



LOW SERUM ALBUMIN IS NOT AN EARLY MARKER OF ACUTE LIVER FAILURE

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ABSTRACT The objective of this study is to rule out that low serum albumin is not a good indicator of acute liver failure. In our study on the patients of acute viral hepatitis, all the patients were having low serum albumin level but neither of the patients require Albumin transfusion, they all recovered on their own.

KEYWORDS : Acute hepatitis, Serum albumin, AST/ALT .

INTRODUCTION

Viral hepatitis which is affecting children's health for a long time was first recognized in 1970's. Viral hepatitis is caused by five distinct viruses which are Hepatitis A virus (HAV), Hepatitis B virus (HBV), Hepatitis C virus (HCV), Hepatitis D virus (HDV) and Hepatitis E virus (HEV). Hepatitis means "inflammation of the liver". Out of five, cause of infection is one of four viruses: hepatitis A, B, C or E. Hepatitis D, also referred to as hepatitis D virus or hepatitis delta virus (HDV) is considered to be a subviral satellite because it can propagate only in the presence of the hepatitis B virus (HBV) [1].

Viral hepatitis is a major health problem in both developing and developed countries.[2]

Acute liver injury caused by viruses manifest in 3 main functional liver biochemical profiles.(i) As a reflection of cytopathic injury to the hepatocytes, there is a rise in ALT and AST.(ii). Cholestasis results from abnormal bile flow at the canalicular and cellular level because of hepatocyte damage and inflammatory mediators.(iii). Synthetic dysfunction is reflected by a combination of abnormal protein synthesis, metabolic disturbances, poor clearance of medications and altered sensorium.[3] Abnormal liver synthetic function is a marker of liver failure ,(assessed by prothrombin /INR test)and is an indication for prompt referral to transplant center[6].

In viral hepatitis there will be hyperbilirubinemia, elevated AST/ALT, Normal Albumin, usually normal PT[4]. Human serum albumin is a multifunctional negatively charged non-glycosylated plasma protein, which is synthesised mostly in the liver. Albumin is the most abundant circulating protein found in plasma. It represents half of the total body protein content (3.5 g/dL to 5 g/dL) of plasma in healthy patients. Albumin serves many of the functions in the body. It is a major component in maintaining colloid oncotic pressure, platelet function, and normal coagulation and is a free radical scavenger in inflammation. It is an important carrier of drugs, fatty acids, divalent cations (e.g., calcium, zinc), hormones, and bilirubin.[5]

METHODS

This study was conducted in a tertiary care hospital for a period between July 15, 2023 to January 15, 2024. All the admitted cases of Acute Hepatitis of any pediatric age group were included. Criteria for diagnosis of acute viral hepatitis was either of the viral marker positive for HbsAg, Anti HAV, Anti HCV or Anti HEV. (symptoms for less than 6 months)

All these confirmed cases were tested for Liver functions i.e Enzymes (ALT/AST), Serum Bilirubin (Total and Indirect), Prothrombin time/INR and Serum Albumin/Globulin. This was done in the first 48 hours of admission, and then in the convalescent phase.(marked by absence of fever & vomiting/nausea with presence of good appetite.

Any cases which showed complications like encephalopathy were excluded from study. Similarly cases showing additional illness or having additional cause/s (like Wilson's disease, drug induced hepatitis etc.) were excluded.

Any child with diseases which are known to cause Hypoalbuminemia (Nephrotic syndrome, malabsorption syndromes, Hyperthyroidism) were also excluded from study.

Although there was no fixed duration between tests but in most cases the gap between battery of test was 8-10days.

RESULTS

Out of 96 children admitted with viral hepatitis 84 children were having low Serum albumin upto 2.1 . Then after 8-10 days repeat Serum Albumin was done and out of 96 children 78 showed normal serum albumin level.

	S. albumin level at admission		S. Albumin level at discharge	
	Normal	Low	Low	Normal
Number of children	12	84	6	78
Serum Albumin		Number of Patients		
<2.5		67		
2.6-3.0		12		
>3.0		5		

DISCUSSION

It has been reported in various studies in different parts of world in the past which showed decrease Serum albumin in cases of acute viral hepatitis , Desai et al(5) .In one study reduced albumin was mentioned as an early marker for acute liver failure. In this study, done in San Diego County, 106 patients of acute hepatitis were studied and found to have low serum albumin which was taken as marker of Acute liver failure(6). In our study total 96 patients with acute viral hepatitis were studied and 84(87.5%) were having low serum albumin at the time of admission and without any albumin infusion they recovered and serum albumin were normal after 8-10 days in 78(92.9%) of the patients and only 6 (7.1%) were having low albumin level at 8-10 days but out of them 3 recovered without Albumin infusion when Serum Albumin were studied in follow up visit after 7 days. 3 patients did not come for follow up .

Albumin level at admission



■ Normal S. Albumin ■ Low S. Albumin

Serum albumin level at Discharge



■ Normal Albumin ■ Low Albumin

CONCLUSION

Serum Albumin level is good indicator of synthetic liver function and previously being used as indication for early liver transplant(6). Our

study result shows spontaneous recovery of albumin synthesis in most of the cases hence Serum Albumin level can not be taken as good marker for early referral to liver transplant.

There is no need to transfuse Albumin in acute viral hepatitis whatever low level of serum albumin are noted.

Ethics Clearance: An institutional ethical approval was obtained before the commencement of the study.

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Competing Interests: None stated.

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