SERUM GAMMA GLUTAMYL TRANSFERASE (γ -GT) ACTIVITY IN ALCOHOLICS WITH LIVER ABSCESS AND CHRONIC ALCOHOLICS

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ABSTRACT

Gamma Glutamyl Transferase (γ -GT) is a microsomal enzyme. Its activity in serum is assayed in alcoholics with liver abscess and alcoholics without liver abscess after screening by ultrasonography. The enzyme activity in serum is increased by 334% in the patients with liver abscess compared to normal control subjects ($p < 0.0001$), and 172% when compared to patients with chronic alcoholism without liver abscess ($p < 0.0001$). The enzyme activity was increased by 59.3% in the serum of patients without liver abscess compared to the normal control subjects ($p < 0.001$). Measurement of γ -GT in serum appears to be a sensitive index in the diagnosis of alcoholics with liver abscess.

KEY WORDS

Alcoholic liver abscess, γ -GT in chronic alcoholics, serum γ -GT

INTRODUCTION

Gamma Glutamyl Transferase (γ -GT), also known as Gamma Glutamyl Transpeptidase, is a microsomal enzyme with a wide tissue distribution. However, measurement of its activity in serum has been found useful in screening alcohol abuse (1). A sudden increase in the serum γ -GT activity in chronic alcoholics is suggestive of a recent bout in alcohol drinking (2). A second practical diagnostic application is that an elevated serum γ -GT associated with an increased serum alkaline phosphatase shows that the latter enzyme in serum is of hepatic origin (1). Still, some workers find that assay of γ -GT in serum as a misleading test (3) and measurement of hepatic mitochondrial aspartate amino transferase as a new marker enzyme in alcohol abuse (4). However, the results of the present investigation signify the importance of γ -GT assay in serum as a diagnostic marker in alcoholics with liver abscess. The alcoholics in the present study were untreated patients since

administered drugs for treatment might elevate the γ -GT in serum (5). The patients in the present study were also free from any infection due to hepatitis B virus or Hepatitis C virus as these infections might elevate the γ -GT activity in serum.

MATERIALS AND METHODS

Alcoholics from the neighbouring rural areas of Rajah Muthiah Medical College Hospital were admitted in the medical ward after radiologically screening for liver abscess by ultrasonography. The patients were divided into two groups:

Group 1 (alcoholics with liver abscess)

Group 2 (alcoholics without liver abscess)

A third group, Group 3 is the control group from age matched male volunteers of the staff of the hospital who were non-alcoholic.

Fasting blood samples were collected from the three groups for determination of the activity in serum of γ -GT by the autoanalyser method of SZASZ (6) modified by Persifin and Vandersilk (7). The results were analyzed statistically by student's 't' test.

RESULTS AND DISCUSSION

Out of a total of 47 alcoholics admitted, 22 patients had liver abscess (Group 1). The rest 25 formed the

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Table 1. Serum γ -GT in alcoholics with liver abscess, alcoholics without liver abscess and normal controls

Group	Serum γ -GT U/L	p Value
1. Alcoholics with liver abscess (n=22)	112.74 $\pm$ 10.81*	<0.0001 (between 1 & 2 and 1 & 3)
2. Alcoholics without liver abscess (n=25)	41.4 $\pm$ 2.83	
3. Normal (n=20)	25.99 $\pm$ 0.85	<0.001 (between 2&3)
* Mean $\pm$ S.E.		

chronic alcoholic group without liver abscess (Group 2). The serum γ -GT in these two groups was compared to the enzyme activity in 20 controls (Group 3).

The results are presented in Table 1. The normal γ -GT in serum is 25.99 $\pm$ 0.85. As against this value in alcoholics with liver abscess (Group 1), the increase in serum γ -GT is by 334% ($p < 0.0001$). When a comparison is drawn between groups 1 and 2, serum γ -GT was increased by 172% ($p < 0.0001$) in the patients with liver abscess over those without liver abscess. This study thus is indicative of hepatic microsomal injury in chronic alcoholics supporting earlier observations (8, 9). The microsomal injury is more severe when the alcoholics have an abscess in liver, as shown by an increase of 172% over those without liver abscess. Hence, serum γ -GT determination in alcoholics with liver abscess will be a useful diagnostic tool.

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