

Available online at [www.jsan.org.np](http://www.jsan.org.np)

Journal of Society of Anesthesiologists of Nepal



## Clinical Audit

### An audit of hepatobiliary diseases in a tertiary level intensive care unit in Nepal

*Pramesh Sunder Shrestha, Subhash Prasad Acharya, Gentle Sunder Shrestha, Diptesh Aryal, Rejin Kumar Udaya, Moda Nath Marhatta*

*Tribhuvan University Teaching Hospital, Maharajgunj, Kathmandu 44600, Nepal*

#### ARTICLE INFO

##### Article History

Received 3<sup>rd</sup> August 2016

Accepted 15<sup>th</sup> August 2016

Published 28<sup>th</sup> June 2017

© Authors retain copyright and grant the journal right of first publication with the work simultaneously licensed under Creative Commons Attribution License CC - BY 4.0 that allows others to share the work with an acknowledgement of the work's authorship and initial publication in this journal.



#### Abstract

**Background:** Hepatobiliary diseases account for significant proportion of admission in our intensive care unit, a semi-closed, 11 bedded mixed medical-surgical unit. This study was conducted to study the profile of patients with various hepatobiliary diseases who required intensive care unit admissions with the aim of identifying the need for a hepatobiliary critical care facility.

**Methods:** A retrospective study was designed and all consecutive patients admitted with hepatobiliary problems from January 2013 till December 2013 were enrolled in the study.

**Results:** Out of 467 patients admitted, there were 61 (13.06%) patients with hepatobiliary diseases. Out of 61 patients, there were 24 (39.3%) patients with medical cause for hepatobiliary disease and 37 (60.7%) patients with a surgical cause. The majority of the patients 52.45% were male. The overall mortality in these patients was 37.70%. The mortality in patients with surgical cause for the hepatobiliary disease was less (27.02%). Encephalopathy was a common condition leading to ICU admission. The common medical conditions were Cirrhosis secondary to Alcoholic Liver disease and Acute Fulminant Hepatic Failure. The commonest surgical conditions were Severe Pancreatitis, Post-Whipple's surgery, postoperative sepsis after Cholecystectomy, Liver Injury secondary to Road Traffic Accidents and Severe Cholangitis.

**Conclusion:** The number of patients presenting to our multidisciplinary unit with hepatobiliary diseases is high and this group of patients have a high mortality. Though the numbers do not suggest an immediate need for a Hepatobiliary intensive care unit, the increasing trend suggests such a facility would be the need of time in near future.

**Keywords:** Clinical Audit; Intensive care unit; Liver diseases; Mortality; Prevalence

**How to cite this article:** Shrestha PS, Acharya SP, Shrestha GS, Aryal D, Udaya RK, Marhatta MN. An audit of hepatobiliary diseases in a tertiary level intensive care unit in Nepal. Journal of Society of Anesthesiologists of Nepal (JSAN) 2017;4(1):42-45 <https://doi.org/10.3126/jsan.v4i1.17445>

#### Corresponding Author:

*Dr Pramesh Sunder Shrestha, MD, DM*

*Department of Anaesthesiology,*

*Tribhuvan University Teaching Hospital, Institute Of Medicine, Maharajgunj, Kathmandu, Nepal*

*Email: drpramesh@outlook.com*

*Orcid ID: <http://orcid.org/0000-0001-5890-0018>*

**Introduction**

Liver diseases are one of the common conditions that lead to intensive care unit (ICU) admission. The incidence of these diseases is high and despite the intensive support and treatment, it carries significant morbidity and mortality. Prevalence of liver disease in a country usually depends on the incidence of alcoholism and viral hepatitis as they are the usual culprits for liver disease. Patients admitted with Cirrhosis of the liver with  $\geq 3$  organ failure admitted to ICU have  $>30\%$  mortality.<sup>1</sup> These patients belong to some of the most challenging cases in terms of level and complexity of care required. In an ICU, the management of such patients requires a focused multidisciplinary team approach where a successful outcome depends on early diagnosis, extensive teamwork to maximise the chance of recovery, and by extending the window of opportunity for organ transplant.<sup>2</sup>

In Nepal, there is a paucity of data on the prevalence of liver diseases in intensive care units. Geo-cultural factors influence the prevalence of liver diseases with public health importance in any country. Yet the predominant aetiology of liver diseases varies from country to country and in different cultural groups at different periods of time.<sup>3</sup> This retrospective study is done to find out the profile of patients presenting with the hepatobiliary disease in a tertiary care intensive care unit in Nepal. The results of the study should help to decide on the need of an hepatobiliary ICU with liver transplant facility.

**Methods**

A retrospective was designed, institutional review board approval was obtained and data collection was done from our ICU admission records. All consecutive patients admitted with a hepatobiliary problem from 1<sup>st</sup> January 2013 till 31<sup>st</sup> December 2013 were studied.

The variables studied were age, sex, the cause of admission, diagnosis and mortality. Cases with missing data on these variables were excluded from analysis. The teams involved in the treatment were intensive care physicians, gastroenterologists and hepatobiliary surgeons. Cirrhosis of liver was defined using ultrasound as surface nodularity, overall coarse and heterogeneous echo texture, segmental hypertrophy/atrophy with signs of portal hypertension, splenomegaly or ascites. Portal hypertension was defined as an increase in the blood pressure within a system of veins called the portal venous system with features of increased pressure in the portal vein may lead to the development of large, swollen veins within the oesophagus, stomach, rectum, or umbilical area. Hepatic encephalopathy was defined as a spectrum of neuropsychiatric abnormalities in patients with liver dysfunction, after exclusion of brain diseases. Acute liver failure was defined as a condition in which there was a rapid deterioration of liver function resulting in coagulopathy, usually with an international normalised ratio (INR) of greater than 1.5, and alteration in the mental status (encephalopathy) of a previously healthy individual.

Both quantitative and qualitative data were expressed as numbers and their respective percentages.

**Results**

During the study period, out of 467 patients admitted to the ICU, there were 61 (13.06%) patients with hepatobiliary diseases. The demographic data are expressed in table 1.

Table 1. Demographic profile of Hepatobiliary disease

	Medical causes	Surgical Causes
Age in years		
<15	1	0
15-65	17	30
>65	6	7
Sex ratio		
Male	15	17
Female	9	20
Hepatobiliary diseases	24	37

The overall mortality, mortality due to medical or surgical cause is shown in figure 1.

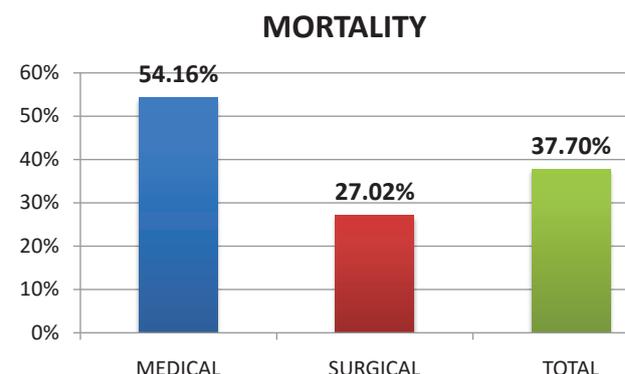


Figure 1: Mortality

The causes of admission in the non-surgical patients are shown in figure 2.

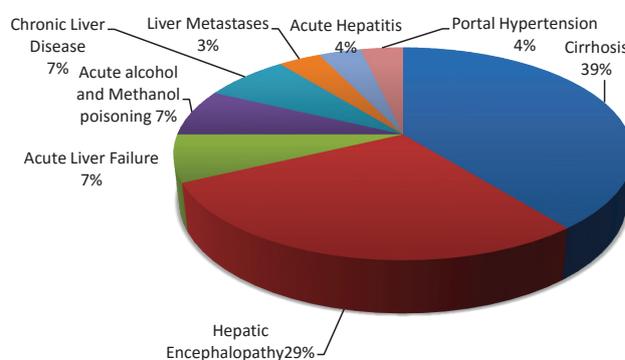
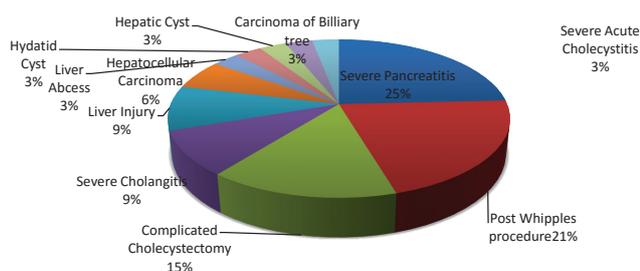


Figure 2: Distribution by diagnosis (Medical causes)



**Figure 3: Distribution by diagnosis (Surgical causes)**

Among the patients with hepatobiliary diseases, there were 24 (39.3%) patients with medical cause for hepatobiliary disease and 37 (60.7%) patients had a surgical cause for admission to ICU. Table 1. Forty-seven patients were 15 to 65 years of age whereas 13 patients were elderly (>65 years) and one was <15 years. Table 1. Out of these, 32 (52.45%) were male and 29 (47.55%) patients were female. Table 1. Considering outcome, the overall mortality in these patients was 37.70%. But the mortality in surgical patients was less (27.02%) in comparison to the patients with medical cause for hepatobiliary disease (37.70%). Fig. 1. The common medical conditions landing to ICU were Cirrhosis secondary to Alcoholic Liver disease in 11 patients (39%), Acute Fulminant Hepatic Failure in two patients secondary to toxic ingestions (7%), Chronic Liver Disease in two patients (7%). Fig 2. Hepatic Encephalopathy (29%) was the common condition leading to ICU admission. The commonest surgical conditions were Severe Pancreatitis (25%), Postoperative (Whipples Surgery) (21%) followed by Liver injury secondary to Road Traffic Accidents (9%), Severe Cholangitis (9%) and postoperative sepsis after Cholecystectomy (15%). Fig 3.

## Discussion

It is a well versed reality that patients admitted to Intensive Care Unit with Hepatobiliary diseases need extensive workup with multidisciplinary team approach. In spite of all that in the best of hands the outcome is still poor. In a limited resource country like ours, where, financial constraints determine the fate of our patients, hepatobiliary diseases are often looked upon even by healthcare professionals as big economic burden.

Among patients admitted with liver disease, there were 32 (52.45%) were male and 29 (47.55%) patients were female. There was increase in proportion male sex n=15 (62.5%) being admitted with medical cause for hepatobiliary disease with hepatic encephalopathy and cirrhosis being the leading cause of admission. These findings are consistent with those found by Pinto et al where they reported a prevalence of 72% in men and 28% in female.<sup>4</sup> These findings are consistent with those of Jinghan et al in 2003 reporting increasing incidence of alcoholism in Nepalese male community due to social and cultural factors.<sup>5</sup> There was increase in prevalence of female sex n=20 (54.05%) in patients admitted to intensive care unit with surgical cause for hepatobiliary disease. These

findings are consistent with those reported by Manadhar et al in 2013 reporting increase prevalence of pancreatitis among female sex in Nepalese population in 1:1.5 ratio.<sup>6</sup> Increase incidence of pancreatitis among Nepalese female population was also reported by Bohara et al.<sup>7</sup>

Mortality among patients admitted with hepatobiliary disease of medical cause was 54.16%, this is on consistent findings of Shellman RG et al who also found mortality of 64% in similar group of patients.<sup>8</sup> In 2012, Flood S et al performed a systemic review and found mortality of 40 to 50% among patients of alcoholic liver disease admitted in intensive care unit.<sup>9</sup> Mortality among patient of hepatobiliary disease admitted for surgical cause in intensive care unit was 27.82%. In 2005, Pitchumoni CS also reported a mortality rate of 25% among patient of complicated pancreatitis.<sup>10</sup> Jakobson et al also reported a mortality of 17.8% among postoperative patients undergoing major surgery for gastroenterological malignancies.<sup>11</sup> High mortality among patients admitted with hepatobiliary disease with medical cause might be due to sicker group of patients compared to group with surgical cause. We found prevalence of Hepatic encephalopathy to be 29% among patient admitted to intensive care with medical cause for hepatobiliary disease which is consistent with those found by Gomez et al in a review of hepatobiliary patients in 2014. Gomez et al found prevalence of 34%.<sup>12</sup>

The strength of our audit is that data of one year in a tertiary academic institute was collected and represents unselected patients with hepatobiliary diseases. Because of retrospective nature of our data collection some information bias may have occurred.

Hence it is high time for us to determine the specialized treatment goals to improve the outcome of liver disease with setup of facilitation for organ transplant. It is very difficult to determine the common liver diseases that get admitted in an intensive care setting since the disease varies in variety according to region, ethnicity and time period. A detailed prospectively planned observational study to quantify the exact disease burden in the country, prevalence of liver failure and estimation of the number of patients requiring liver transplant is immediately required.

In conclusion, the proportion of patients admitted to the intensive care unit of the ICU with hepatobiliary disease is high and these patients have a high mortality. With increasing number of patients with hepatobiliary diseases, a hepatobiliary ICU with probably liver transplant facility might be the need of near future.

**Conflicts of interest:** All the authors have filled the ICMJE conflict of Interest form and declare that they have nothing to disclose. SP Acharya and D Aryal are the members of the editorial board of this journal and did not participate in the editorial process of this article.

**Acknowledgement:** None

**Sources of Funding:** None

**ORCID IDs:**

**Pramesh Sunder Shrestha** <http://orcid.org/0000-0001-5890-0018>  
**Subhash Prasad Acharya** <http://orcid.org/0000-0003-1596-0496>  
**Gentle Sunder Shrestha** <http://orcid.org/0000-0003-0385-2340>  
**Diptesh Aryal** <http://orcid.org/0000-0002-1431-8293>  
**Rejin Kumar Udaya** <http://orcid.org/0000-0003-0565-9800>  
**Moda Nath Marhatta** <http://orcid.org/0000-0002-4273-1317>

**References**

1. Cholongitas E, Senzolo M, Patch D, Kwong K, Nikolopoulou V, Leandro G, Shaw S, Burroughs AK. Risk factors, sequential organ failure assessment and model for end-stage liver disease scores for predicting short term mortality in cirrhotic patients admitted to intensive care unit. *Aliment Pharmacol Ther* 2006;23:883-93. <https://doi.org/10.1111/j.1365-2036.2006.02842.x> [PMid:16573791]
2. McDowell Torres D, Stevens RD, Gurakar A. Acute liver failure: a management challenge for the practicing gastroenterologist. *Gastroenterol Hepatol (N Y)* 2010;6(7):444-50. [PMid:20827368] [PMCID:PMC2933761]
3. Shrestha SM. Liver diseases in Nepal. *Kathmandu Univ Med J (KUMJ)* 2005;3(2):178-80. [PMid:16415618]
4. Cortez-Pinto H, Marques-Vidal P, Monteiro E. Liver disease-related admissions in Portugal: clinical and demographic pattern. *Eur J Hepatol* 2004;16:873-7. <https://doi.org/10.1097/00042737-200409000-00010> [PMid:15316411]
5. Jhingan HP, Shyangwa P, Sharma A, Prasad KM, Khandelwal SK. Prevalence of alcohol dependence in a town in Nepal as assessed by the CAGE questionnaire. *Addiction* 2003;98:339-43. <https://doi.org/10.1046/j.1360-0443.2003.00301.x> [PMid:12603233]
6. Manadhar S, Giri S, Poudel P, Bhandari R, Lakhey P, Vaidya P. Acute Biliary Pancreatitis: An Experience in a Tertiary level hospital of Nepal. *Indian J Surg* 2013;75(6):449-53. <https://doi.org/10.1007/s12262-012-0533-5> [PMid:24465101] [PMCID:PMC3900759]
7. Bohara TP, Parajuli A, Joshi MR. Role of biochemical investigation in prediction of biliary etiology in acute pancreatitis. *JNMA J Nepal Med Assoc* 2013;52(189):229-32. [PMid:23591301]
8. Shellman RG, Fulkerson WJ, DeLong E, Piantadosi CA. Prognosis of patients with cirrhosis and chronic liver disease admitted to the medical intensive care unit. *Crit Care Med* 1988;16(7):671-8. <https://doi.org/10.1097/00003246-198807000-00005> [PMid:3371043]
9. Flood S. Patients with alcoholic liver disease admitted to critical care: A systemic review. *Journal of Intensive Care Society* 2012;13(2):130-5. <https://doi.org/10.1177/175114371201300210>
10. Pitchumoni CS, Patel NM, Shah P. Factors influencing mortality in acute pancreatitis: can we alter them? *J Clin Gastroenterol* 2005;39(9):798-814. <https://doi.org/10.1097/01.mcg.0000177257.87939.00> [PMid:16145344]
11. Jakobson T, Karajagin J, Vipp L, Padar M, Parik AH, Starkopf L. Postoperative complication and mortality after major gastrointestinal surgery. *Medicina(Kaunas)* 2014;50(2):111-7. <https://doi.org/10.1016/j.medic.2014.06.002> [PMid:25172605]
12. Romero-Gomez M, Montagnese S, Jalan R. Hepatic encephalopathy in patients with acute decompensation of cirrhosis and acute-on-chronic liver failure. *J Hepatol* 2015;62:437-47. <https://doi.org/10.1016/j.jhep.2014.09.005> [PMid:25218789]