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CLINICAL IMAGE

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Hepatopulmonary syndrome complicated by interstitial pneumonia and obesity with normal contrast echocardiography

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Abstract

Diagnosis of hepatopulmonary syndrome complicated by interstitial pneumonia and obesity is difficult because these complications can cause hypoxia. Such patients may not present with typical contrast echocardiography findings.

KEYWORDS

hepatopulmonary syndrome, interstitial pneumonia, perfusion lung scintigraphy

1 | CASE PRESENTATION

Hepatopulmonary syndrome (HPS) presents with three features: liver disease, intrapulmonary blood vessel dilation, and hypoxemia. HPS complicated by interstitial pneumonia and obesity is difficult to diagnose because these complications can independently cause hypoxia. Multiple modalities, including pulmonary function test, contrast-enhanced echocardiography, and perfusion scintigraphy, should be combined for accurate diagnosis.

A 60-year-old man with alcoholic liver cirrhosis and obesity (BMI, 27.3) presented with exertional dyspnea. Chest radiography revealed bilateral diffuse interstitial opacities (Figure 1). Laboratory examination and pulmonary function tests revealed arterial hypoxemia (PaO_2, 53.0 mmHg), elevated KL-6 (2,087 U/mL), and reduced % DLCO (30.8%). Total lung capacity, residual volume, and forced vital capacity were within the normal range. Echocardiography showed no intracardiac shunt, and the microbubble test results were negative. Perfusion lung scanning revealed no evidence of pulmonary embolism, but a severe right-to-left shunt was identified (Figure 1). Therefore, the patient was diagnosed with hepatopulmonary syndrome (HPS).

2 | DISCUSSION AND CONCLUSION

This case provides two important clinical suggestions. First, diagnosis of HPS complicated by interstitial

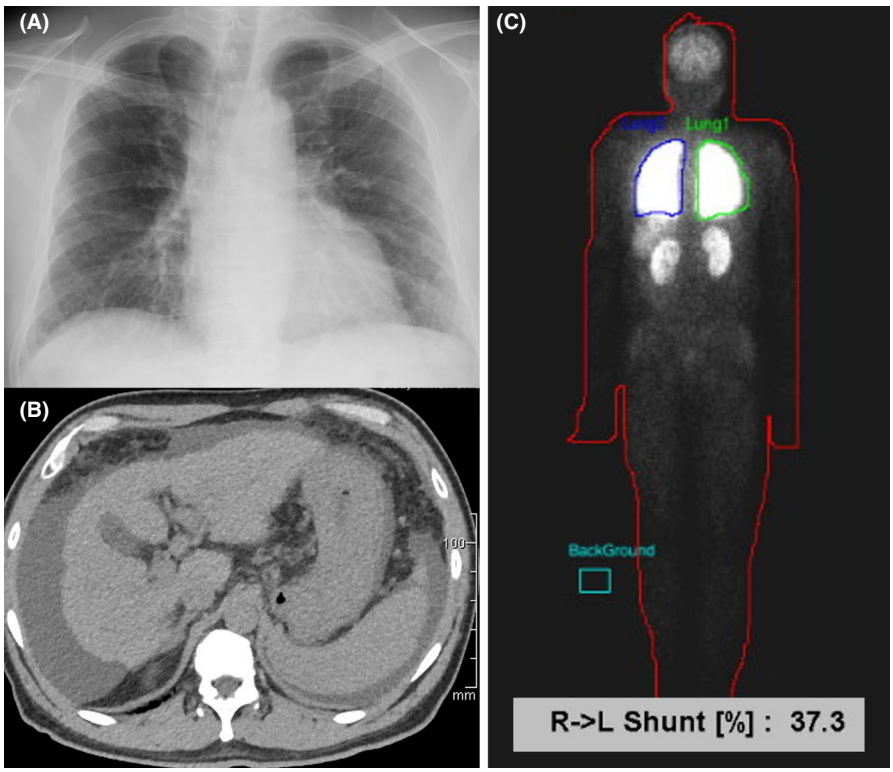

FIGURE 1 Chest radiography revealing bilateral diffuse interstitial opacities (A). Total lung capacity, residual volume, and forced vital capacity are within normal range, and % DLCO is decreased to 30.8%. Computed tomography revealing liver atrophy, surface irregularities, splenomegaly, and ascites (B). Lung perfusion scintigraphy with ^{99m}Tc-MAA revealing accumulation in the brain, kidneys, and gastrointestinal tract (shunt=37.3%) (C). Defects in ^{99m}Tc-MAA are absent in the lungs. Home oxygen therapy is initiated, and liver transplantation is currently under consideration

pneumonia and obesity is difficult. Diffusion impairment due to pulmonary fibrosis and obesity-induced thoracic compression can also cause hypoxia. The presence of decreased DLCO and absence of abnormalities in lung volume fractions lead to suggest the possibility of HPS.

Second, normal contrast-enhanced echocardiography (CEE) findings may be obtained despite the presence of a high degree shunt. Some reports indicated that perfusion lung scanning was more sensitive than CEE.[1,2] Multiple modalities, including pulmonary perfusion scintigraphy, should be combined for accurate diagnosis.

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CONFLICTS OF INTEREST
None.

AUTHOR CONTRIBUTIONS
AO was responsible for conception, design, drafting, image modification, and finalizing the manuscript. KF was responsible for demonstrating contrast echocardiography. All authors read and approved the final manuscript.

CONSENT
Informed consent for the publication and related images was obtained from the patient.

DATA AVAILABILITY STATEMENT
No datasets were generated or analyzed during this case report.

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