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The Role of VExUS in Volume Management for CKD Patients

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Accurate evaluation of volume status is crucial for guiding clinical management; however, physical examination has been shown to be an unreliable indicator of intravascular volume. The venous excess ultrasound score (VExUS) is an emerging, non-invasive tool that integrates inferior vena cava (IVC) diameter with pulse-wave Doppler assessments of the portal, hepatic, and renal veins to quantify venous congestion. Patients with CKD are particularly vulnerable to volume overload, and renal venous congestion can directly impair kidney function, contributing to the development of cardiorenal syndrome. VEXUS allows for bedside assessment of organ congestion and supports individualized fluid management in this high-risk population. This presentation will introduce the basic principles of the VEXUS score and describe the Doppler techniques used to evaluate the inferior vena cava, hepatic vein, portal vein, and renal vein. The clinical application of VEXUS will be illustrated through selected case reports, highlighting its utility in guiding volume management decisions. In addition, the limitations and potential pitfalls of VEXUS will be discussed, emphasizing key considerations for accurate interpretation during volume assessment.

Keywords: VExUS , CKD, volume management, volume status, cardiorenal syndrome