

# ALPHAFETOPROTEIN IN LWER DISEASE

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## Abstract

Alpha fetoprotein (AFP) was determined using Radioimmunoassay (A IA) in 278 patients with various liver diseases. Titres were raised in hepatic malignancies as well as in other liver disorders.of AFP with age, sex, liver function tests and HBsAg No correlation was found between the titres positivity (JPMA 38: 234, 1988).

## INTRODUCTION

Small amounts of AFP have been detected in the sera of healthy adults with RIA<sup>1-3</sup> indicating that the adult liver retains the capacity to make AFP in the absence of neoplastic disease, which was rarely detected before with less sensitive technique.<sup>4</sup>

Variations of AFP levels have been reported with age, type of liver disease and HBsAg positivity<sup>5-6</sup>. The present study was conducted to determine its diagnostic value in benign and malignant liver diseases and its correlation with age, sex, liver function tests and HBs antigenemia.

## PATIENTS AND METHOD

Sera of 278 patients with various liver diseases and 139 apparently healthy subjects were analysed for the presence of AFF with RIA method using Ammersham International (UK.) kit. The following tests were performed in all patients: Serum bilirubin<sup>7</sup>, alkaline phosphatase,<sup>8</sup> SGOT and SGPT<sup>9,10</sup>. serum proteins' seruni albumin and globulin<sup>2</sup> and prothrombin time<sup>1</sup> HBsAg (Countercurrent immunoelectrophoresis) was done in 140 cases. The diagnosis of various liver diseases were based on clinical and biochemical findings. Liver biopsy was done in 16% cases of hepatitis, 60% of cirrhotics and all patients with liver cancer and fatty liver. Student 't' test and x2 test were used for statistical analysis.

## RESULTS

AFP was detected in 278 patients and 139 controls. Eighty controls were negative (L ng/ml) and 59 positive for AFP (rang 1-30 ng/ml).

**Results are shown in Table1**

| Disease                  | No. of cases | Mean (SD)        | Range           |
|--------------------------|--------------|------------------|-----------------|
| Hepatocellular carcinoma | 32           | 117,000 (52,000) | 160,000-320,000 |
| Metastatic carcinoma     | 11           | 7,000 (2,000)    | 1,000-18,000    |
| Chronic hepatitis        | 88           | 43,000 (19,000)  | 1,000-140,000   |
| Cirrhotics               | 95           | 45,000 (20,000)  | 1,000-140,000   |
| Healthy controls         | 139          | 11,000 (11,000)  | 0-110,000       |

Thirty-two (33.7%) of 95 cases with hepatocellular carcinoma showed AFP levels of more than 200 ng/ml. Of these 7 cases had values ranging between 160,000-320,000 ng/ml. Liver was enlarged in all cases ranging from 4-25 cm below the costal margin and all of them died within 6 months of examination. Twentyfive cases were lost to follow up. Two (18.2%) out of 11 cases of metastatic carcinoma had AFP titres more than 200 ng/ml (Figure I).

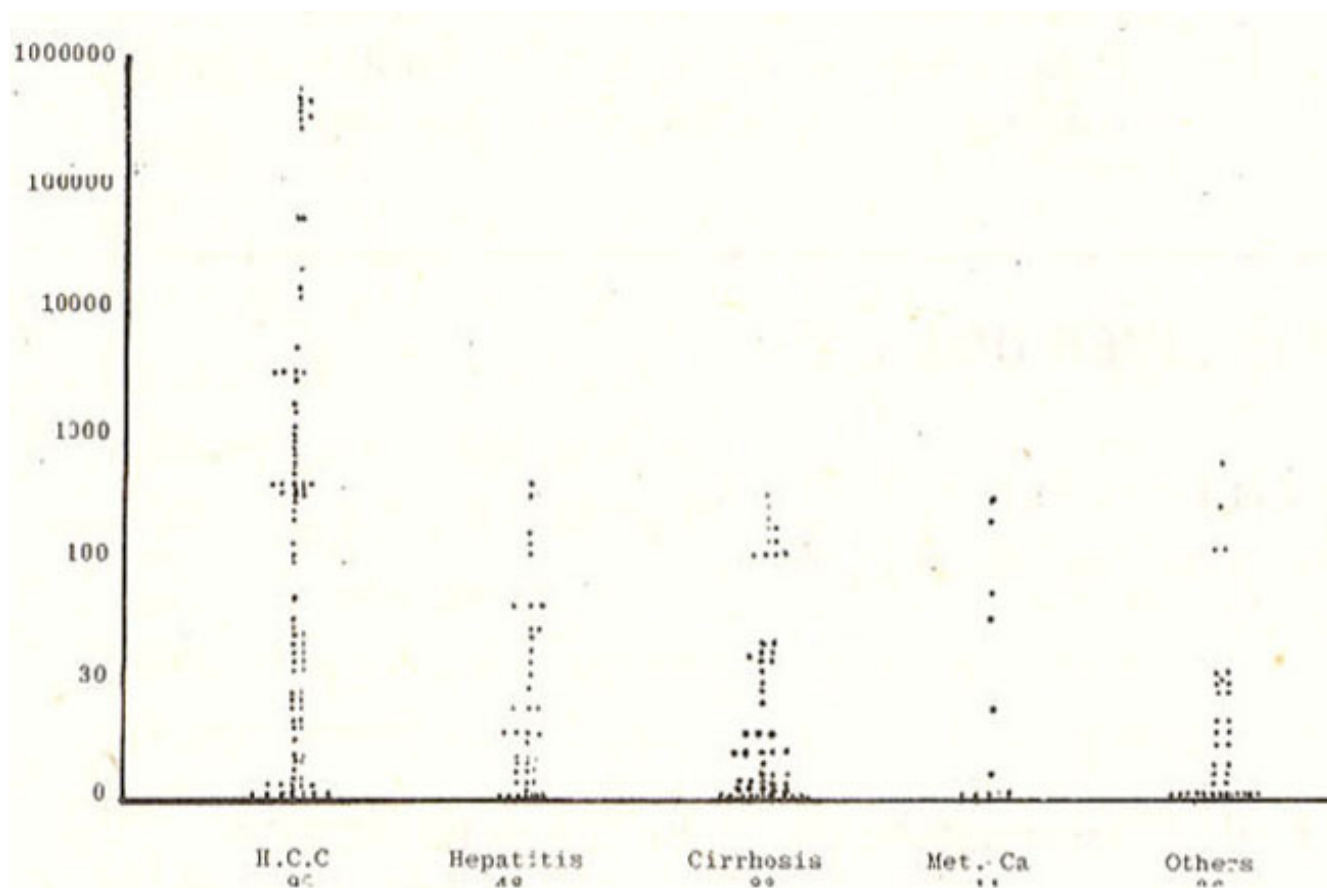


Figure 1. Titres of AFP in different liver diseases.

Of 48 cases of acute viral hepatitis 3(6.3%) had AFP values of more than 200 ng/ml. Maximum value attained was 560ng/ml except for one case in which exceedingly high titres 30,500 ng/ml were found. Six(6.8%) out of 88 cirrhotics had titres of more than 200 mg/mi with a maximum value of 610 ng/ml. Titres were also elevated in some case of fatty liver, chronic persistent hepatitis and constrictive pericarditis.

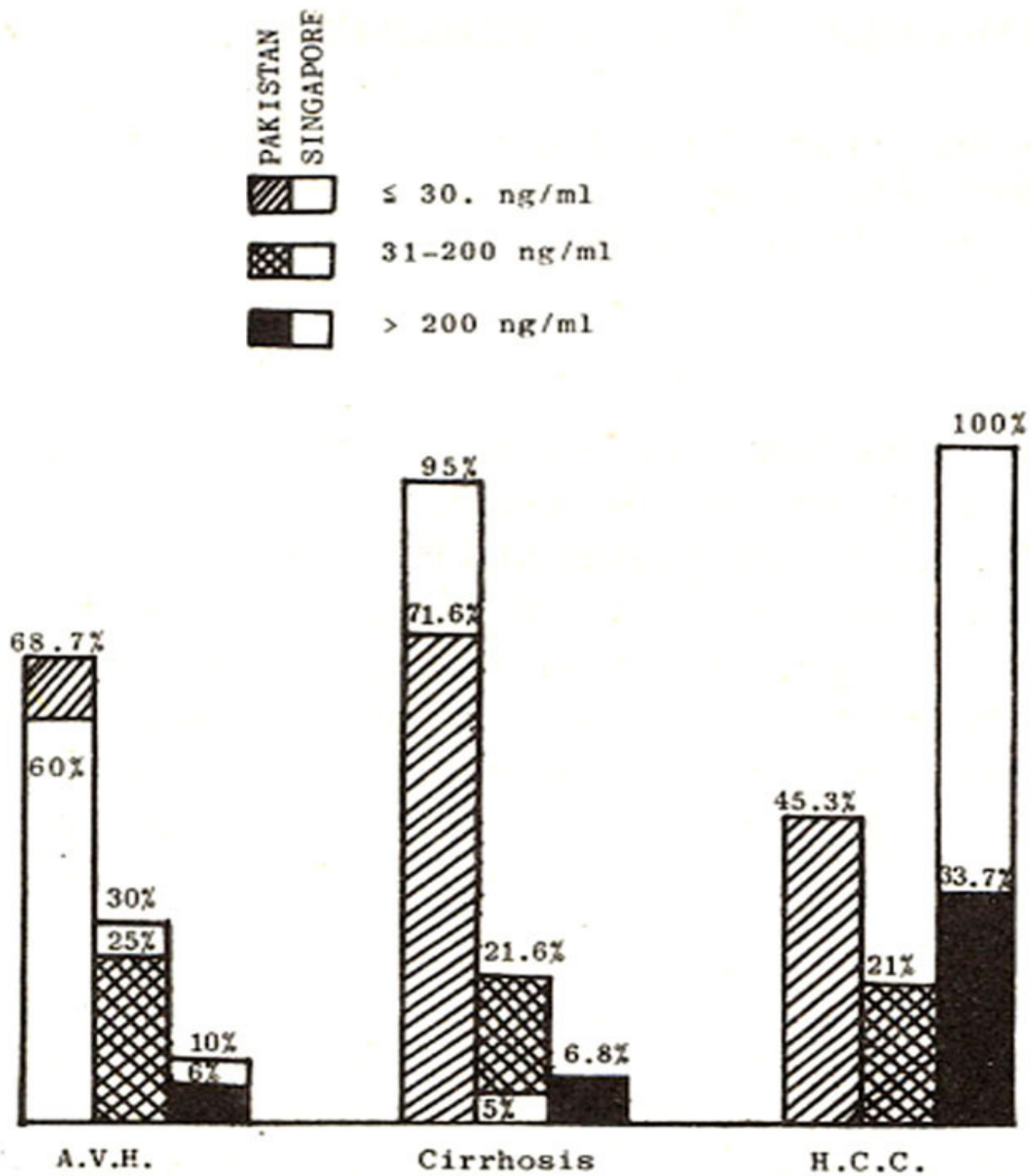


Figure 2. Comparison of AFP levels in Pakistan with Singapore in acute viral hepatitis, cirrhosis and hepatocellular carcinoma.

Statistically no correlation was found between the titres of AFP and age, sex, liver function tests (serum bilirubin, SGOT, SGPT, alkaline phosphatase), serum proteins, prothrombin time and HBsAg antigenaemia (Table II).

TABLE II. Correlation of AFP with Age, Sex, LFT and HBsAg Positivity.

|                     | n        | H.C.C. |     |                | Hepatitis |     |                | Cirrhosis |     |                | Met. Ca |     |                | Others |     |                |
|---------------------|----------|--------|-----|----------------|-----------|-----|----------------|-----------|-----|----------------|---------|-----|----------------|--------|-----|----------------|
|                     |          | ≤30    | >30 | X <sup>2</sup> | ≤30       | >30 | X <sup>2</sup> | ≤30       | >30 | X <sup>2</sup> | ≤30     | >30 | X <sup>2</sup> | ≤30    | >30 | X <sup>2</sup> |
|                     |          | 43     | 52  |                | 33        | 15  |                | 63        | 25  |                | 7       | 4   |                | 31     | 5   |                |
| Age                 | ≤30      | 9      | 4   |                | 42        | 40  |                | 30        | 40  |                | -       | -   |                | 32     | 20  |                |
|                     | >30      | 91     | 96  | *N.S           | 58        | 60  | N.S            | 70        | 60  | N.S            | 100     | 100 | N.S            | 68     | 80  | N.S            |
| Sex                 | Male     | 65     | 60  |                | 58        | 60  |                | 54        | 36  |                | 71      | 75  |                | 64     | 60  |                |
|                     | Female   | 35     | 40  | N.S            | 42        | 40  | N.S            | 46        | 64  | N.S            | 29      | 25  | N.S            | 36     | 40  | N.S            |
| Liver function test | Normal   | 7      | 4   |                | -         | -   |                | 29        | 36  |                | 14      | 50  |                | 26     | 20  |                |
|                     | Abnormal | 93     | 96  | N.S            | 100       | 100 | N.S            | 71        | 64  | N.S            | 86      | 50  | N.S            | 74     | 80  | N.S            |
| HBsAG               | Positive | 30     | 31  |                | 27        | 40  |                | 13        | 8   |                | 28      | -   |                | 6      | -   |                |
|                     | Negative | 19     | 27  | N.S            | 18        | 27  | N.S            | 38        | 64  | N.S            | 28      | -   | N.S            | 19     | 40  | N.S            |

\*N.S not Significant

## DISCUSSION

AFP has been detected not only in hepatic malignancies but also in cirrhosis, acute viral hepatitis and few other benign liver diseases<sup>4</sup>.

This finding has changed the previous concepts of AFP positivity being diagnostic of hepatocellular carcinoma. Present study and few others<sup>5-14</sup> show that sole positivity of AFP does not exclude other benign liver diseases. In fact high titres (200 ng/ml) or the rising titres determined by serial estimation are more diagnostic of hepatocellular carcinoma than a single reading<sup>15</sup>.

study shows similar pattern of AFP positivity in u-o.-ca acute viral hepatitis and cirrhosis. In the present study only 33.7% cases of hepatocellular carcinoma had AFP titres of more than 200 ng/ml in contrast to 100% in Singapore' (Figure 2). Previously it was believed that AFP rises only in HBsAg positive cases<sup>5</sup>. AFP levels in this and other series were elevated almost equally in patients with or without antigenemia<sup>16</sup>. Titers of AFP in the present study and in others<sup>17</sup> had no relation with age, sex or any of the liver function tests, except for few in which titres were very high in patients less than 30 years of age<sup>6-18</sup>

Previous studies showed that in hepatitis AFP levels rise when SGPT starts falling, therefore patients who fail to follow such a course have bad prognosis.<sup>18-19</sup> Serial estimations were not done in this study but variation in AFP titres (1—30500 ng/ml) indicate that cases were seen at various stages of the disease.

Positivity of AFP in benign liver diseases and extra hepatic diseases<sup>20</sup> and high percentage of negativity (45.3%) in hepatocellular carcinoma in this series makes this test insignificant for the diagnosis of hepatocellular carcinoma. However, further studies with serial estimation of AFP in cirrhotics having titres of more than 200 ng/ml will help in early detection of hepatocellular carcinoma.

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