Shalini sathiyamoorthy et al /J. Pharm. Sci. & Res. Vol. 8(8), 2016, 869-870

ISSN:0975-1459
Journal of Pharmaceutical Sciences and Research
www.jpsr.pharmainfo.in

Estimation of Liver Function Test in Hypertension Patients

***Shalini sathiyamoorthy, ****Dr. **S. Preetha**
**I year student, BDS Saveetha dental college and hospital, Chennai.*
***Lecturer, Department of Physiology, Saveetha Dental College and Hospital, Chennai.*

Abstract:
Aim: This study was aimed to analyse the LFT levels in patients with Hypertension.
Method: The study was done using 30 Hypertension patients. The LFT levels of the patients were estimated to analyse that LFT level influence the Hypertension patients.
Result: There was significant rise in the levels of Total serum bilirubin, serum AST, serum ALT. The levels of globulin were lowered. The concentrations of Total serum protein, serum albumin, serum alkaline phosphatase were not significantly high.
Conclusion: The LFT levels in Hypertension patients have a higher risk of diseases associated with abnormal LFT levels.

INTRODUCTION:

The liver is a gland and plays a major role in metabolism with numerous functions in the human body, including regulation of glycogen storage, decomposition of red blood cells, plasma protein synthesis, hormone production, and detoxification [1]. It is an accessory digestive gland and produces bile, an alkaline compound which aids in digestion via the emulsification of lipids [2].Liver function tests (LFTs or LFs) are groups of blood tests that give information about the state of a patient's liver [3]. These tests include prothrombin time (PT/INR), a PTT, albumin, bilirubin (direct and indirect), and others. Liver transaminases (AST or SGOT and ALT or SGPT) are useful biomarkers of liver injury in a patient with some degree of intact liver function [4,5,6]. Other tests are often performed by a specialist and include hepatitis serology, iron and copper studies, α1-antitrypsin levels, and autoantibodies. These relate to the possible aetiology of the abnormality [7].Hypertension (HTN or HT), also known as high blood pressure (HBP), is a long term medical condition in which the blood pressure in the arteries is persistently elevated [8]. An interrelationship between the functional integrity of the liver and development and maintenance of hypertension is being increasingly recognised [9]. An absence of experimental and clinical hypertension with liver disease has been noted [10]. It was suggested that hypertension could not occur in the presence of more than minimal liver damage and, conversely, a deranged liver would afford a good degree of protection against this syndrome [9,11].

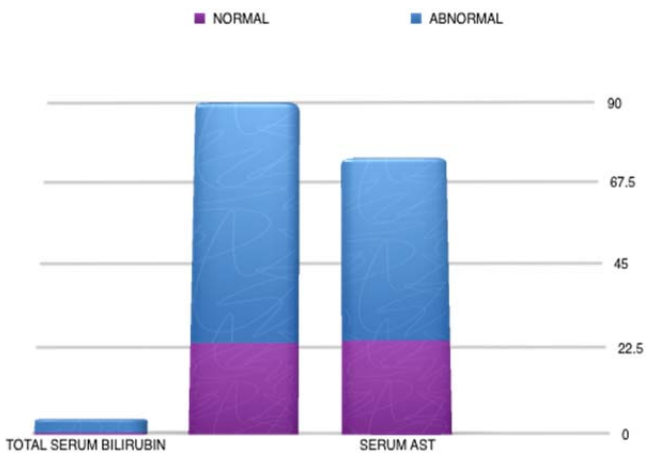
MATERIALS AND METHOD:

30 cases of essential hypertension between the ages 30 - 60 years were selected. The study was carried out in HITECH DIAGNOSTIC CENTRE,Kilpauk,chennai-10,Tamilnadu using 30 hypertension patients and concentration of Total serum bilirubin, Total serum protein, serum albumin, serum globulin, serum alkaline phosphatase, serum ALT, serum AST were estimated to find LFT level of hypertension patients. Thus the relationship between the liver function and hypertension were estimated. The patients with hypertension were only chosen, the patients with any other disorders were not taken into consideration.

RESULT:

The p value of Total serum protein, serum albumin, serum globulin, serum alkaline phosphatase were calculated using Independent sample test, while the p values of Total serum bilirubin, serum ALT, serum AST were calculated using Mann-Whitney Test. The values of Total serum bilirubin, serum AST, serum ALT were statistically significant (p value<0.05).The values of Total serum protein, serum albumin, serum globulin, serum alkaline phosphatase were not statistically significant (p value>0.05).

	Normal		Abnormal		
	Mean	**S.D**	**Mean**	**S.D**	**Sig.value**
Total serum bilirubin	0.527	0.1057	3.123	3.2639	0.002
Serum ALT	22.26	11.147	61.31	79.124	0.043
Serum AST	22.77	8.413	46.15	22.648	0.000



DISCUSSION:

We are still uncertain about the exact etiology of essential hypertension. Various theories and hypotheses have been expounded from time to time. Amongst others, plasma protein, belonging to alpha2 globulin fraction, the so-called hypertensinogen, has also been incriminated in the production and maintenance of hypertension [12]. It has been stated that the renin of the kidneys activates or transforms the inert hypertensinogen into the active form, hypertension. In view of the vital role played by the liver in the synthesis of proteins, it is conceivable that a functionally active liver contributes this globulin which is essential for the maintenance of blood pressure; and when the liver is damaged along with other functions it loses its ability to elaborate hypertensinogen. This would explain the fall in high blood pressure following acute liver disease as was g in one of the cases under reference.

Serum albumin: globulin ratio in some of the cases under reference was found to be less than 1.5 and the slight variation of fractions from the normal range was associated with a disturbance in thymol turbidity test in a few of these hypertension cases. Whether this was due to "the presence of an abnormal globulin necessary for the persistence of essential hyper- tension" as suggested by Loyke (1955), has yet to be established [11].In this study it is found that there were significant difference in the levels of Total serum bilirubin, serum ALT, serum AST, and the level of globulin in hypertension patients is lowered. There was no significant alterations in the Total serum protein, serum albumin, serum globulin, serum alkaline phosphatase.

CONCLUSION:

Thus, from this study we find that the LFT levels in Hypertension patients have a higher risk of diseases associated with abnormal LFT levels. The abnormalities of liver enzymes such as Total serum bilirubin, serum ALT, serum AST were noted.

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