EUS assessment of portal pressure gradient identifies a significant amount of previously undiagnosed clinically significant portal hypertension

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Background

- Portal hypertension (PH) is a complication of cirrhosis and a harbinger of decompensation.
- Assessment of the portal pressure gradient (PPG) provides valuable information to aid in the assessment, staging, and prognostication of disease.
- Previously, PPG assessment was performed by interventional radiology and did not include simultaneous endoscopic assessment.
- Newer techniques have been developed that enable direct EUS directed vascular access, enabling assessment by endoscopists.
- Although data exists that shows correlation between EUS-PPG and HVPG using a manometer, it is limited by small numbers.

Hypothesis & Aims

- We hypothesized that EUS-PPG is safe and technically feasible.
- We aimed to report a real-world experience in the utilization of endoscopic ultrasound (EUS) guided PPG measurement.

Methods

- We conducted a retrospective cohort study of patients who underwent EUS-PPG from a military tertiary care center between February 2021 to May2022.
- Extensive Demographic and clinical data were abstracted (indication, referral source, effect on management, medical history, Social history, endoscopic findings, procedural characteristics, and biopsy results).
- Statistical analysis was performed using the t-test.

Results

Table 1. Patient Demographics

Variable	Mean ± (Standard Deviation) or n (% total)
Age	64 ± 12
Male gender	13 (72%)
Hispanic race/ethnicity	6 (33%)
Caucasian	10 (55%)
African American	1 (5%)
Asian	1 (5%)
History of NASH/NAFLD	6 (33%)
History of cirrhosis	4 (22%)
History of alcohol use	12 (66%)
MELD-Na	9 ± 3
Child-Pugh Score	5.1 ± 0.5
FIB-4	3.74 ± 4.5
LSM (kPa, Fibroscan) (n=9)	22 ± 20

Table 2. Indications

Variable	Mean ± (Standard Deviation) or n (% total)
Establish/exclude diagnosis of cirrhosis	10 (55%)
Assess surgical risk/candidacy	5 (27%)
Assess ability to switch medications	3 (16%)

Table 3. Outcome

Variable	Mean ± (Standard Deviation) or n (% total)
Changed surgical plan	5 (27%)
Changed diagnosis of cirrhosis (de-escalation)	4 (22%)
Escalated care (confirmed advanced fibrosis vs cirrhosis)	5 (27%)
Changed medication (Rx or dose)	4 (22%)

Table 4. Findings

Variable	Mean ± (Standard Deviation) or n (% total)
Endoscopic findings	
Esophageal varices	2 (11%)
Gastric varices	1 (5%)
Portal hypertensive gastropathy	6 (33%)
Portal pressure findings	
Clinically significant portal hypertension (≥10mmHg)	5 (27%)
Average hepatic vein pressure (mmHg)	11.2 ± 8.9
Average portal vein pressure (mmHg)	15.3 ± 6.8
Average PPG (mmHg)	5.8 ± 4.5
Middle hepatic vein access	13 (72%)
Left portal vein access	13 (72%)
EUS Findings	
Nodular liver contour	6 (33%)
Hyperechoic parenchyma	14 (77%)
Liver Biopsy (n=15)	
Adequate specimens	15 (100%)
Wet suction technique	15 (100%)
Bilobar biopsies	4 (26%)
Left lobe biopsy	11 (73%)

Key results

- The most common indication for evaluation was to establish or exclude the diagnosis of cirrhosis
- The mean PPG was 5.8 ± 4.5 mmHg
- Concurrent EUS-Liver biopsy was performed in 83% of patients
- Liver biopsy was both 100% diagnostic and concordant with PPG
- EUS-PPG data led to management changes in 94% of patients

Conclusions

- EUS-PPG measurement is safe and technically feasible
- EUS-PPG measurements resulted in changes in management
- Child-Pugh score did not correlate well with the presence of CSPH

Implications

- We speculate that the use of EUS-PPG has the potential to change prognostication and staging of liver disease.
- Larger studies are required to correlate EUS-PPG with other non-invasive assessments of liver disease.