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EUS-guided portal pressure measurement: Beware of thrombosis risk

To the Editor:

We read with great interest the article by W. Laleman and colleagues on the future of endo-hepatology.[1] We would like to highlight a potential risk associated with direct portal pressure measurement in patients with portosinusoidal vascular disease (PSVD), a population particularly prone to portal vein thrombosis.

We present the case of a 41-year-old female who was referred to our general hepatology outpatient clinic in October 2023 for abnormal liver tests. Her medical history includes lymphoblastic leukemia diagnosed in 2016, which was treated with allogeneic hematopoietic stem cell transplantation in 2017.

Her current medical treatment consists of monthly immunoglobulin infusions (Privigen®). Blood tests revealed normal aspartate aminotransferase levels, alanine aminotransferase at 66 U/L (normal <40), gamma-glutamyltransferase at 123 U/L (normal <40), and alkaline phosphatase at 161 U/L (normal <120). Total bilirubin was 0.6 mg/dl, with albumin levels and international normalized ratio within normal ranges. Notably, she has a persistently low platelet count (47,000/mm^3), previously attributed to her hematological condition.

A review of her medical records revealed that these liver test abnormalities have been present since 2017. Further evaluation revealed splenomegaly (14 cm), a patent portal vein with normal flow (15.4 cm/s in the portal trunk). A full workup was performed, ruling out viral, autoimmune or other common liver diseases.

Given the persistent liver abnormalities, liver stiffness measurement by vibration-controlled transient elastography was first performed. This revealed a liver elasticity of 9.8 kPa and a controlled attenuation parameter of 218 dB/m. Spleen stiffness measurement showed a significantly elevated elasticity of 99.3 kPa.

A PSVD was suspected. We performed hepatic venous pressure gradient (HVPG) measurement, a transjugular liver biopsy, and an upper endoscopy to screen for esophageal varices. Grade 3 esophageal varices were identified. The HVPG showed a gradient of 7 mmHg, with a free pressure of 5 mmHg and a wedged pressure of 12 mmHg. Due to the discrepancy between the low HVPG and the presence of varices, we decided to also measure direct endoscopic ultrasound-guided portal pressure gradient (EUS-PPG) and showed in the hepatic vein and portal vein a pressure of 7 mmHg and 25 mmHg, respectively, confirming significant portal hypertension with a gradient of 18 mmHg. The portal vein was patent during the EUS evaluation. The patient received prophylactic antibiotics with cefuroxime 1.5 g before the procedure, which was uneventful. Liver biopsy revealed nodular regenerative hyperplasia grade 3 on histology, with a METAVIR score of F0. We decided to treat the patient with non-selective beta-blockers, carvedilol 6.25 mg twice daily. Notably, the patient developed a partial portal vein thrombosis of 3.5 cm, affecting less than 50% of the portal trunk, which was observed 6 weeks after the procedure during her 6-monthly ultrasound follow-up. She did not develop any ascites. This thrombosis required anticoagulation therapy (apixaban). A follow-up after 3 months showed partial recanalization of the portal vein (2 cm of the portal trunk) and full recanalization after 1 year of treatment. While a direct causal link cannot be established, this raises concerns about the potential thrombotic risk associated with EUS-PPG in high-risk patients. To our knowledge, this complication has not yet been reported in the literature.

EUS-PPG measurement is a promising technique allowing for the direct measurement of portal pressure. However, this invasive procedure is not without risks and the safety and feasibility of EUS-PPG measurements remain to be established, particularly in patients with severe chronic liver disease who are at increased risk of portal vein thrombosis. Until further data are available, non-invasive alternatives such as spleen stiffness measurement should be considered whenever possible in high-risk patients.

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Conflict of interest

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Authors' contributions

GD wrote the manuscript, NL et PD reviewed the manuscript.

Supplementary data

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[1] Laleman W, Vanderschueren E, Mehdi ZS, et al. Endoscopic procedures in hepatology: current trends and new developments. J Hepatol 2024 Jan 1;80(1):124–139. https://doi.org/10.1016/j.jhep.2023.08.032.