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Correspondence

Re: Optimal diagnostic tool for surveillance of oesophageal varices during COVID-19 pandemic. A reply



Sir—We thank Wilcox *et al.*, for their valuable comments on our study published recently.¹ We prospectively compared CT against endoscopy and concluded that the former can be a reliable alternative to upper gastrointestinal (GI) endoscopy for diagnosis and grading of oesophageal varices in circumstances where the latter may not be feasible, such as during COVID-19 pandemic.²

We are fully aware that endoscopy is the reference standard for oesophageal varices surveillance. Unfortunately, there is no alternative technique in patients who are unfit for endoscopy. In the midst of COVID-19 pandemic, international bodies recommended deferring routine and surveillance endoscopic procedures. In such circumstances, portal-phase CT-guided variceal screening can be a useful tool and has been assessed elsewhere. Studies have proposed a cut-off size of 3 mm for small varices and ≥ 5 mm for large varices.^{3–5} The size criteria we utilized for CT-guided screening of oesophageal varices was adapted in line with a prospective study by Dessouky *et al.*⁶

Although Baveno classification do not discuss CT screening, Baveno VI guidelines strongly recommend non-invasive tools for the assessment of portal hypertension to avoid screening endoscopies in low-risk patients.⁷ Moreover,

endoscopic variceal screening is usually performed between 6 months to 3 years, depending on the size of varices at the index endoscopy; an interval between CT and endoscopy < 6 months may not be possible in real-world situations.

To address confounding factors in our study, endoscopic and CT images were analysed prospectively and independently by two specialists for each technique and indeterminate results were further re-evaluated by a third endoscopist and a radiologist, respectively.

We sincerely thank the authors for identifying the error in Table 2. We have attached the corrected Table below. We defer to agree with the authors that CT identifies incidental findings in patients with liver cirrhosis. A triphasic abdominal CT is often an invaluable tool in cirrhotic patients identifying hepatocellular carcinoma, defining vascular anatomy, and providing important information in patients undergoing liver transplantation, exclusion of other diagnoses, e.g., abdominal tuberculosis, extrahepatic portal vein obstruction, and importantly CT, eliminates observer bias associated with abdominal ultrasound.

In conclusion, portal venous phase of triphasic abdominal CT can be a useful tool for oesophageal varices diagnosis and grading.

Table 2. Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and area under the receiver operating characteristic curve (AUROC) of computed tomography (CT) in the diagnosis of oesophageal variceal grading

CT grading	No varices	Small	Medium	Large
Sensitivity	57.1%	85.1%	72.2%	94.1%
95% CI	27.7–82.3	68.5–93.8	59–82.4	80.3–99.3
Specificity	97.9%	92.2%	95.5%	88.5%
95% CI	93.9–99.3	85.3–96	88.1–98.5	78.7–94.9
PPV	66.6%	79.3%	89.6%	80%
95% CI	22.3–95.7	60.3–92	72.7–97.8	67.5–88.5
NPV	96.9%	94.6%	86.6%	96.8%
95% CI	91.3–99.4	86.9–98.5	76.8–93.4	89–99.2
AUROC	0.775	0.887	0.839	0.913
95% CI	0.54–1	0.80–0.97	0.75–0.93	0.85–0.98
p-Value for AUC	0.015	0.00	0.00	0.00

Conflict of interest

The authors declare no conflict of interest.

References

1. Wilcox G, Taylor J, Albazaz R, et al. Re: optimal diagnostic tool for surveillance of oesophageal varices during COVID-19 pandemic. *Clin Radiol* 2021;**76**:782–783
2. Jothimani D, Danielraj S, Nallathambi B, et al. Optimal diagnostic tool for surveillance of oesophageal varices during COVID-19 pandemic. *Clin Radiol* 2021;**76**(7):550.e1–7.
3. Kim YJ, Raman SS, Yu NC, et al. Esophageal varices in cirrhotic patients: evaluation with liver CT. *AJR Am J Roentgenol* 2007;**188**:139–44.
4. Perri RE, Chiorean MV, Fidler JL, et al. A prospective evaluation of computerized tomographic (CT) scanning as a screening modality for esophageal varices. *Hepatology* 2008;**47**:1587–94.
5. Tseng YJ, Zeng XQ, Chen J, et al. Computed tomography in evaluating gastroesophageal varices in patients with portal hypertension: a meta-analysis. *Dig Liver Dis* 2016;**48**:695–702.
6. Dessouky BA, Abdel Aal el SM. Multidetector CT oesophagography: an alternative screening method for endoscopic diagnosis of oesophageal varices and bleeding risk. *Arab J Gastroenterol* 2013;**14**:99–108.
7. de Franchis R, VI Faculty Baveno. Expanding consensus in portal hypertension: report of the Baveno VI Consensus Workshop: stratifying risk and individualizing care for portal hypertension. *J Hepatol* 2015;**63**:743–52.

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