

# PROGNOSIS OF ACUTE FULMINANT HEPATIC FAILURE

TO ASSESS THE CAUSES AND PROGNOSIS OF ACUTE FULMINANT HEPATIC FAILURE  
IN PATIENTS ATTENDING MEDICAL UNIT I, GHULAM MOHAMMAD MAHAR MEDICAL COLLEGE  
HOSPITAL, SUKKUR.

ORIGINAL  
PROF-1932

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**ABSTRACT...** Acute fulminant hepatic failure (ALF) is a medical emergency and associated with high mortality rate. Its etiology shows considerable geographical variations. The viral causes are the most common in our region, [whilst acetaminophen (Paracetamol) induced hepatotoxicity forms the most common precipitant in many developed countries]. **Objective:** To assess the causes and prognosis of acute fulminant hepatic failure in patients attending medical unit I, Ghulam Mohammad Mahar Medical college hospital, Sukkur. **Study Design:** A cross-sectional study. **Place of Study:** Medical Unit-I, Ghulam Mohammad Mahar Medical College Hospital, Sukkur. **Duration of Study:** From January 2010 to July 2011. **Methodology:** A total one hundred twenty (120) patients of ALF were studied during the study period to evaluate the causes and prognosis. Those patients who were admitted during the study period were included in the study. The selected patients presented with jaundice and hepatic encephalopathy of varying grades. **Results:** Almost all the cases the causative agents were viruses. Among these, the hepatitis E virus (HEV) was the top most causative agent followed by hepatitis B Virus (HBV) in this study. Despite good effort of conservative treatment, the mortality rate was 77.5%. The mortality rate was higher in grade-III and grade-IV encephalopathy patients, whereas the prognosis is better in grade-1 and grade-II encephalopathy patients.

**Key words:** Causes, Prognosis, Fulminant, Hepatic failure.

## INTRODUCTION

Acute fulminant hepatic failure (ALF) is characterized by the development of hepatic encephalopathy within eight weeks after onset of acute liver disease<sup>1</sup>. There is a wide range of causative agents of ALF with geographical variations, the viruses ranking the top<sup>2</sup>. Besides these, drugs, chemicals, poisonous mushroom, shock, hyper and hypothermia, Budd Chiary syndrome some other factors may causes ALF i.

Clinical profile of ALF depends upon the causative agents. Viral hepatitis is most common in Pakistan. Acute hepatic failure is a frequent complication of acute viral hepatitis. The common viruses that cause hepatitis are hepatitis A virus (HAV), Hepatitis B virus (HBV), hepatitis E virus (HEV), hepatitis C virus (HCV), hepatitis delta virus (HDV). All these viruses can be a cause of acute liver failure. Acute liver failure is characterized by disturbances in consciousness, behaviour and personality changes, fluctuating neurological sign, flapping tremor and disturbances in electro-encephalographic changes<sup>3</sup>. Altered mental status in acutely jaundiced patient is the hallmark of fulminant hepatic failure. Neuropsychiatric changes may develop even before jaundice<sup>4</sup>.

The aim and objective of the present study were to

evaluate the causes and prognosis of acute fulminant hepatic failure patients admitted in our medical unit. We have given emphasis particularly to search the viral markers and find out the outcome by providing modern facilities for biochemical, haematological and serological investigations as well as medical care.

## MATERIALS AND METHODS

The study comprises 120 patients with acute fulminant hepatic failure. The patients admitted in Medical unit I of Ghulam Mohammad Mahar Medical College Hospital, Sukkur were observed during the period of January 2010 to July 2011. The patients were selected randomly on the basis of diagnostic criteria. Chronic hepatitis cases have been excluded in this study by doing serology, Ultrasound of abdomen specially hepatobiliary system & in some cases endoscopic examination of upper gastrointestinal tract. The following criteria were used to diagnose acute hepatic failure<sup>5</sup>.

- Biochemical and hematological features suggestive of hepatitis (raised serum bilirubin, raised serum transaminase and prolonged prothrombin time).
- Hepatic encephalopathy within 8 weeks from the onset of acute hepatitis.
- No pre-existing liver disease.

The selected patients presented with jaundice and hepatic encephalopathy. The clinical grades of hepatic encephalopathy were done by using "Modified Conn & Lieberthal grading system" iv .

Grade I:	Confused, Altered mood or behavior, psychometric defects, disordered sleep pattern.
Grade II:	Drowsy, Lethargy, inappro-priate behaviour, personality change.
Grade III:	Stuporus but speaking and obeying simple commands, Non-articulate speech, marked confusion, amnesia & occasional fits.
Grade IV:	Coma.

All the patients were thoroughly investigated biochemically and for viral markers to search for the causes of ALF. The clinical profile and investigations results of each patient were recorded on a predesigned data collection form. All the patients were treated conservatively and monitored periodically. The mean duration of observation was four (4) weeks.

### OBSERVATION AND RESULTS

A total 120 patients were studied on the basis of diagnostic criteria for acute hepatic failure. All the patients presented with mild to severe jaundice and features of hepatic encephalopathy.

In this study, majority of the patients (87.5%) presented within the 4th weak of illness but only (17.5%) patient presented within the 1st weak of illness. The death rate was lower (42.86%) in those presented within 1st Week but higher (84.85%) of those presented after 1st week (Table-I).

Twenty one (17.5%) patients presented with hepatic encephalopathy of grade-IV and thirty (25%) patients had grade-III encephalopathy. Only six patients from grade-III were survived and rest of the patients from grade-III and all patients from grade-IV hepatic encephalopathy died in this study (Table-II).

Serum bilirubin level, serum alanine aminotransferase

**Table-I. Duration of illness and death in patients of acute hepatic failure in this study (n=120)**

Duration of illness (week)	Admitted patients number	Death of patients number	Patients %age
<1	21	09	42.86
1-2	39	30	76.92
3-4	45	39	86.67
>4	15	15	100

**Table-II. Distribution of grades of hepatic encephalopathy and death in patients of acute hepatic failure in this study (n=120).**

Grades of hepatic encephalopathy	Admitted patients number	Death of patients	
		Number	%age
Grade-I	24	15	62.50
Grade-II	45	33	73.33
Grade-III	30	24	80.00
Grade-IV	21	21	100.00

**Table-III: Serum bilirubin level in patients of acute hepatic failure at presentation in this study (n=120).**

Serum bilirubin level (mmol/L)	No. of patients	%age
<85	06	5.0
85-170	36	30.0
171-340	63	52.5
341-510	09	7.5
<510	06	5.0

**Table-IV. Serum alanine aminotransferase level in patients of acute hepatic failure of presentation in this study (n=120).**

Serum ALT (U/L)	No. of patients	%age
<100	21	17.5
100-300	63	52.5
301-500	24	20
501-1000	09	7.5
>1000	03	2.5

**Table-V. Prothrombin time in patients of acute hepatic failure at presentation in this study (n=120).**

Prothrombin time (Seconds)	No. of patients	%age
15-17	27	22.5
18-30	36	30
31-50	27	22.6
>50	30	25

**Table-VI. Serum albumin level in patients of acute hepatic failure at presentation in this study (n=120).**

Serum bilirubin level (gm/L)	No. of patients	%age
<35	42	35
35-45	66	55
>45	12	10

**Table-VII. Distribution of viral markers in patients of acute hepatic failure at presentation in this study (n=120).**

Viral Markers	No. of patients	%age
HEV (Positive)	42	35
HBV (Positive)	48	40
Both HEV & HBV	24	20
HAV (Positive)	03	2.5
All viral markers (Negative)	03	2.5

**Table-VIII. Outcome of treated patients of acute hepatic failure at presentation in this study (n=120).**

Outcome	No. of patients	%age
Recovered	27	22.5
Expired	93	77.5

(ALT) level, serum albumin level and prothrombin time were measured in all the studied patients. Ninety nine (82.5%) patients had bilirubin level between 85-340 mmol/L, six (5%) patient had bilirubin level below 85 mmol/L and fifteen (12.5%) patients had bilirubin level above >340 mmol/L (Table-III).

ALT level was less than 100 U/L in twenty one (17.5%) patients. Between 100-1000 U/L in ninety six (80%) patients and only three (2.5%) patients had ALT level above 1000 U/L (Table-IV).

Sixty three patients (52.5%) had prothrombin time between 15-30 seconds and thirty patients (25%) had more than 50 seconds (Table-V).

Forty two (35%) patients had serum albumin level below 35 gm/L and the rest seventy eight (65%) patients had above 35 gm/L (Table-VI). The mortality rates were 80% and 90% of those patients having higher bilirubin level (>340mmol/L) and prothrombin time (>50 seconds) respectively. The mortality rate was 40% in those having lower albumin level (<35gm/L).

Viral markers for hepatitis B, hepatitis C hepatitis E and hepatitis A viruses were done in all cases. Marker for hepatitis B and hepatitis E virus were found positive in forty two (35%) and forty eight (40%) cases respectively. Both hepatitis B and hepatitis E viral markers were positive in twenty four (20%) cases. Marker for hepatitis A virus was positive in three cases. All viral markers were negative in three (2.5%) cases (Table-VII).

Marker for hepatitis D virus could not be done in this study. The causative agent could not be identified in three cases. In spite of optimum conservative management, ninety three (77.5%) patients were died and twenty seven (22.5%) patients were recovered in this study (Table-VIII).

## DISCUSSION

Acute fulminant hepatic failure is a critical condition. This study evaluated the causes and prognosis of acute fulminant hepatic failure patients admitted in medical unit I, Ghulam Mohammad Mahar Medical college hospital, Sukkur . All the patients investigated thoroughly and also searched for viral markers. All the patients were treated conservatively and monitored periodically.

Varying grades of hepatic encephalopathy is the hallmark of acute hepatic failure in this study. The death rate was lower (70%) in grade-1 and grade-II encephalopathy but higher (89%) in grade-III and grade-IV encephalopathy . This is similar to other studies. The

death rate of patients with grade-III and grade-IV hepatic encephalopathy of those studies was 75.8% and 81% respectively<sup>6</sup>.

In this study the mortality rate were higher in those patients having high serum bilirubin level (>340 mmol/L), high prothrombin time (>50 seconds) and less serum albumin (<35gm/L). The total number of these groups of patients were 15, 30 and 42 and the mortality rates were 80% (15), 90% (27) and 64% (27) respectively. These findings are closely related to other studies. They reported more than 90% death in case of high serum bilirubin and prothormbin time<sup>7</sup>.

Viral markers were done in all the patients in this study. Hepatitis E virus was positive in forty eight (40%) cases and hepatitis B in forty two (35%) cases. Co-infection with hepatitis B and hepatitis E virus were positive in twenty four (20%) patients. Report from developing countries showed that HEV is the main cause of acute hepatic failure which is lower in western countries<sup>8,9</sup>. A study from UK reported only 16.6% cases of acute hepatic failure due to HEV infection but a study from India reported 62% cases viii. HBV causes acute hepatic failure in 30-40% cases in western countries<sup>10,11</sup>. In two other studies reported 40% and 28.5% cases of acute hepatic failure were due to HBV infection<sup>12,13</sup>. Data is not available about the co-infection with HBV and HEV in acute hepatic failure viii. Hepatitis A virus was positive in three (2.5%) cases and the causative agent could not be identified in three cases in this study. A study reported that hepatitis A virus infection complicating acute liver failure was less than 1% case xii. In USA about one third of adults have Anti HAV antibodies and about 100 deaths per year are attributed to HAV related acute liver failure<sup>14</sup>.

By providing optimum conservative management, the survival rate in patients of acute hepatic failure in this study was 22.5%. This was almost similar to other studies iv. Survival rate was higher (57.14%) in patient admitted within 1<sup>st</sup> week of illness and lower (15.15%) in those admitted after 1<sup>st</sup> Week. This is also similar to other studies. The survival rate was 53.3% and 14.9% in patients admitted within 1st Week and after 1st week of illness respectively in those studies<sup>15,16</sup>.

## SUMMARY & CONCLUSION

Clinical and biochemical profile of 120 patients with acute hepatic failure were studied. Features of hepatitis, encephalopathy and increased prothrombin time in the absence of any features suggestive of pre-existing liver diseases were the key indicators for the diagnosis of acute hepatic failure. All patients had jaundice and features of encephalopathy ranging from grade-1 to grade-IV. All the patients were thoroughly investigated and provided optimum conservative management and monitored periodically.

Raised prothrombin time,. Serum bilirubin and alanine aminotransferase were found in all patients. Serum albumin was slightly low in 35% patients. Anti HEV was positive in 40% patients and HBsAg positive in 35% patients. Both anti HEV and HBsAg were positive in 20% of patients. HAV was positive in only three cases in this study. Causes could not be identified in three cases. Only 22.5% patients were recovered completely and 77.5% patients expired. The mortality rates were higher with those patients presented after 1<sup>st</sup> week of illness, with hepatic encephalopathy grade-III and grade-IV, very high serum bilirubin, high prothrombin time and less serum albumin. Although there are some minute variations in some parameters, most of the findings in the present study are similar as suggested by other authors. However further studies with larger samples, with improved investigations and management techniques are suggested to evaluate the strength or weakness of this study.

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•“Revenge is a dish best served cold”

*Juvenal Quotes*