Charles J. Kahi, Section Editor

Membranous Caval Obliteration and "Showerhead"-like Venous Obstruction in Budd-Chiari Syndrome

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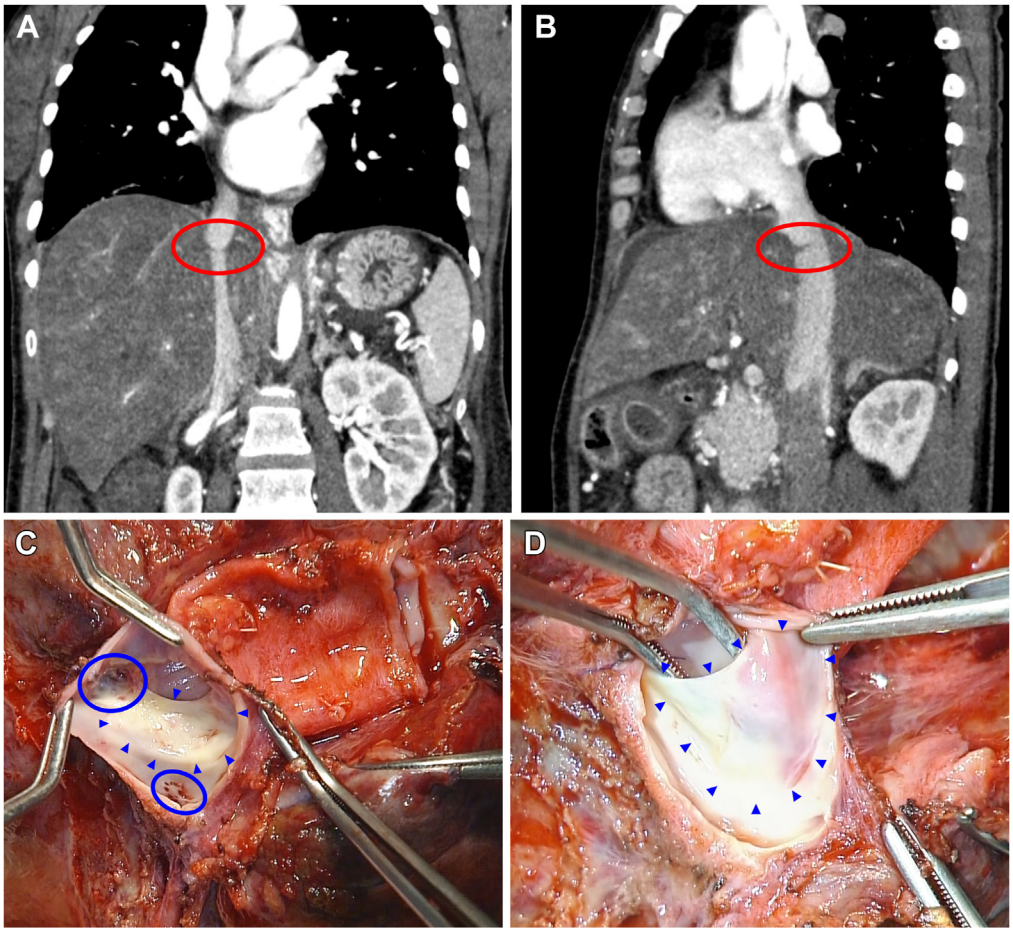

The patient provided written informed consent, and all treatments were approved by the Ethics Committee of Kyoto University (No. 1548 and R1473-3).

A 33-year-old woman presented with a 3-week history of abdominal distension. Massive ascites and ovarian cysts were found, but neither infections nor malignancies were evident. Due to hepatic vein thromboses and pulmonary emboli (Supplementary Figure *A*), anticoagulation was initiated. JAK2-mutation, antiphospholipid antibodies, and protein-C/S deficiency were all negative, but multi-phase dynamic computed tomography depicted membranous inferior vena cava (IVC) obliteration (Figure *A/B*), a characteristic pathology in Budd-Chiari syndrome (BCS).

Membranous caval obliteration/obstruction is rarely detected by routine axial images in delayed/venous phases because of its thinness and severely altered splanchnic/systemic hemodynamics. Paradoxically, IVC lesions are often visualized in early/arterial phases of coronal/sagittal sections (Figure *A/B*) by rapid

downward contrast backflow from the right atrium because of reduced venous return from below.

As hepatic encephalopathy worsened, she underwent semi-emergent living-donor liver transplantation. "Showerhead"-like venous obstruction and membranous IVC obliteration were clearly identified extracorporeally (Figure *C/D* and Supplementary Figure *B* and Video). She remains well for years post-transplant.

Reportedly, BCS prevalence ranges from 2.4 to 33.1 per million but is likely underestimated due to difficult diagnosis. Wide variations in disease type (acute–chronic), different lesions (hepatic vein–IVC), various symptoms, and different etiologies by race and region, further complicate the overall understanding and diagnosis. BCS should always be kept in differential diagnosis of unexplained liver diseases with altered abdominal/systemic hemodynamics.

Supplementary Material

Note: To access the supplementary material and/or video(s) accompanying this article, visit the online version of *Clinical Gastroenterology and Hepatology* at www.cghjournal.org, and at http://doi.org/10.1016/j.cgh.2024.08.014.

Conflicts of interest
The authors disclose no conflicts.

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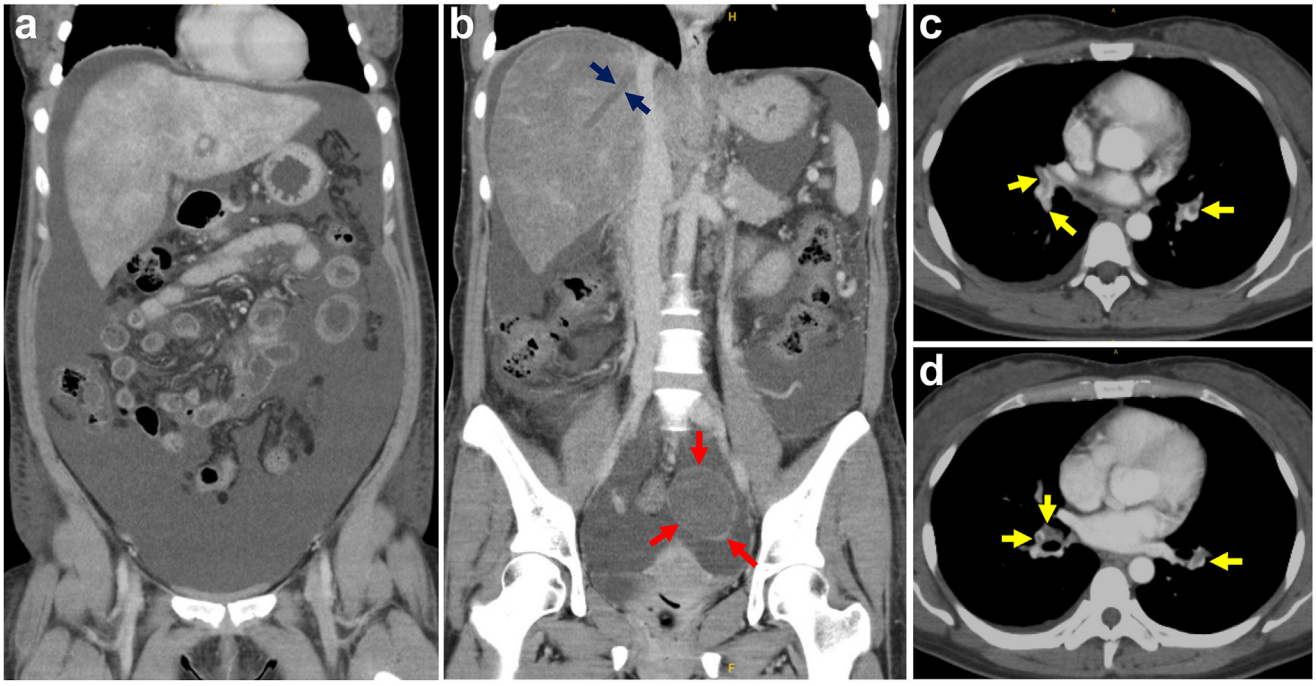
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