Patients: Comparison of the Central and Peripheral Pulmonary Vasculature. Radiology 1999; 211: 549.

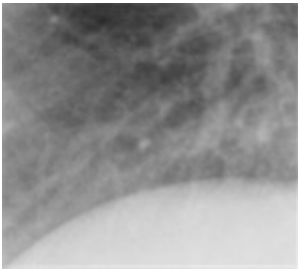
Figure 1

a



Description: dilated vessels and reticulonodular opacities **Origin:**

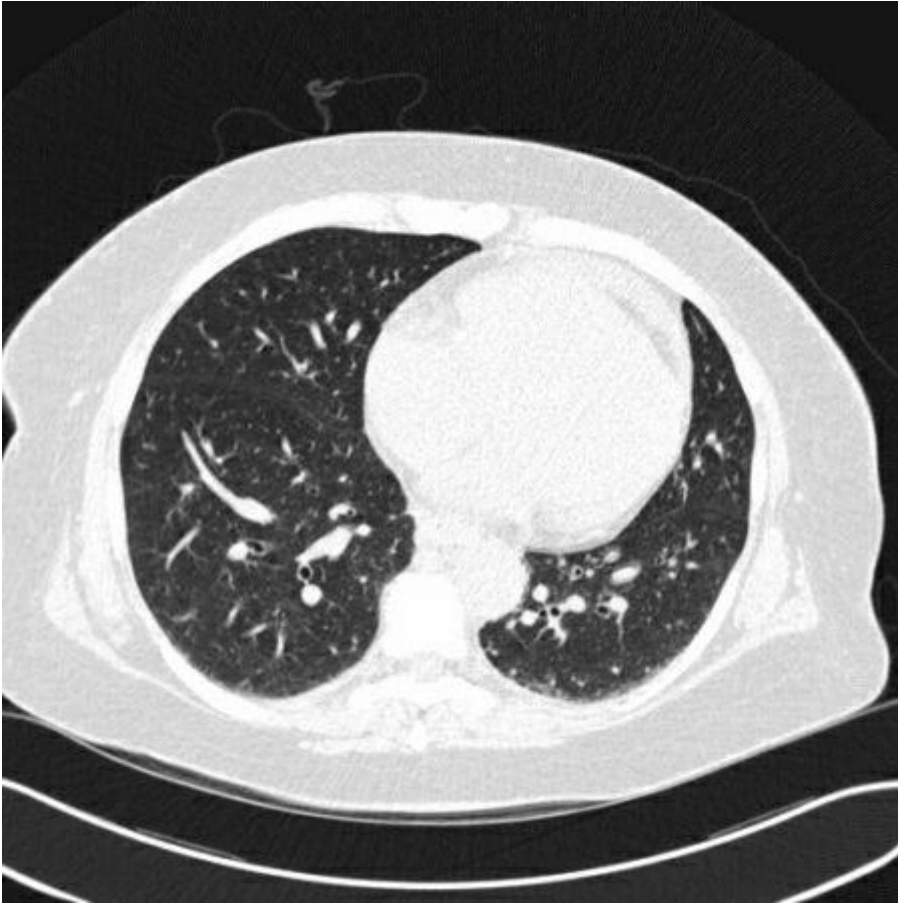
b



Description: Figure 1b
detailed view of HPS **Origin:**

Figure 2

a



Description: dilated vessels and reticulonodular opacities **Origin:**

b



Description: dilated terminal arterial branches extending to the pleura **Origin:**