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EVALUATION OF SGOT/SGPT RATIO IN ALCOHOLIC AND NON-ALCOHOLIC PATIENTS

General Medicine

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ABSTRACT

Introduction: Alcohol is one of the most common cause of liver problems in hospitalized patients in most tertiary care hospitals. Several studies have shown that SGOT activity exceeds SGPT in alcoholic patients as compared to non-alcoholic patients and their ratio is >1.5. Hence we decided to conduct a study of the ratio of SGOT/SGPT in alcoholic and non-alcoholic patients in our hospital settings.

Methodology: This study was a cross sectional observational study of all the patients admitted in our hospital with diagnosis of chronic liver disease from June 2018 to July 2019. Total 150 patients were included in the study , out of which 120 patients were in the alcoholic group and 30 in non-alcoholic group. SGOT/SGPT ratio was determined and compared in both the groups.

Results: Out of total 150 patients, majority of the patients in both the group were males. Male to female ratio in alcoholic group was 9:1 and in non-alcoholic group was 2.75:1. Mean SGOT/SGPT ratio in alcoholic patients was 2.04 and in non- alcoholic patients was 1.93. Also Mean SGOT/SGPT ratio in alcoholic male was 2.02 and female was 2.30 respectively and in non-alcoholic male was 1.92 and female was 1.96.

Conclusion : SGOT/SGPT ratio was almost similar in the both the groups. Ratio higher than 2.5 was more found in alcoholic group than non-alcoholic group patients.

KEYWORDS

INTRODUCTION:

Alcohol abuse is one of the most common causes of hepatocellular diseases. Several markers for high alcohol consumption *per se* have been studied e.g. carbohydrate deficient transferrin (CDT), Gamma Glutamyl Transferase (GGT) and serum glutamic oxaloacetic transaminase (SGOT). Most have fairly low sensitivities and specificities. While no single biochemical liver function test is sufficiently specific to allow a definitive diagnosis in patients with liver disease, it has been frequently noted that serum glutamic oxaloacetic transaminase (SGOT) activity exceeds serum glutamic pyruvic transaminase (SGPT) activity in patients with alcoholic liver disease. [1]The role of the ratio of SGOT to SGPT has been evaluated in previous studies conducted on patients with acute and chronic liver diseases of various origins. These studies have shown that SGOT/SGPT ratio is usually increased to >1.5 in patients with alcoholic liver disease [2] as compared to patients with non-alcoholic liver diseases. So we decided to conduct a study of the ratio of SGOT to SGPT in alcoholic vs non-alcoholic patients in our hospital setting .

Materials and methods

This study was a cross-sectional observational study carried out at multi-speciality hospital attached to medical college. It was conducted between June 2018 to January 2019. All adult patients who had clinical and investigatory evidence of chronic liver disease were included in the study. One of the essential criteria was ultrasound examination suggestive of chronic liver disease. Patients of chronic hepatitis and cirrhosis of liver whose symptoms had started before 6 months were included in the study. Patients having primary or secondary liver malignancy were excluded. Ultrasonography (USG) findings of chronic liver disease included change in echo-texture of liver, round edge, nodular liver surface, hypo-echoic nodules which suggest regenerative nodules, ascites, splenomegaly and porto-systemic collaterals. All patients were divided into 2 groups alcoholic and non - alcoholic. Alcoholic group included patients who had history of drinking alcohol roughly around 80-100 g/day for more than 8 years and no other cause of chronic liver disease could be identified apart from alcohol. Non-alcoholic group included patients having chronic liver disease because of hepatitis B, hepatitis C, Non-alcoholic fatty liver disease (NAFLD), Non-alcoholic steatohepatitis (NASH), Wilson hepatitis and others. In all patients necessary investigations were done of which SGOT, SGPT and its ratio was calculated for study purpose. SGOT/SGPT ratio was determined on the basis of transaminases measurement in the first blood sample after admission.

Results

Table 1- Age and gender profile in alcoholic and non-alcoholic patients.

Age Group	Alcoholic (n=120)				Non Alcoholic (n=30)				Total (N=150)
	Male	%	Female	%	Male	%	Female	%	
< 30 Years	7	5.83%	0	0.00%	0	0.00%	1	3.33%	8
31 to 40 Yrs	18	15.00%	3	2.50%	3	10.00%	2	6.67%	26
41 to 50 Yrs	61	50.83%	8	6.67%	14	46.67%	4	13.33%	87
51 to 60 Yrs	1	0.83%	1	0.83%	0	0.00%	0	0.00%	2
61 to 70 Yrs	15	12.50%	0	0.00%	5	16.67%	0	0.00%	20
> 70 Yrs	6	5.00%	0	0.00%	0	0.00%	1	3.33%	7
Total	108	90.00%	12	10.00%	22	73.33%	8	26.67%	150

As shown in table 1, 150 patients were taken in the study. Out of them 120 were alcoholic and 30 were non-alcoholic. Out of 120 alcoholic patients, 108 were males and 12 were females.7 were <30 years of age, 21 were between 31 to 40 years of age, 69 were between 41 to 50 years of age, 2 were between 51 to 60 years of age, 15 were between 61 to 70 years of age and 6 were > 70 years of age. Out of 30 non-alcoholic patients, 22 were males and 08 were females.1 female was <30 years of age, 5 were between 31 to 40 years of age, 18 were between 41 to 50 years of age, 5 were between 61 to 70 years of age and 1 was >70 years of age. Male to female ratio in alcoholic group was 9:1 while in non-alcoholic group the ratio was 2.75:1

Table 2- SGOT values in alcoholic and non-alcoholic patients

SGOT	Alcoholic		Non Alcoholic		Total
	N	%	N	%	
< 50	54	45.00%	12	40.00%	66

51 to 100	37	30.83%	12	40.00%	49
101 to 200	24	20.00%	6	20.00%	30
> 200	5	4.17%	0	0.00%	5
Total	120	100.00%	30	100.00%	150

Figure 1- SGOT values in alcoholic and non-alcoholic patients.



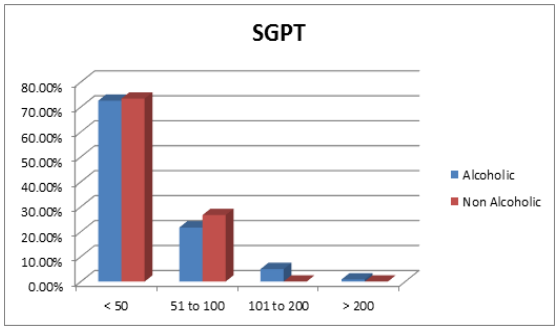
As shown in Table-2 and figure-1, out of total 120 alcoholic patients, 54 patients were having SGOT values < 50, 37 patients were having values between 51 to 100, 24 patients were having values between 101 to 200 and 5 patients were having values > 200.

Out of total 30 non-alcoholic patients, 12 patients were having SGOT values < 50, 12 patients were having values between 51 to 100 and 6 patients were having values between 101 to 200.

Table 3- SGPT values in alcoholic and non-alcoholic patients

SGPT	Alcoholic		Non Alcoholic		Total
	N	%	N	%	
< 50	87	72.50%	22	73.33%	109
51 to 100	26	21.67%	8	26.67%	34
101 to 200	6	5.00%	0	0.00%	6
> 200	1	0.83%	0	0.00%	1
Total	120	100.00%	30	100.00%	150

Figure 2- SGPT values in alcoholic and non-alcoholic patients



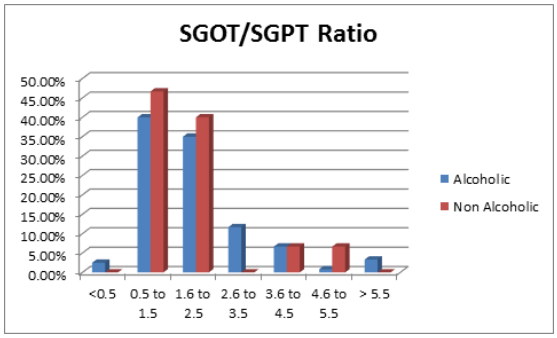
As shown in Table-3 and figure-2, out of total 120 alcoholic patients, 87 patients were having SGPT values < 50, 26 patients were having values between 51 to 100, 6 patients were having values between 101 to 200, 1 patients were having values > 200.

out of total 30 non-alcoholic patients, 22 patients were having SGPT values < 50 and 8 patients were having values between 51 to 100.

Table 4- Mean SGOT/SGPT ratio in alcoholic and non-alcoholic patients.

SGOT/SGPT Ratio	Alcoholic		Non Alcoholic		Total
	N	%	N	%	
<0.5	3	2.50%	0	0.00%	3
0.5 to 1.5	48	40.00%	14	46.67%	62
1.6 to 2.5	42	35.00%	12	40.00%	54
2.6 to 3.5	14	11.67%	0	0.00%	14
3.6 to 4.5	8	6.67%	2	6.67%	10
4.6 to 5.5	1	0.83%	2	6.67%	3
> 5.5	4	3.33%	0	0.00%	4
Total	120	100.00%	30	100.00%	150

Figure 3- Mean SGOT/SGPT ratio in alcoholic and non-alcoholic patients.



Mean SGOT/SGPT ratio in alcoholic patients was 2.04 and in non-alcoholic patients was 1.93 (p value - 0.670).

Table 5- Mean SGOT/SGPT ratio of male and females patients in alcoholic and non-alcoholic group.

Mean SGOT/SGP	Alcoholic		Non-alcoholic	
	Male	Female	Male	Female
T Ratio	2.02	2.30	1.92	1.96
P –value	0.494		0.934	

As shown in table 5, Mean SGOT/SGPT ratio in alcoholic male was 2.02 and female was 2.30 respectively (p-value-0.494).

Mean SGOT/SGPT ratio in non-alcoholic male was 1.92 and female was 1.96 respectively (p value-0.934)

DISCUSSION

Chronic liver disease leading to hospitalization is one of the common problem encountered in tertiary care hospitals. Majority of causes of chronic liver disease are due to alcohol. The other causes of chronic liver disease includes hepatitis B and hepatitis C infection, metabolic liver disease, drug induced liver injury and liver cell disorder because of primary and secondary malignancy. A disease process in which there is progressive destruction of liver parenchyma leading to fibrosis and cirrhosis of liver is one of the most common type of chronic liver disease. Disease which lasts for greather than 6 months is referred as "Chronic liver disease". Thus in this study one of the selection criteria was persistence of symptoms and signs of liver disease for greater than 6 months.

In the study period of 8 months, 150 patients of chronic liver disease were admitted in our hospital, of which 120 who were following the criteria of alcoholic liver disease were included in the alcoholic group and 30 in non-alcoholic group. Out of 150 patients, majority were males. The alcohol consumption being more common in males, we found that the male to female ratio in alcoholic group was 9:1. However in non-alcoholic group, though the males were higher, the ratio was 2.75:1.

In the selection of the patient, apart from clinical features of chronic liver disease, USG examination of abdomen was an important selection criteria. USG plays a major role in diagnosis and prognosis of chronic liver disease. As it is valuable in the assessment of liver parenchyma and detection of liver lesions, it was included as one of the diagnostic tool for all patients in this study.[3]

This study was a prospective cross sectional study. Prevalence of alcoholic liver disease was 4 times greater than non-alcoholic liver disease. The amount of alcohol consumption that places an individual at risk of developing alcoholic liver disease is not known. However, in practice, most patients with Alcoholic liver disease drink more than 100 g/d for a decade or a two or more than that.[4] In our study we included all the patients who drank alcohol roughly around 80-100 g/day for more than 8 years.

Biochemical liver function test (LFT) is important to evaluate patient of chronic liver disease. However none are specific. SGOT activity is greater than SGPT in patients having alcoholic liver disease is one of the finding reported by many workers.

The process of transamination, a mechanism of metabolism of amino

acid takes place in many tissues of body including liver. Clinically transaminase activity in relation with SGOT and SGPT is well studied. These enzymes are liberated in the circulation because of cellular necrosis. Cardiac muscle has higher content of GO- transaminase and thus high serum values are found with myocardial infarction. Similarly higher values of SGOT are reported in acute hepatitis.[5] Wrobleswski in 1957, suggested that SGOT and SGPT level may aid in differential diagnosis of liver disorder. The relative increase of SGOT in comparison with SGPT is reported due to alcoholic liver disease and high value may indicate more severe liver damage.[6] Serum GGTP is also considered to be associated with chronic liver disorder which is non-icteric and is because of chronic alcohol consumption.[7]

Many studies have reported SGOT/SGPT ratio as indicative of chronic liver disorder due to alcohol like alcoholic hepatitis or cirrhosis.[1] In a study conducted by Alves, Ermelinda et al, the ratio of SGOT/SGPT was significantly higher than in the three controlled groups which consisted patients of viral hepatitis, obstructive jaundice and non-alcoholic chronic liver disease. In our patients, mean SGOT/SGPT ratio was 2.04 in alcoholic group while it was 1.93 in non-alcoholic group. Thus we did not find statistically significant difference.

The study of Alves, Ermelinda et al concluded that values higher than 2 is also diagnostic of alcoholic liver disease and was found out in 56% of their patients. In our study 27 out of 120 (22.5%) alcoholic liver disease patients had ratio above 2.5 while only 4 out of 30 non-alcoholic patients (13.33%) had ratio above 2.5.

Though our result suggests higher ratios in alcoholic group, the results are not discriminative. This may be because we took all hospitalized patients which may have more severe liver disease in both the groups and again both alcoholic and non-alcoholic group were not similar. The alcoholic group had 4 times higher number of patients than non-alcholic group. Subgroup analysis of male and female of alcoholic as well as non-alcoholic patients also did not show difference in SGOT/SGPT ratio.

Conclusion

SGOT/SGPT ratio was not different in alcoholic group patients in comparison with non-alcoholic group. Ratio higher than 2.5 was more found in alcoholic group than non-alcoholic group patients. Further large scale study may be needed to get further insight.

REFERENCES

1. Alves PS, Camilo EA, Correia JP. The SGOT/SGPT ratio in alcoholic liver disease. Acta medica portuguesa. 1981;3(4):255-60.
2. Correia J P, Alves P. S. and Camilo E. A. (1981) SGOT-SGPT ratios. Digestive Diseases and Sciences 26, 284.
3. Gerstenmaier JF, Gibson RN. Ultrasound in chronic liver disease. Insights into imaging. 2014 Aug 1;5(4):441-55.
4. Basra S, Anand BS. Definition, epidemiology and magnitude of alcoholic hepatitis. World journal of hepatology. 2011 May 27;3(5):108.
5. Henry L. Serum transaminase levels in liver disease. Journal of clinical pathology. 1959 Mar;12(2):131.
6. Gurung RB, Purbe B, Gyawali P, Risal P. The ratio of aspartate aminotransferase to alanine aminotransferase (AST/ALT): the correlation of value with underlying severity of alcoholic liver disease. Kathmandu Univ Med J (KUMJ). 2013;11(43):233-6.
7. Zinzuvadia SN, Mehta NR, Lakhani JD. Serum GGTP as a diagnostic aid in non-icteric chronic liver disease patients. The Journal of the Association of Physicians of India. 1987 Oct;35(10):703-5.