TOTAL SERUM BILE ACIDS IN LIVER DISEASE

Pages with reference to book, From 82 To 84

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Abstract

Total serum bile acid levels (TSBA) were determined in 44 patients with acute and chronic hepatic diseases. Elevated levels of TSBA were observed in all the patients. Values were higher in cirrhosis, lowest in liver cancer and intermediate in hepatitis. When compared with normal values a significant ($p<0.001$) increase in TSBA was found in three groups of patients. No significant correlation was observed between TSBA and various liver function tests. Change in the levels of serum bile acids appear to be a more sensitive indicator of hepatic dysfunction than routinely used liver function tests (JPMA 31:82, 1981).

Introduction

The importance of serum bile acids in the evaluation of hepatic function in health and disease has recently been emphasized (Bouchier and Pennington, 1978; Javitt, 1977). Diseases of the liver are likely to affect the formation, conjugation and excretion of bile acids resulting in the changes in serum bile acid levels.

The purpose of this study was to evaluate the diagnostic usefulness of total serum bile acid levels in acute and chronic hepatic disorders.

Material and Method

Postprandial blood samples were collected from patients with hepatitis 05), cirrhosis (15) and liver cancer (14). The serum glutamate oxal-acetate (GOT), glutamate pyruvate (GPT) transaminases, alkaline phosphatase (AP) and bilirubin were done, and sera were stored at 20°C until analysed for total bile acids. The analysis of TSBA was done with thinlayer chromatography and spectrophotometery (Sadaruddin and Zuberi, 1980). Correlation of TSBA and hepatic function was studied in 6 patients with hepatitis, 11 with cirrhosis, and 14 with liver cancer.

Results

Table: Serum Bile Acids in Patients with Liver Disease (ug/ml).

	*Normal**	*Hepatitis*	*Cirrhosis*	*Liver Cancer*
Number of Cases	119	15	15	14
Mean	6.52	57.49	82.95	24.5
(Range)	(0 14.9)	(44-68.5)	(62.8-95)	(19.5-35.83)
S.E.	0.29	1.71	1.29	1.36

*Sadaruddin and Zuberi (1980).

The table shows the mean values and range of TSBA in controls and patients with liver disease. A significant ($p<0.001$) elevation in TSBA levels was observed in all patients with hepatic disorders. Values were highest in cirrhosis, lowest in cancer and intermediate in hepatitis (Fig. 1).

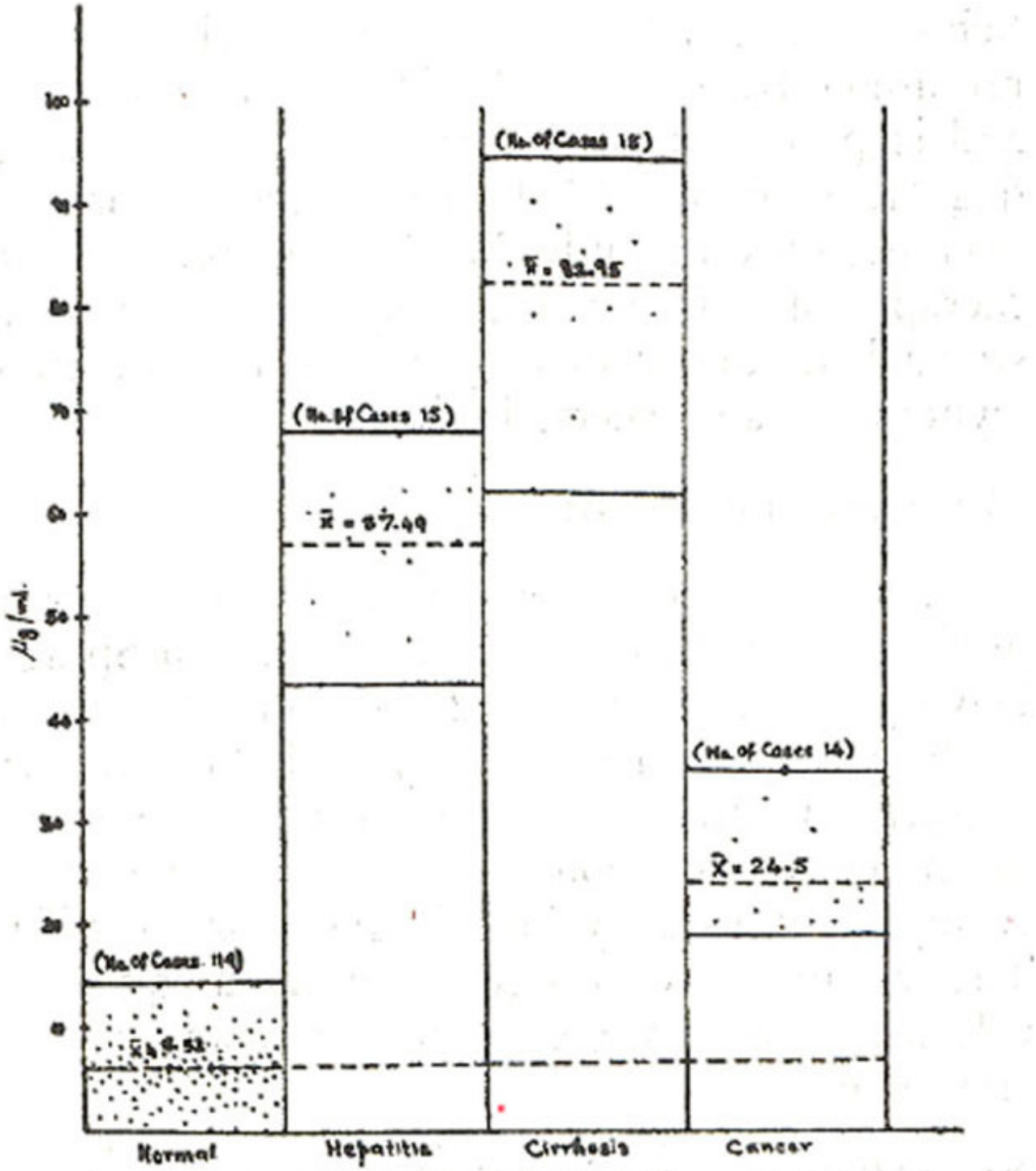

Fig. 1 : Total Serum Bile Acids and their mean values.

The comparative percent frequency of abnormal values of TSBA and various liver function tests is shown in fig. 2.

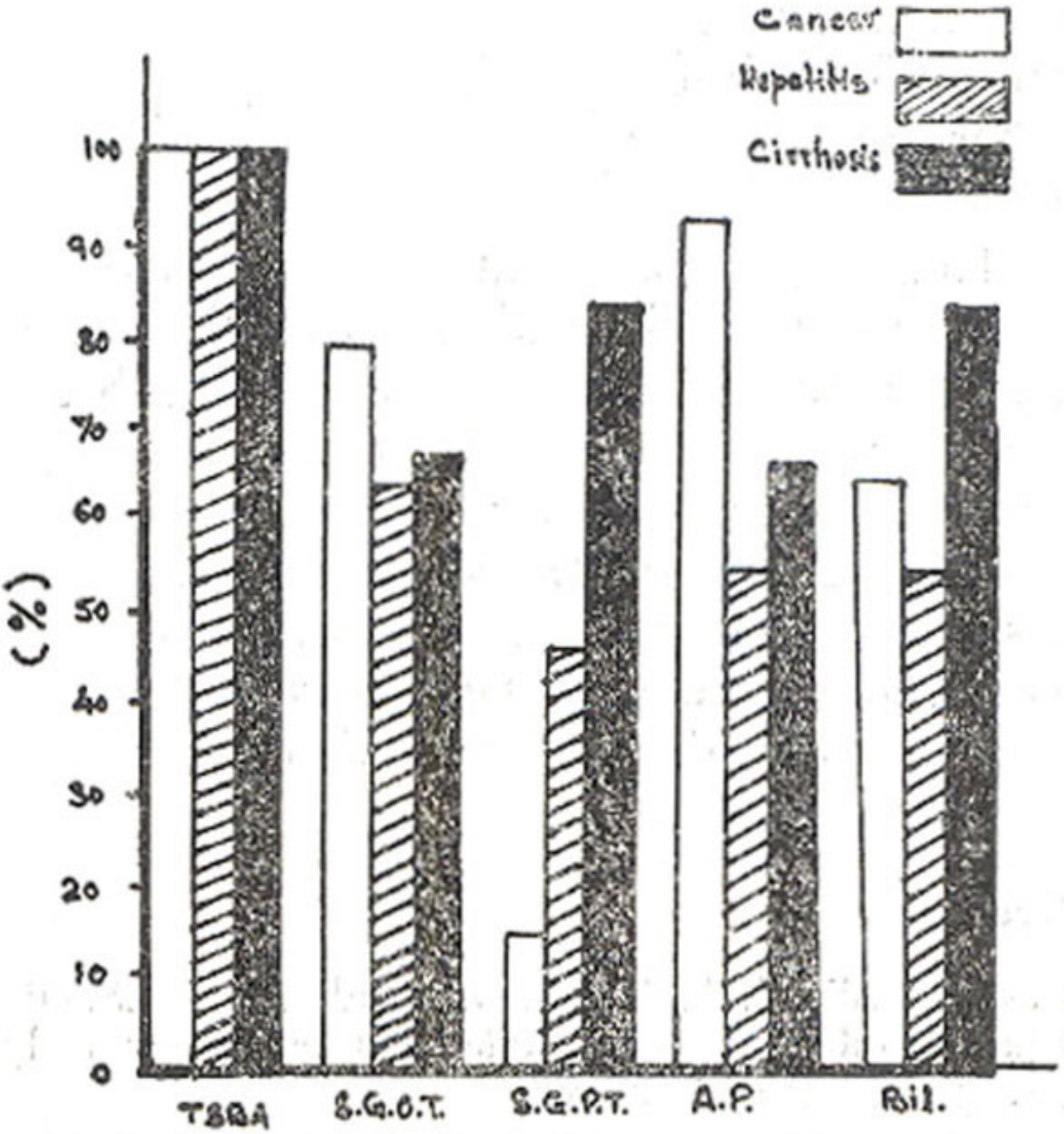

Fig. 2: Comparative Percent Frequency of Abnormal Values of Total Serum Bile Acids and other Liver Function Tests.

Serum GOT and AP were normal in 33% and bilirubin and GPT in 16% of patients with hepatitis. Serum GOT was normal in 36.4%, GPT in 24.4% and AP and bilirubin in 44.5% of patients with cirrhosis. Similarly in cancer 85.7% patients had normal GPT values, while 21.4%, 7.2% and 35.7% patients had normal GOT, AP and bilirubin respectively. TSBA were raised in all the patients. No correlation was found between TSBA and the conventional liver function tests.

Discussion

Bile acids are good diagnostic indicators of hepatic function and disease. The normal values (Mean±SE) of TSBA found in this study (6.52± 0.29 ug/ml) are similar to those reported by Barnes et al (1975), and higher than 2.20±0.54 ug/ml obtained by Iwata and Yamazaki (1964). The variations can be attributed to the difference in the techniques employed for the bile acid analysis and other factors (Sadaruddin and Zuberi, 1980). .

Total serum bile acids were raised in liver diseases. Values in hepatitis varied from 44-68.5 ug/ml. Pennington et al (1978) found elevated bile acid levels in patients with viral hepatitis which returned to normal along with, other conventional liver function tests. Over 16% patients with hepatitis and elevated TSBA in the present series had normal serum GPT and bilirubin.

Impairment of hepatic cell function and portasystemic shunts in patients with cirrhosis divert the bile acids away from the liver and thus alter their enterohepatic circulation. This results in the elevation of TSBA in the blood and ascitic fluid (Vlahcevic et al., 1977). As has been observed in this study, several other workers (Demers and Hepner, 1976; Dasher et al., 1977; Roda et al., 1977) found markedly elevated bile acid values in cirrhosis even when other liver function tests were normal.

Rehman et al (1976) found GPT levels higher than GOT in hepatitis and reverse of it in cir-hosis, while no difference between two transaminases was seen in hepatic malignancy.In 10 patients with liver cancer GOT was higher than GPT in this series. It is thus presumed that higher values of TSBA in liver cancer may be due to associated cirrhosis.

Total serum bile acids were elevated in all the patients with liver disease even if routinely used liver function tests were normal. Studies by Kaplowitz et al (1973), Fausa and Gjone (1976), Thjodleifsson et al (1977), Javitt (1977) and Javitt et al (1978) have suggested that the measurement of postprandial serum bile acid concentrations seems to be a more sensitive test of hepatobiliary disease than other conventional liver function tests.

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