CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.3229316

Available online at: http://www.iajps.com *Research Article*

EARLY FACTORS RESPONSIBLE FOR PROGRESSION OF HEPATITIS B TO LIVER FAILURE

[1]Dr. Ayesha Zahoor, [2]Dr. Kanwal Shahzadi, [3]Dr. Shaiza Sharif

[1]MBBS, Yusra Medical and Dental College SZABU, Pakistan. [2]MBBS, Frontier Medical College Abbottabad. [3]MBBS, Fatima Jinnah Medical University Lahore. Pakistan.

Article Received: March 2019 **Accepted:** April 2019 **Published:** May 2019

Abstract:

Retrospective study was conducted on 293 patients with hepatitis B infection and were divided into acute liver failure and non-acute liver failure ALF(13) and non-ALF(280) group. 13 patients out of 293 developed ALF, out of which 3 died and 7 survived. Variables like age, anti-HBc IgM titers≥10 S/CO, HBeAg negativity, and serum bilirubin at the time of enrollment was higher in ALF group as compared to non-ALF group. PT and APTT values were lower in ALF group. At discharge, ALF patients had lower TB normalization rates and early clearance of HBsAg, HBeAg and HBVDNA than non-ALF patients. In multivariate analysis, two independent predictor factors for prediction of ALF progression at time of enrollment were TB≥5×upper limit of normal (ULN) and HBeAg negative status, with 84.6% sensitivity, 85.7% specificity, a most likely ratio of 5.91 and an area under the receiver operating characteristics curve (AUROC) of 0.850. Lower levels of peak PTA (<20%) and higher levels of peak hepatic encephalopathy (HE) grade (III-IV) was observed in those who died than those who survived.

Key Words: *hepatitis B, hepatic failure, factors.*

Corresponding author:

Dr. Ayesha Zahoor,

MBBS, Yusra Medical and Dental College SZABU, Pakistan.

QR code

Please cite this article in press Ayesha Zahoor et al., ***Early Factors Responsible for Progression of Hepatitis B to Liver Failure.,*** *Indo Am. J. P. Sci, 2019; 06(05).*

INTRODUCTION:

Pakistan belongs to developing world where majority of the hepatic complications like cirrhosis and hepatic failure is due to viral infections. The reason behind it may be less developed screening tools and opportunities required for blood transfusion or injectable medications, improper sterilization techniques. Use of vaccination in all population has reduced the burden in developed world, but improvement is not up to the mark in developing nations [1].

17% patients have a cumulative risk to develop HCC following HBV infection in Asia, while its 10% in Europe. The death rate associated with it is 15% in Asia and 14% in Europe [2]. The response to treatment and factors which help in assessing poor prognosis have been studied previously, Bommel FV, et al has concluded in a study conducted in 2015 that HBV RNA level is a good predicting factor for assessing treatment response in HBV patients.[3] APACHE II score and MELD scoring were considered better factors for assessing disease progression in acute on chronic hepatitis patients [4].

METHODS:

Data collection and analysis was done on hospitalized patients who were positive for hepatitis B virus infection, in Sir Ganga Ram hospital, Lahore during the January 2016 to December 2017. Retrospective descriptive study design was applied and analysis was done anonymously. Written consent was taken from all those who participated, they were verbally explained about the study purpose and procedure in detail. The study protocol was approved by the Medical Ethics Committee of the hospital.

Fever, anorexia, fatigue, and dark colored urine),signs(jaundice), laboratory results [raised serum alanine aminotransferase (ALT) or aspartate aminotransferase (AST) levels], presence of either serum IgM antibody against hepatitis B core antigen (anti-HBc IgM) or hepatitis B surface antigen (HBsAg) or both, no detection of HBsAg for 6 months before presentation, and exclusion of other possible causes of acute hepatitis (i.e., viruses, toxins, alcohol, autoimmunity, and metabolic factors), all these factors helped in making diagnosis of AHB.

AHB-ALF was defined on basis of clinical signs and lab results like PT prothrombin time more than 40% of normal orencephalopathy.in CHB virus infection HbsAg persistence was for more than a year. Patients were followed up for a year, initially monthly and later after 2 months. Microparticle enzyme immunoassay was used to measure HBsAg, antibodies HBeAg and antibodies. Verton 3 assay COBAS Taqman PCR estimated serum HBV DNA level. Students' spearman and t test were applied for continuous variables and for categorical variables, Fischer test and chi square test was applied. ROC curves and ratios were calculated. SPSS version15 was used for statistical analysis.

Table 1

Demographic and baseline characteristics between patients with AHB with ALF and those without ALF.

Group	N	Age(y)	Gender (M/F,N)	Time from symptom onset to hospital admission (d)	Duration of hospitalization (d)	Type 2 diabetes mellitus(N, %)	AFP(N %)
Non-ALF	280	36(18~73)	202/78	7(2~65)	29(7~91)	13/280(4.64)	7/280(2.
ALF	13	55(22~67)	11/2	8(5~60)	30(5~75)	1/13 (7.69)	3/13(23.
P		0.047	0.324	0.112	0.484	0.61	<0.001

RESULTS:

In multivariate analysis, two independent predictor factors for prediction of ALF progression at time of enrollment were TB≥5×upper limit of normal (ULN) and HBeAg negative status, with 84.6% sensitivity, 85.7% specificity, a most likely ratio of 5.91 and an area under the receiver operating characteristics curve (AUROC) of 0.850. Lower levels of peak PTA (<20%) and higher levels of peak hepatic encephalopathy (HE) grade (III-IV) was observed in those who died than those who survived.

Table 2

Multivariate analysis for factors independently associated with ALF in AHB.

Factors	Univariate OR (95% CI)	*P* value	Multivariate OR (95% CI)	*P* value
TB (μmol/L) <5×ULN vs. ≥5×ULN	17.73(2.27~138.30)	<0.001	8.07 (0.89~72.64)	0.033
HBeAg positive vs.negative	8.27(1.79~38.06)	0.001	6.49(1.14~36.96)	0.035
Age(y) ≥50 vs.<50	6.4(2.01~20.31)	0.0003	1.34(0.25~7.17)	0.731
anti-HBc IgM (S/CO) ≥10 vs. <10	0.22(0.04~1.02)	0.035	0.17(0.01~1.54)	0.115
HBVDNA (log10 IU/mL) ≥5.0 vs. <5.0	0.95(0.92~0.98)	0.163	0 (0.0)	0.997

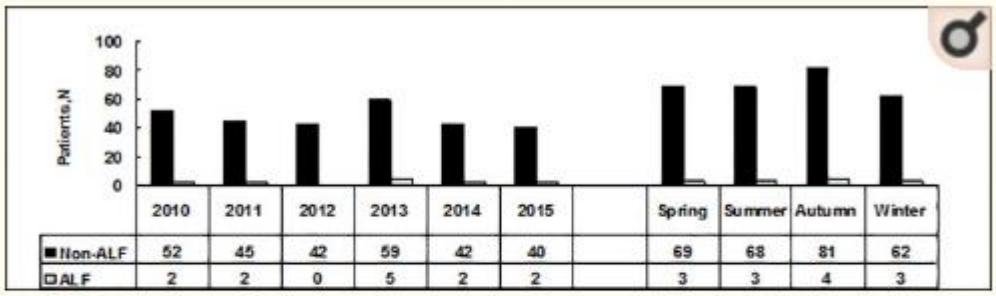

Fig 1

The seasonality and annual numbers of adult patients with AHB with and without ALF from 2010 to 2015.

DISCUSSION:

Host single nucleotide polymorphism on sodium taurocholate cotransporting polypeptide (NTCP, an HBV entry receptor) are considered as good prognostic signs in patients suffering from acute on chronic hepatitis B infection, concluded by Lin, et al. in a study [5]. In case of hepatitis C virus infection the factors responsible for it include profibrogenic chemokines and viral evolution[6]. Wang X studied the role of alpha fetoproteins in assessment of disease progression to hepatic failure[8]. In this study significance of HBsAg, HBeAg, HBV DNA was

used as factors to assess disease progression in HBV infected individuals. The increasing mortality and morbidity associated with HBV infection has increased the need to assess certain predictive factors for disease outcome assessment in patients. These viral and host response factors if timely assessed and controlled can help in preventing progression to liver failure.

REFERENCES:

1. Xiong QF, et al. Early predictors of acute hepatitis B progression to liver failure. PLOS One 2018; 13(7).
2. Fattovich G, et al. Natural history of chronic hepatitis B: Special emphasis on disease progression and prognostic factors. Journal of Hepatology 2018; 48: 335-352.
3. Bommel FV, et al. Serum hepatitis B virus RNA levels as an early predictor of hepatitis B envelope antigen seroconversion during treatment with polymerase inhibitors. Hepatology 2015; 61(1): 66-67.
4. Fan HL, et al. Predictors of the outcomes of acute-on-chronic hepatitis B liver failure. World J gastroenterol 2012; 18(36): 5078-5083.
5. Lin Lin C, et al. New perspective of biomarkers for management of hepatitis B. Clin Mol Hepatol 2016; 22(4): 423-431.
6. Farci P, et al. Profibrogenic chemokines and viral evolution predict rapid progression of hepatitis C to cirrhosis. PNAS 2012; 109(36): 14562-14567.
7. Chen l, et al. Prediction model of the progression of patients with acute deterioration of hepatitis B virus related liver diease to acute on chronic liver failure. Medicine 2018; 97(34).
8. Wang X, et al. Alpha-fetoprotein as a predictive marker for patients with hepatitis B related acute on chronic liver failure. Canadian Journal of Gastroenterology and Hepatology 2018.