Epidemiologic trends in mortality of cirrhosis in the intensive care unit: a large, Australasian, multi-center cohort

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Background: There is little published population level data that describes the outcomes of patients with cirrhosis in the intensive care unit (ICU). The aims of this study were: 1) to describe trend changes in mortality of patients with cirrhosis admitted to ICUs across Australia and New Zealand, and 2) to investigate the effect of increasing organ failures on mortality in this group.

Methods: The Australian and New Zealand Intensive Care Society Centre for Outcome and Resource Evaluation Adult Patient Database was examined. Readmissions to ICU and admissions following liver transplantation were excluded. Patients admitted to 171 ICUs with and without cirrhosis between January 1, 2000 and December 31, 2011 were compared. Severity of illness on admission was assessed using number of organ failures and the Acute Physiology and Chronic Health Evaluation (APACHE) III scoring system (after removal of the coefficient for cirrhosis).

Results: Patients with cirrhosis accounted for 1.4% (13 379/958 853) of ICU admissions. In-hospital mortality in the cirrhotic group was 31% compared to 12% in the non-cirrhotic group ($p < 0.001$). Cirrhotic patients had a higher mortality rate with each increase in number of organ failures. Cirrhotic patients with 1 organ failure had a comparable mortality to non-cirrhotic patients with 3 organ failures (20 vs 21%). In-hospital mortality decreased in both groups over time. The cirrhotic group had a 10% absolute reduction in mortality between the 2000–2003 and 2008–2011 time cohorts compared to a 3.8% reduction in the non-cirrhotic group ($p < 0.001$). After adjusting for baseline illness severity using logistic regression, a similar reduction in the odds ratios for mortality over time was demonstrated for both groups (Figure 1).

Conclusion: The mortality of critically ill patients with cirrhosis has decreased over time. Survival in this group is better than previous reports. Mortality in cirrhosis increases with number of organ failures.

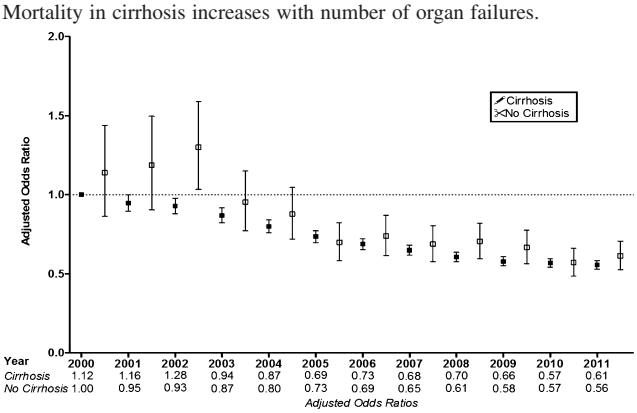

Figure 1 Odds ratios for baseline disease severity, referenced against the year 2000 with 95% confidence intervals.

Percutaneous transhepatic variceal embolization – first case reports in an Australian setting

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Introduction: Gastroesophageal varices are present in approximately 50% of patients with cirrhosis and their presence correlates with severity of liver disease. Approximately 10–20% of patients have uncontrolled or recurrent variceal bleeding despite urgent endoscopic and/or pharmacological therapy. A transjugular intrahepatic portosystemic shunt (TIPS) has been shown to be an effective treatment in uncontrolled variceal bleeding but may have complications including shunt occlusion and hepatic encephalopathy. Percutaneous transhepatic variceal embolization (PTVE) is an alternative technique that effectively treats acute esophageal variceal bleeding in approximately 70%–90% of patients, and has been shown to reduce variceal recurrence and rebleeding rates[1]. In brief, the procedure involves transhepatic portography to identify and then superselectively catheterize collateral vessels to allow embolization. We describe the first use of PTVE in an Australian setting.

Case reports: 1) A 43 year old male presented with hematemesis on a background of alcoholic cirrhosis, with a Model for End-stage Liver Disease (MELD) score of 15. Hemoglobin was 62 g/L prior to gastroscopy, and the procedure failed to isolate the bleeding varices due to massive hemorrhage. He underwent a successful PTVE with ethylene vinyl alcohol copolymer, a material that is commonly used in neurovascular procedures and has recently been shown to be effective in vascular embolization of gastrointestinal vessels[2]. He was discharged home two weeks later. 2) A 50 year old male presented with hematemesis and melena on a background of hepatitis C and alcohol-related cirrhosis, with a MELD score of 19. His hemoglobin was 80 g/L, and endoscopic identification of the varices failed due to massive hemorrhage. He underwent a successful PTVE with cyanoacrylate (embolic material), and was discharged home three weeks later.

Summary: PTVE offers an alternative to TIPS for refractory variceal bleeding. Although PTVE and TIPS are comparable in terms of variceal rebleeding prevention, PTVE offers a lower incidence of hepatic encephalopathy and better survival rates than TIPS in patients with higher MELD scores[3]. Furthermore, PTVE is advantageous in allowing for the embolization of a wider venous network, unlike endoscopic treatments that only obliterate mucosal and submucosal varices without any effect on feeding vessels. Its efficacy in our cases was enhanced by the use of particular embolic materials that have been shown to be permanently retained in paraesophageal veins without a time-dependent decrease[4]. These are the first case reports in Australia using PTVE.

References

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