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G Wilcox 24/04/2021

Letter to the Editor - *Clinical Radiology*

Letter to the Editor - "Optimal diagnostic tool for surveillance of oesophageal varices during COVID-19 pandemic".

Dear Editor,

We read the article by Jothimani et al [1] where the authors explore the accuracy and utility of computed tomography (CT) for the diagnosis and grading of oesophageal varices, against the gold standard of oesophagogastroduodenoscopy (OGD). They conclude CT is comparable to OGD for these purposes and list limitations including low patient numbers, single centre and lack of ability to detect high risk signs for bleeding. However, we wish to raise further limitations.

Two modality specific scoring systems underpinned the comparative analysis for ordinal sizing of varices. The baveno workshop consensus classification is established and is used in the british society of gastroenterology guidance [2], but no such radiological measure is validated. The unreferenced four stage radiological classification in this paper appears to be their own development, and it is not clear what the significance of the 3mm and 5mm boundaries is clinically and how these have been validated in practice. This is important because direct inter-technique comparison of vessel calibre or mucosal prominence may be affected by distension of the oesophagus during endoscopy, compared to the atmospheric pressure during CT acquisition.

Varices have been observed to progress from small to medium/large at an annual rate of approximately 12% [3]. This study included cases where the CT occurred within 6 months either side of the OGD. In our opinion this 6 month delay may have led to category shifting of varices and affected the validity of the data and a smaller limit would have been more appropriate in a retrospective comparative study for proof of principle.

We would like to draw attention to table 2 where we believe the sensitivity was substituted for PPV for all categories of varix, and similarly with specificity and NPV. We suggest that this should be reevaluated and a correction published. It may be of interest to the readship to see an example of how we calculated this, with reference to small varices.

Table 2 calculations for 'SMALL varices'

Original Table

CT classified	Endoscopic (True classification)			
	None	Small	Medium	Large
None	4	2	0	0
Small	3	23	2	1
Medium	0	2	26	1
Large	0	0	8	32

Correctness if comparing Small to Not-Small

CT classified	Endoscopic (True classification)			
	None	Small	Medium	Large
None	TN	FN	TN	TN
Small	FP	TP	FP	FP
Medium	TN	FN	TN	TN
Large	TN	FN	TN	TN

Collapsed to usual 2x2 table

CT classified	Endoscopic (True classification)	
	Small	Not Small
Small	Σ TP = 23	Σ FP = 6
Not Small	Σ FN = 4	Σ TN = 71

Calculated indices
Sensitivity = TP/(TP+FN) = 23/(23+4) = **85.1**%
Specificity = TN/(TN+FP) = 71/(71+6) = **92.2%**
PPV = TP/(TP+FP) = 23/(23+6) = **79.3**%
NPV = TN/(TN+FN) = 71/(71+4) = **94.7%**

While the study included cases which had undergone triple-phase CT, the authors only evaluated the portal venous phase imaging for variceal measurement. While additional phases add little to the assessment of varices, 380 cases were excluded because of lack of triple phase CT. In our view single phase portal venous imaging should have been included to increase the sample size.

CT often identifies incidental findings and there are potentially significant additional resource implications related to this. In the current UK context, local endoscopic surveillance programs for patients with cirrhosis are recovering after the health emergency related to sars-cov-19. It is important that CT surveillance assessment is not assumed to have equivalence when its clinical role is unvalidated and the published statistical analysis is incorrect.

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