



A RETROSPECTIVE OBSERVATIONAL STUDY TO DETERMINE ETIOLOGY IN PEDIATRIC PATIENTS WITH ACUTE LIVER FAILURE

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ABSTRACT

Acute liver failure is a less common disease in pediatrics. Its outcome mostly depends on the etiology. With known etiology the outcome is favourable and with advancement of liver transplantation, the mortality is further reduced. Most of the study for etiology are from western countries , study conducted at our center in attempt to know the prevailing etiology for acute hepatic failure in our region.

Materials and method: Retrospective observational study was done at Pediatrics Department, Katihar medical college, Katihar, Bihar, over the period from September 2017 to December 2020. 62 cases were selected by reviewing the files which qualified the inclusion and exclusion criteria. Information was taken on self designed questionnaire.

Result and discussion: Most common identifiable etiology comes out Hepatitis A (9.6%) and Hepatitis B (9.6%) followed by bacterial infection (8.1%), drug induced hepatitis (3.2%) and wilson's disease (3.2%). There was 2 cases of HAV with coinfection of staphylococcus and salmonella each. Majority of cases (30 out of 62 cases) were nonA nonB nonC viral hepatitis.

KEYWORDS : Acute liver failure (ALF), etiology of hepatitis in pediatrics, viral hepatitis.

INTRODUCTION:

Acute liver failure (ALF) is a rare disease in pediatrics. It results in large proportion of hepatic tissue injury to death, leaving insufficient hepatic parenchymal mass to sustain liver function [1]. Hepatic encephalopathy is the term used to describe the complex and variable changes in neuropsychiatric status, those complicate the liver disease. It causes a spectrum of neurological manifestations that develop in association with different liver diseases. A common link is the potential reversibility of the neurological manifestations once the abnormality of liver function is corrected.

ALF with infective etiology, toxins and certain enzymatic deficiencies are preventable if identified earlier otherwise most of them dies or some of them can be saved by liver transplant.

Acute viral hepatitis and chronic liver diseases are the two important clinical settings in which hepatic encephalopathy occur. Acute viral hepatitis results in fulminant hepatic failure in 1-2% cases.

Minimal hepatic encephalopathy corresponds to those neurologic manifestations that are not obvious on clinical examination but are detected by the demonstration of abnormal neuropsychological or neurophysiological tests.

Acute liver failure in childhood had not been extensively studied in our region. Most of the reports had been predominantly from west. In the developing countries and in some part of developed countries Hepatitis A is the most important etiology for fulminant hepatic failure in children[2-6]. Hepatitis B remain the most important etiology in endemic region for fulminant hepatic failure[7]. The aim of this study is to identify the etiology prevailing in our region, so that early identification and intervention can be made.

MATERIALS AND METHOD:

An observational retrospective study, conducted at department of pediatrics, Katihar medical college, Bihar. Data

was taken by reviewing the files of patient admitted from September 2017 to December 2020.

Children with acute liver failure were included in this study, as per recommendations made in Indian pediatrics December 2011 [8], which are

1. Onset of liver dysfunction within 8 weeks of onset of symptoms (neonates may have only deranged liver functions without overt symptoms)
2. Uncorrectable (6-8 hours of administration of one dose of parenteral vitamin k)
3. Coagulopathy with international normalized ratio (INR) > 1.5 in patient with hepatic encephalopathy or INR > 2 in patient without hepatic encephalopathy
4. No evidence of chronic liver failure either at presentation or in the past.

Patients having history of chronic liver disease and incomplete files were excluded from this study.

Fulminant hepatic failure [FHF] is further classified as Hyper acute (less than 7 days), acute (8-28 days) and sub acute (5-12 weeks) depending upon time taken to develop encephalopathy after onset of jaundice.

Various data such as age, gender , height ,weight, serum bilirubin level(total ,direct, indirect), serum albumin, SGPT/SGOT, ALP, PT/INR, blood culture, viral markers, serum ceruloplasmin, urinary copper, eye investigation report was taken from the patient files.

Clinical presentation, grade of encephalopathy and etiology was taken into consideration. Patient outcome in terms of recovery, referral for liver transplant or death was recorded. Information was taken on self-designed questionnaire

RESULT AND DISCUSSION:

Total 62 patients file was reviewed, 39 were male and 23 were female (Table 1). Out of 62 most common identifiable etiology for ALF in children came out to be hepatitis A (6; 9.6%) and hepatitis B (6; 9.6%) (Table 2). Similar results were reported by Srivastava KL et al [9] and Psacharopoulos HT et al[10].

However in study done by WS Lee hepatitis A was most common followed by Hepatitis B among the identifiable viral cause for ALF in childhood [11].

Blood culture found to be positive in 5 patient (8.1%) with staphylococcus aureus found in 3 patients followed by Acinetobacter and Candida in 1 patient each. Similar observation was made in a Delhi study done by Arora NK et al [12].

HAV with blood culture positive found in 2 case, one was staphylococcus aureus and other was candida.

Among 2 cases HAV was found positive with raised titre of H & O antigen of Salmonella Typhi.

Two cases of were diagnosed as Wilson's disease, one was female of 9 years age and another was male 11 year old.

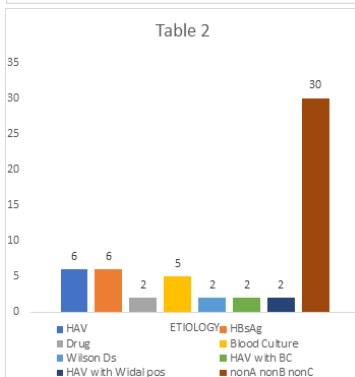
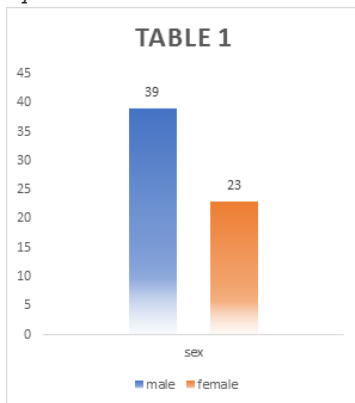
Two cases was due to drug induced hepatitis. One was on ATT for last 2 months and another was due to valproate.

Among the remaining 43 cases, 30 cases have history of viral prodrome and were classified as nonA nonB nonC viral hepatitis. In the remaining 13 cases no definite causative etiology was established. Test for storage disorder was not done in this study, which was a limitation of this study.

From the study it can be concluded that though viral infection remain the most common etiology for ALF but co-infection with other organism exists and that must be evaluated simultaneously.

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