

LIVER DISEASES: ADMISSIONS AND MORTALITY IN A MEDICAL ICU AT A RURAL CENTRE IN PAKISTAN

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ABSTRACT

Objectives: To study the frequency of admissions, complications and death rates in patients with chronic liver disease (CLD) in a rural medical Intensive Care Unit (ICU).

Methodology: Retrospective analysis of 174 consecutive admissions.

Results: Out of 174 consecutive admissions, 69 patients (40%) had background liver disease. However, 55 patients out of this total (32%) were admitted directly in ICU because of the features of complications of their liver disease. Twenty six out of fifty five (47%) died. Thirteen out of twenty six had signs of encephalopathy. Seven out of fifty five had more than one complications of liver disease-only one of them survived.

Hepatitis C was the cause of liver-related deaths in 18/26 (69%).

Conclusion: CLD is the commonest cause of admissions (32%) in medical ICU - Hepatitis C being responsible for 69%. Liver disease and its complications were also the commonest cause of all deaths in medical ICU, of which Hepatitis C contributed 69%. Encephalopathy was the most common manifested complication of cirrhosis, causing highest mortality.

KEYWORDS: Cirrhosis, ICU, Complication, Mortality.

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INTRODUCTION

Although respiratory diseases and cardiovascular diseases are common primary indications for Intensive Care Unit (ICU) admissions (43% and 16% respectively in one large Danish study¹), anecdotally liver disease is the

commonest serious medical illness requiring ICU admission in our region. Acute and chronic liver diseases (CLD) have a variety of causes and are common in our region. Hepatitis secondary to viral infection appears to be the commonest cause of CLD. Pakistan Society of Gastroenterology and Gastrointestinal Endoscopy (PSG&GIE) estimates 6% people in Pakistan are infected with hepatitis C virus (HCV)² and another over 3% with hepatitis B virus (HBV).³ Our own experience has suggested that even these figures are gross under-estimation for our population (infection rates 18.7% and 5% respectively) and CLD is the single commonest disease requiring admission in our general hospital (unpublished data). The disease often progresses to decompensation that may require ICU admission, consumes considerable resources, and may cause death. Cirrhotic patients admitted to the ICU have high hospital mortality, which goes even higher if patients require mechanical ventilation or renal replacement therapy even when liver transplanted patients and those needing readmission to the

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ICU are not taken into account.⁴ ICU management of such patients incurs considerable expenses, which is often out of reach for a financially less privileged patient. According to the World Bank, 34.7% of rural population in Pakistan lives under the officially notified poverty line.⁵ Our centre is situated in a poor rural area where majority of the patients can't financially afford expenses of adequate treatment, especially those caused by mechanical ventilation. However no data exists regarding the burden of acute and chronic liver disease in ICU in such setting. Moreover there is no data on such patients' outcome that do not have financial means to get mechanical ventilation if and when it may be needed. We therefore undertook a study – the first of its kind in a rural under-privileged area - to find out the frequency of patient admissions in medical ICU due to liver disease, and to determine the frequency of its complications, their impact on mortality, and death rate in these patients.

PATIENTS AND METHODS

Retrospective analysis was done of the medical records of all the 174 consecutive admissions in our 10 bedded medical ICU, between 1st Jan '06 to 31st July '06. Those referred for mechanical ventilation were excluded. The aetiology, development of complications and outcomes of the patients admitted with liver disease were studied. Approval was given by the hospital's Research and Ethics Committee to conduct this study.

RESULTS

Out of 174 total admissions during the study period, 69 patients (40%) had background liver disease. Fifty five of them (32%) were admitted directly because of liver disease and its complications (33 males, 22 females; median age 45 years – SD = 16.95). Of them, 38 patients (69%) had HCV related liver disease. Eight (15%) had HBV related liver disease; two (4%) had Alcohol-related and one (2%) had both HCV and HBV co-infected liver disease. In six patients (11%), no aetiology was found. Out of 8 patients infected with HBV, 2 patients

(25%) also had infection with Delta virus. All 55 patients who were admitted because of their CLD had a complication–encephalopathy comprised 26 (47%) of them. Other complications included Bleeding Oesophageal Varices (BOV) in 14 patients (25%), Ascites in 11 (20%), Hepato-Renal Syndrome (HRS) in 5 (9%) and Hepatocellular Carcinoma, Acute Liver Failure and Coagulopathy features were seen in two (4%) patients each. Of these, 7 (13%) patients had two features of complications each. There were thus 62 complicating events affecting 55 patients admitted because of CLD. There were a total of 67 deaths (39%) in the medical ICU. Twenty six out of sixty seven deaths (39%) were due to liver disease and its complications.

Encephalopathy was associated with highest number (13/26) of liver-related deaths. It also featured in all 7 patients that had more than one complication of their liver disease. Of these 7 patients, three had hepatorenal syndrome and two each had ascites and bleeding from oesophageal varices in addition to encephalopathy. Only one of these 7 patients (who had hepatorenal syndrome with encephalopathy) was discharged home alive. There was a total of 32 complicating events affecting 26 liver-related deaths.

HCV caused 18/26 (69%) of all liver-related deaths. Other causes of liver disease that resulted in mortality included HBV (n=4; 15%); HBV co-infected with Delta virus (n=1; 4%); HBV co-infected with HCV (n=1; 4%); and 2 (8%) did not have an identified cause of their liver disease.

DISCUSSION

Acute and chronic liver disease is an important cause for admission in ICU and carries a high mortality. In a prospective cohort study of 293 patients with compensated cirrhosis of different aetiologies, median survival was approximately 9 years.⁶ Prognosis is markedly worsened with the development of clinical decompensation (ascites, jaundice, encephalopathy or haemorrhage).⁷⁻¹¹ In a study done on patients with HCV and alcohol liver dis-

ease, who were followed up after their first decompensation, 42% and 26.6% died respectively with a mean period of 39 +/- 2 months.⁷ After development of the first episode of encephalopathy alone, the survival probability is 42% at one year of follow-up and 23% at 3 years.¹¹ In our study also, encephalopathy comprised of single most common presentation of liver disease (47%), of which 50% died in hospital. In another study from Lahore, encephalopathy was the commonest complication of cirrhosis requiring admission to ICU (33%) where it also was the commonest cause of death (50%). Like our study, liver disease was the commonest cause of death in the medical ICU in that study as well (52%).¹²

There are often more than one decompensating events for a patient with CLD and these events also differ somewhat in their impact on mortality. Those admitted with both gastrointestinal bleeding and coma have been reported to have by far the poorest survival, only 15% being alive one year later.¹³ Thirteen percent of all patients admitted with liver disease in our study had more than one complicating event, with 86% mortality. However, in our study the numbers were too small (7 patients) to draw any meaningful conclusion on this issue.

The prognosis of complicated or decompensated cirrhosis is thus far from satisfactory. The situation gets even worse for those who also require organ support. The in-hospital mortality in a UK University Hospital for 110 admissions with alcoholic liver disease that required mechanical ventilation rose from 31% to over 85% if the patients required any other organ support or had a raised creatinine level in the first 24 hours, and 94% in those who required acute renal replacement therapy.¹⁴ In a Saudi Arabian study that excluded liver transplanted patients, cirrhotic patients admitted to the ICU had high hospital mortality (73.6%). Patients requiring mechanical ventilation and renal replacement therapy had even higher mortalities (84% and 89%, respectively).⁴ The problem is likely to get even worse if adequate facilities are either non-existent or are beyond the financial reach of the patients, making it

practically non-existent for them. Pakistan is a developing country. Earning of 65.6% of its population is under \$2 per day.¹⁵ Out of its almost 160 million population, 67.5% live in the rural areas.¹⁶ Of them, 34.7% live under the officially notified national poverty line.⁵ The population studied in our study is significantly poor rural Pakistani population. Access to ICU facilities, which involves mechanical ventilation and acute renal replacement therapy, is expensive and therefore is virtually non-existent for a vast majority of our patients. Hence it is likely that the liver-related deaths are significantly higher in this population than what they would be had these patients have a free access to such facilities. In our study, 47% of all patients who were admitted with liver disease died. This is significantly higher figure than many other studies. However, we excluded patients if they were referred for mechanical ventilation to see the impact of the disease only on the vast majority of our patients who do not have means to have this expensive treatment.

In this study, more men (60%) were admitted than women (40%) with liver disease. This is comparable to a study from Faisalabad, which represents an urban part of Pakistan (57% Vs 43% respectively).¹⁷ The commonest cause of liver disease in our study was HCV (69%). HCV has by far taken over the other known causes of CLD in Pakistan in recent times. Over 6% of Pakistani population is infected with HCV.² At a Lahore centre, two third of all patients admitted at medical ICU with CLD were infected with HCV.¹² In Western world too, it has become a major problem and is now the commonest indication of liver transplantation in the United States of America.¹⁸

The burden of disease presenting to a medical ICU differs in different regions depending on several factors specific to those regions. In a developing country of Nigeria, over an eight-year period, patients with neurological diseases were reported to comprise the highest number of admission into ICU of a University Teaching Hospital, most of them being for tetanus. The commonest indication for admission was

respiratory insufficiency (33%). The overall mortality rate was 69%. The report emphasized the urgent need for proper training, motivation of staff and maintenance of equipment used in the ICU.¹⁹ Another study from a developed country (Denmark), found respiratory diseases (43%) and cardiovascular diseases (16%) to be the most common primary indications for ICU admission.¹ However, in our study, liver disease constituted the largest number of medical admissions. This is probably because of the large liver disease burden that our centre has, and also because of the fact that we have the largest liver disease centre of our region. Moreover, cirrhosis secondary to HCV is fast becoming a major medical problem in urban Pakistan as well and has already been reported to be the commonest indication of admission to ICU in a Lahore centre.¹² Nevertheless, the issues related to proper training and motivation of staff, provision and maintenance of adequate equipment remain highly important in our population as well. However, prevention of hepatitis C is the need of the hour and massive public awareness programs need to be instituted. This is the only way to reduce the burden of the disease.

CONCLUSION

This is the first study showing liver disease as the commonest presenting illness to medical ICU in a rural Pakistani centre. HCV is the commonest cause of complicated liver disease and its associated mortality, whereas encephalopathy is the commonest complication of liver disease and is the single most common cause of liver-related deaths. Massive efforts are needed in providing facilities and financial support to poor patients in this (and other) rural region who cannot otherwise have adequate medical treatment.

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