



ORIGINAL RESEARCH PAPER

Gastroenterology

CLINICAL PROFILE AND ETIOLOGY OF ACUTE LIVER FAILURE IN CHILDREN AGED 1 MONTH TO 12 YEARS

KEY WORDS: Acute Liver Failure, Etiology, Outcome, Mortality

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ABSTRACT Acute liver failure is a disease whose etiology is enigmatic as in more than 50% of the cases the exact cause cannot be found. The aim of this study is to study and determine the clinical profile and etiology of acute liver failure in children aged 1 mon to 12 years in a tertiary care pediatric centre in south India. All children aged 1 month to 12 years presenting with acute liver failure and admitted in the hospital were included in the study. A total number of 50 children were included in the study. Infections were the most common cause of acute liver failure followed by drug toxicity. The mortality in acute liver failure was 68% in this study and there was no correlation between demographic factors and outcome.

INTRODUCTION:

Acute liver failure is a disease whose etiology is enigmatic as in more than 50% of the cases the exact cause cannot be found. Even if the etiology is known it is not clear how exactly it causes fulminant hepatic failure and hence the pathophysiology is exclusive. As both etiology and pathophysiology are not clear we are forced to many novel and sometimes even experimental modalities of treatment. In spite of all these, outcome could be quite dismal and the prognosis is said to be perplexing. The hall mark of this condition are an acute impairment of liver function the presence of hepatic encephalopathy and the absence of preexisting liver disease. As the only definitive treatment is liver transplantation that is not freely available in our country the prognosis is very bad¹.

AIM:

The aim of this study is to study and determine the clinical profile and etiology of acute liver failure in children aged 1 mon to 12 years in a tertiary care pediatric centre in south India

Methodology:

This is a prospective study in children in the study age group admitted either in the Medical ward or Gastroenterology department who satisfied the inclusion criteria at the Institute of Child Health and Hospital for Children, Egmore, Chennai, during the period October 2016 to June 2017.

Criteria for Acute Liver Failure (Pediatric Acute Liver Failure Study Group)¹

- Biochemical evidence of liver injury
- No history of known liver disease
- Coagulopathy not corrected by administration of Vitamin K
- INR>1.5 if patient has encephalopathy on >2 if the patient does not have encephalopathy.

All children aged 1 month to 12 years presenting with acute liver failure and admitted in the hospital were included in the study and those with pre existing liver disease were excluded. After obtaining informed consent from parent/guardian, various patient demographic characteristics, history, clinical details were entered in a prestructured profoma. All these children underwent investigations like Liver function tests, coagulation profile and tests towards specific etiology. Statistical analysis of data will be performed by statistical software SPSS. Outcome variables categorized as normal or abnormal and their prevalence expressed as percentage and p value of < 0.05 was considered significant.

RESULTS:

A total number of 50 children were included in the study and among these 42% of children aged 6-12 years, 36% 1-5 years and

22% were less than 1 year of age. In this study, 30(60%) of the children were females and 20(40%) were males. In this study the duration of illness was found to be less than one week in 78%. In this study, 32% had bleeding manifestations and abdominal pain was present in 22%. In this study 90% of the cases had altered level of consciousness, 21(42%) had icterus, 10 (20%) had free fluid detected by clinical examination.

The etiological profile of acute liver failure is depicted in Table 1. In this study, the etiology of liver failure was found to be due to infectious causes in 34%, drug induced toxicity in 30% and inconclusive in 16%. In this study among the infectious causes dengue contributed maximum accounting for 56% while others were hepatitis A (18.75%), leptospirosis (12.5%) and sepsis (12.5%). Paracetamol, antituberculous drugs, sodium valproate and some native medicines/toxins were among those drugs causing acute liver failure

In this study, out of the 50 children studied, 16(32%) improved and 34(68%) died. Among the causes for acute liver failure, drug toxicity carried a high mortality of 80% followed by congestive(75%), infection (70%), autoimmune (33%), metabolic(33%) and 62% of patients with no known cause also died. There was no association between duration of illness or biochemical parameters and outcome in this study.

TABLE 1: Etiology of acute liver failure

Etiology	No. (%)
Infection	17(34%)
Drug induced	15(30%)
Congestive	4(8%)
Metabolic	3(6%)
Autoimmune	3(6%)
Inconclusive	8(16%)

DISCUSSION:

In this study among 50 children, 42% were between 6 and 12 years, 36% between 1 and 5 years and 22% were below 1 year of age. This is comparable to study by Kaur et al² in which 41.8% were between 6-12 years, 44% between 1-5 years and 14% less than 1 year of age.

Male: Female ratio was 2:3 in our study with female preponderance whereas Kaur et al² in their study showed a male preponderance with Male: Female ratio of 7:3. In this study, the commonest etiology of liver failure was found to be due to infections in 34%, followed by drug toxicity in 30%. This is comparable to Kaur et al² study in which infections were the most common cause (77%) with viral hepatitis reported (hepatitis A-E)

in 72% cases and pediatric acute liver failure study group³ demonstrated that the etiology of acute liver failure in infants are found to be indeterminate in 38%(neonatal hemochromatosis (13.6%), herpes simplex virus (12.8%). In the study by Tryambak et al⁴ hepatitis due to hepatotropic viruses was made in 30 patients out of 35 patients in whom etiology for acute liver failure was made out and remained the commonest cause. In this study, 16(32%) had bleeding and 34(68%) had no bleeding. This is comparable to Kaur et al² which 42% had bleeding and 58% did not have bleeding.

CONCLUSION:

1. In this study infections (34%) were the most common cause of acute liver failure followed by drug toxicity (30%).
2. In this study out of the 50 cases studied 68% died and 32% improved
3. Highest mortality was in the drug (80%) and congestive etiology (75%)
4. There was no correlation between demographic factors such as age, sex and outcome
5. Our study failed to establish any association between clinical laboratory values and outcome

Since ALF is a potentially fatal condition, estimating the likelihood of spontaneous recovery and identifying patients who cannot be salvaged without liver transplantation is necessary. Prognostic factors that predict mortality and need for early liver transplantation are required. Our study results highlight the fact that viral hepatitis still remains the most common cause of acute liver failure.

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