**Perioperative assessment and Treatment tactics of Patients with Virus-induced Liver Cirrhosis: Risk Evaluation, Surgical Results, and Future Directions. Literature review.**

*Daniyar Sultankulov, Anna Shin*

*Al-Farabi Kazakh National University, Almaty, Kazakhstan*

*The relevance of Research:* Liver cirrhosis represents a medically significant chronic condition marked by the irreversible substitution of liver parenchyma with fibrotic tissue, resulting in progressive impairment of organ function, accompanied by structural alterations such as thickening and nodularity. [1]

More than six thousand cases of newly diagnosed chronic viral hepatitis are registered annually in Kazakhstan. Of these, chronic viral hepatitis B accounts for 48%, chronic viral hepatitis C accounts for 52%. At the same time, the highest incidence of chronic forms of viral hepatitis, about 87%, is recorded in the age group from 30 to 60 years. Also, in Kazakhstan, according to World Health Organization (WHO), in 2022, 49,175 adult patients are registered with a diagnosis of viral hepatitis, including 23,233 patients with hepatitis C, 22,977 people with hepatitis B, 1,252 patients with hepatitis D, 5,976 with liver cirrhosis and more than 500 people with hepatocellular carcinoma (HCC) and cholangiocarcinoma (CCC) liver tumors. [2]

This pathology is characterized by a severe progressive course, being one of the main causes of mortality and disability in economically developed countries. Diffuse chronic liver diseases and cirrhosis are among the six leading causes of death in patients aged 35 to 60 years, accounting for 14 to 30 cases per 100,000 populations, with a worldwide mortality rate of approximately 2 million people per year on average. [2]

*Purpose of the Review*: to analyze domestic and foreign literature concerning the diagnosis, management, and treatment strategies employed for patients afflicted with virus-induced liver cirrhosis.

*Methods*: We reviewed the literature from 2005–2024 to identify studies reporting perioperative outcomes in patients with cirrhosis according to surgical procedure and severity of cirrhosis. Total, we identified 87 studies, extracted study design elements, and reported perioperative outcomes by type of surgical procedure, Child-Turcotte-Pugh (CTP) class, or Model for End-stage Liver Disease (MELD) score in each.

*Results*: In general, patients with cirrhosis exhibit perioperative mortality rates that are five–six times higher than those without cirrhosis, with variations depending on the extent of liver dysfunction. [3-5] In gastrointestinal surgeries, the highest postoperative mortality rates are observed following colorectal resection (13%–26%), esophagectomy (11%–25%), and pancreaticoduodenectomy (11.9%–17%). [6-7] Conversely, the lowest postoperative mortality rates are typically associated with laparoscopic cholecystectomy and elective uncomplicated hernia repair (0% in most studies). [8] Notably, coronary artery bypass graft and valvular heart surgeries demonstrate elevated mortality rates, while elective hip and knee replacements are characterized by lower mortality rates[3]. Patients diagnosed with compensated cirrhosis (CTP Class A, or MELD<10) and limited comorbidities typically exhibit favorable surgical tolerance. In the case of CTP Class B individuals (MELD 11–15), characterized by moderate risk, careful assessment of the risks and benefits of elective surgery is imperative. Preoperative optimization and vigilant perioperative monitoring are indispensable for this cohort. Conversely, patients categorized as CTP Class C (MELD>15) face elevated mortality risks, necessitating consideration of liver transplantation or alternative therapeutic approaches over surgical intervention. [4-5] In cases where patients are potential candidates for transplantation and necessitate a non-urgent operation beforehand, it is advisable to initiate a transplant work-up before surgery. This approach facilitates prompt listing for organ transplantation should post-operative hepatic failure occur. Existing cohort studies predominantly focus on postoperative rescue transplantation, particularly in instances of post-hepatectomy acute liver failure. [8] Despite the associated morbidity, transplantation emerges as a crucial, potentially life-saving intervention for a condition otherwise deemed fatal. Unfortunately, the available literature on perioperative management of cirrhotic patients is limited, primarily relying on case series and expert opinions for guidance. The existing risk calculators are deemed insufficient for comprehensive risk assessment in this population.

*Conclusion*: The severity of liver dysfunction, concurrent medical conditions, and the nature and complexity of the surgical procedure, particularly whether it is elective or emergent, collectively influence the perioperative mortality and morbidity rates in patients with cirrhosis. Existing clinical research on risk assessment and perioperative management in this population is subject to significant limitations, underscoring the need for further investigation and refinement.

*References*:

1. Northup PG, Friedman LS, Kamath PS. AGA Clinical Practice Update: Surgical Risk Assessment and Perioperative Management in Cirrhosis. Clinical gastroenterology and hepatology. 2018

2. https://www.who.int/ru/news-room/feature-stories/detail/kazakhstan-is-leading-light-for-free-hepatitis-testing-and-treatment-in-central-asia

3. Friedman LS. Surgery in the patient with liver disease. Transactions of the American Clinical and Climatological Association. 2010;121:192–204. [PubMed: 20697561]

4. de Goede B, Klitsie PJ, Lange JF, et al. Morbidity and mortality related to non-hepatic surgery in patients with liver cirrhosis: a systematic review. Best practice & research Clinical gastroenterology. 2012;26(1):47–59. [PubMed: 22482525]

5. O’Leary JG, Yachimski PS, Friedman LS. Surgery in the patient with liver disease. Clinics in liver disease. 2009;13(2):211–31. [PubMed: 19442915]

6. Nguyen GC, Correia AJ, Thuluvath PJ. The impact of cirrhosis and portal hypertension on mortality following colorectal surgery: a nationwide, population-based study. Diseases of the colon and rectum. 2009;52(8):1367–74. [PubMed: 19617746]

7. El Nakeeb A, Sultan AM, Salah T, et al. Impact of cirrhosis on surgical outcome after pancreaticoduodenectomy. World journal of gastroenterology. 2013;19(41):7129–37. [PubMed: 24222957]

8. Im GY, Lubezky N, Facciuto ME, et al. Surgery in patients with portal hypertension: a preoperative checklist and strategies for attenuating risk. Clinics in liver disease. 2014;18(2):477–505. [PubMed: 24679507]