To TOE or not to TOE? That is the question in patients with portal hypertension and varices

We read with interest your recently published review by Cardénas and Ginès on patients with cirrhosis, awaiting liver transplantation,1 with an emphasis on the high morbidity and mortality with variceal bleeding. Such patients may require a transoesophageal echocardiogram (TOE) to assess cardiorespiratory abnormalities potentially precluding a transplant, as well as for intraoperative haemodynamic monitoring and for investigation for endocarditis. However, the safety of performing a TOE in such patients is debated by clinicians due to the perceived risk of postprocedural bleeding.2 Three small studies have analysed post-TOE bleeding complications in patients with varices, having reported no bleeding in 26, 14 and 23 patients.3–5 We hypothesised that direct external trauma by the echocardiographic probe is unlikely to cause significant bleeding, as variceal bleeding is primarily caused by wall tension, a function of increasing variceal diameter and internal pressure.6 We therefore audited post-TOE bleeding rates at an Australian liver transplant referral centre in patients who had both varices or portal hypertension and a TOE based on International Classification of Diseases 10 coding from 1995 to 2010.

This project was approved by the Austin Hospital Research Ethics Unit (Project Number H2011-04346.) All patients had consented to have a TOE and endoscopies as per nationally accepted guidelines. Kruskal–Wallis multivariate statistical analysis was performed to determine any factors predicting the usefulness of TOEs, using the Minitab statistics program (V15, Minitab Inc, Pennsylvania, USA).

Sixty TOEs were performed on 51 patients. Seventy percent of TOEs were performed in men, and patients were a median age of 56.4 years. Child–Pugh scores of A, B and C were present in 30%, 36% and 33%, respectively, and the median Model for End-Stage Liver Disease (MELD) score was 17.1. Underlying causes of portal hypertension included alcoholic cirrhosis (27%), viral hepatitis (12%), non-alcoholic steatohepatitis (8%) and cryptogenic cirrhosis (8%). Cirrhosis was diagnosed at a median of 7.6 years prior to TOE. TOEs were performed at a median time of 150 days from variceal diagnosis, with 70% within 1 year. Seventy-three percent were for investigation of endocarditis.

Seventy-eight percent of patients had oesophageal varices seen on endoscopy, and 22% had radiological evidence of portal hypertension. When varices were seen on endoscopy, 30% had both gastric and oesophageal varices, 57% had large varices (>5 mm in diameter as per American Association for the Study of Liver Diseases definitions7) and 26% had stigmata of acute bleeding including red spot, red wales, clots and active spurting. Importantly, 53% of TOEs were performed without prior variceal treatment, such as liver transplantation, endoscopic banding or transjugular intrahepatic portosystemic shunting. We did not analyse if patients were taking β-blockers or nitrates. However, our study included more
objective risk factors for variceal bleeding, namely, variceal size and cirrhosis score at time of TOE.

There was no variceal bleeding 2 weeks after any TOE. Ours is, to our knowledge, the only study analysing for such late bleeding. TOEs were useful in changing clinical management in 50% of cases by guiding medication regimens or surgical procedures (table 1). Multivariate analysis did not reveal any factors that predicted whether a TOE would be useful, with factors analysed including: patient gender; cause and duration of portal hypertension; alcohol use; transplantation status; body mass index; MELD and Child-Pugh score at time of TOE; variceal size and site; and indication for TOE. We therefore suggest that TOEs in patients with varices or portal hypertension should be performed if clinically indicated, as no bleeding rates occurred even if large varices and/or acute stigmata of bleeding were present.

Christopher Leung,1 Sern Wei Yeoh,2 Lucy Y Lim,2 Ray Boyapati,2 Adam G Testro,2 Rhys Vaughan,2 Kaye Marion,3 Louise M Burrell,1 Peter W Angus2
1Department of Medicine, University of Melbourne and Liver Transplant Unit, Austin Hospital, Melbourne, Victoria, Australia; 2Liver Transplant Unit, Austin Hospital, Melbourne, Victoria, Australia; 3Statistics and Operations Research Group, School of Mathematical and Geospatial Sciences, RMIT University, Melbourne, Victoria, Australia

Correspondence to Dr Christopher Leung, Liver Transplant Unit, Level 8, Harold Stokes Building, 145 Studley Road, Heidelberg, VIC, 3084, Australia; chris.leung@y7mail.com

Acknowledgements We thank S Shanaka from RMIT University for his assistance with statistical analysis.

Contributors PW A and LMB are equal authors. CL, LMB, DYL, RV, AGT and PWA were responsible for the conception and design of the study. SEY and RB collected the data which was analysed and interpreted by CL, SEY, LYL, RB and KM. CL and SEY drafted the article, and all other authors critically revised it for important intellectual content. All authors gave final approval of the manuscript version to be published. CL and SEY, as guarantors, are responsible for the overall content.

Funding None.

Competing interests All authors have completed the Unified Competing Interest form at http://www.icmje.org/coiDisclosureform.pdf (available on request from the corresponding author), and declare that no authors have financial or non-financial interests that may be relevant to the submitted work.

Provenance and peer review Not commissioned; externally peer reviewed.

Data sharing statement All authors, external and internal, had full access to all of the data (including statistical reports and tables) in the study and can take responsibility for the integrity of the data and the accuracy of the data analysis.

Received 7 September 2012 Accepted 22 October 2012 Published Online First 15 December 2012


REFERENCES
To TOE or not to TOE? That is the question in patients with portal hypertension and varices

Christopher Leung, Sern Wei Yeoh, Lucy Y Lim, Ray Boyapati, Adam G Testro, Rhys Vaughan, Kaye Marion, Louise M Burrell and Peter W Angus

Gut 2013 62: 655-656 originally published online December 15, 2012
doi: 10.1136/gutjnl-2012-303351