



CODEN [USA]: IAJPBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.1248152>Available online at: <http://www.iajps.com>

Research Article

**CANCER ANTIGEN -125: CORRELATION WITH AMOUNT OF
ASCITES CAUSED BY CHRONIC LIVER DISEASE.**¹Dr. Amina Inayat Ullah, ²Dr. Azmeena Azam, ³Dr. Alvina Faiz¹WMO, Basic Health Unit, Aroop, Gujranwala.²WMO, THQ Hospital, Sabzazar, Lahore.³WMO, Abdul Aleem Khan Dispensary, Lahore.**Abstract:**

Objective: To find correlation between serum CA-125 levels and extent of ascites in chronic liver disease patients. Methodology: It is analytical study, conducted at Shifa international hospital, Islamabad, Pakistan over a period of one year from January 2012 to December 2012. Total 130 patients with chronic liver disease were enrolled, after confirmation of presence of hepatic cirrhosis on abdominal ultrasonography. Serum cancer antigen 125 level was measured in all patients. Presence of ascites was not made necessary for patients to be enrolled in study. The amount of ascites was confirmed by clinical examination and ultrasonography. The relation of CA-125 level with extent of ascites was drawn. Results: 57% patients had chronic liver disease due to hepatitis C virus infection, Child Pugh score C was in 60% patients. Moderate correlation was present between CA – 125 level and abdominal ascites (r 0.642, p value was less than 0.001). Thus it was observed that CA – 125 levels were significantly raised in patients suffering from ascites. P – value less than 0.001, which was statistically significant. Conclusion: There is moderate correlation between extent of ascites and serum cancer antigen 125 levels in patients with chronic liver disease. Thus CA – 125 can be used as a marker for ascites in CLD patients.

Key Words: Chronic liver disease, cirrhosis, liver, ascites, cancer antigen 125.

Corresponding author:**Dr. Amina Inayat Ullah,**

WMO,

Basic Health Unit,

Aroop, Gujranwala

QR code



Please cite this article in press Amina Inayat Ullah et al., **Cancer Antigen -125: Correlation with Amount of Ascites Caused By Chronic Liver Disease**, Indo Am. J. P. Sci, 2018; 05(05).

INTRODUCTION:

Cancer Antigen 125 is widely used as a marker for diagnosis and treatment of ovarian cancer [5, 6, 7]. It is also called MU-16. It is used to determine treatment response and recurrence rate. It was first detected in 1985 in mice ovarian cancer cells. Later it was used and searched in humans and has been widely used as a tumor marker in ovarian cancer. Its level in lymphangioliomyomatosis (LAM) has been investigated by Glasgow CG, et al and it was observed that CA-125 level was significantly raised in patients suffering from LAM [4]. The normal range of CA 125 is 0 to 35 U/ml.

Ascites is defined as accumulation of fluid in the peritoneal cavity. The causes of ascites are liver cirrhosis, tuberculosis, malignancy, intestinal or peritoneal tumors and/or renal failure. The under study title focuses on ascites caused by cirrhosis. Cirrhosis is defined as replacement of hepatic parenchyma with fibrous tissue. There are several causes of hepatic cirrhosis such as, autoimmune, hepatitis B and C virus, alcohol intake and/or drug induced. Chronic liver disease is labelled as presence of hepatic cirrhosis along with other stigmata i.e. ascites, spider nevi, gynecomastia, encephalopathy etc. The most common cause of liver cirrhosis in Pakistan is hepatitis C virus infection, while in developed world due to effective blood pre transfusion screening process, the cause has been reduced. But due to excessive alcohol intake in western world, cirrhosis due to alcohol intake has become the most common cause [1, 2, 3].

Zhu FL, et al in his research work measured the serum and ascites fluid CA-125 level and compared it. It was concluded that instead of only measuring serum CA-125 level, the combined tumor marker detection both in serum and ascetic fluid is a better prognostic marker, as it improves overall sensitivity and specificity [11].

The CLD disease burden in our society is very high, thus need to find more sensitive and specific markers for detection of complications was felt. In Pakistan every 9th person is suffering from hepatitis C virus infection due to quack practice in villages and due to use of improper sterilization ways. This study was conducted by keeping in view the disease burden and with aim to bring into practice use of detecting better diagnostic and treatment responder markers, so that mortality and morbidity rate can be reduced [8].

METHODOLOGY:

The study was conducted on 130 chronic liver disease patients who presented to outdoor or were admitted in the hepatology department of Shifa International Hospital Islamabad, Pakistan during January 2012 to December 2012. All patients had hepatic cirrhosis due to any cause, confirmed on ultrasonography. The patients belonged to ≥ 18 years age group. CT abdomen was performed in order to rule out ovarian carcinoma, as CA-125 is raised in ovarian cancer. The no ethical issue certificate was obtained from hospital ethical board, after approval of study objective. Liver cirrhosis diagnosis was confirmed by detailed history, complete clinical examination, investigations and abdominal ultrasound.

All participants were investigated for liver function tests, INR, PT, aPTT, Ca -125 and abdominopelvic ultrasonography. Laboratory investigations of all participants were obtained from hospital laboratory in order to avoid error. The sample collection and study was done on same day to avoid any change in serum values. OM-MA method was used to measure CA-125 levels. Normal value of CA – 125 was less than 35U/liter. Then values were divided into different ranges i.e. 35 to 100, 100 to 500, 500 to 1000 and more than 1000 U/liter.

Amount of ascites was also classified into different groups depending upon amount of fluid accumulation seen on abdominopelvic ultrasound.

Table 1: Amount of ascites

Classification	Amount of ascites
1	No ascites
2	Peri-hepatic area and around intestinal loops, seen only on ultrasonography.
3	Mild fluid accumulation, no abdominal distension, hepatosplenomegaly, easily seen on USG.
4	Fluid accumulation leading to abdominal distension.

Child Pugh scoring was used to assess hepatic disease severity. 5 to 6, 7 to 9 and 10 to 15 score was stratified into A, B and C, respectively. The information related to all participants was collected on a proforma. Informed written consent was taken from all patients and purpose of research was well explained to them. Data analysis was done using SPSS version 17. Categorical variables were evaluated by applying Chi-square test. For continuous variables student t test was applied. Amount of ascites and CA 125 level correlation was estimated by applying spearman's rank correlation analysis. P- value < 0.05 was considered significant.

RESULTS:

Table 2 shows baseline properties of all participants. 57% participants had cirrhosis caused by hepatitis C

virus infection. 60% patients had Child Pugh class C scoring and mean MELD score was 16.7 ± 5.2 . Ascites was absent in 22 patients. 429.5 ± 201 U/L was mean CA-125.

The correlation between CA-125 and amount of ascites is shown in table: 3. 14 out of 22 patients who were ascites free had normal serum CA-125 level, while remaining 8 out of 22 patients had only slightly raised serum CA-125 level. 41 patients had severe ascites, 12 patients had more than 1000 serum CA-125 level while only 3 out of these 41 patients had normal serum CA-125 value. Thus patients with severe ascites had significantly raised level of serum CA-125 in comparison with those who had no ascites [table: 4].

Table 2: Baseline properties of all participants.

Baseline characteristics	Values in %
Male	74 (57%)
female	56 (43%)
Mean age (years)	52 ± 9
Cause of CLD	
Hepatitis B virus	6 (4.6%)
Hepatitis C virus	74 (56.9%)
Others	50 (38.4%)
Child Pugh Class	
A	7 (5.3%)
B	45 (34.6%)
C	78 (60%)
MELD score (mean \pm SD)	$16.7 \pm 5.2\%$
Ascites	
Present	108 (83%)
absent	22 (16.9%)
CA-125 level	
Mean	429.5 ± 201
Normal	18 (13.8%)
35 to 100	19 (14.6%)
100 to 500	53 (40.7%)
500 to 1000	28 (21.5%)
More than 1000	12 (9.3%)
Other complications	
PSE	56 (43%)
SBP	61 (47%)
Upper GI bleed	16 (12.3%)

Table 3: CA-125 in patients with and without ascites.

	CLD with ascites	CLD without ascites	P value
Total patients	108	22	
Patients with raised CA-125	104 (96.2%)	8 (36%)	Less than 0.001
Mean CA-125	438 ± 208	32 ± 16%	Less than 0.001
Range	17 to 3048	10 to 101 U/L	

Table 4: Association between CA 125 level and ascites.

Amount of ascites	Normal CA 125	CA 125 (35 to 100)	CA 125 (100 to 500)	CA 125 (500 to 1000)	CA 125 (>1000)	Total	Significance
absent	14	6	2	0	0	22	P <0.001 R= .642
Mild	0	10	9	3	0	22	
Moderate	1	3	28	13	0	45	
severe	3	0	14	12	12	41	
total	18	19	53	28	12	130	

DISCUSSION:

The American journal of gastroenterology published an article conducted by Zuckerman E, et al in which the CA marker level in serum was measured amongst patients suffering from ascites. It was observed that CA-125 level was significantly raised in patients with ascites and its range was higher in patients with severe ascites as compared to those with mild or no ascites [1]. Similar conclusion was drawn by Qureshi MO, et al [2].

In Mayo clinic proceeding 2002, correlation between CA-125 and chronic liver disease was highlighted [3]. A comparative measurement of CA-125, CA 19-9 and AFP was done between patients suffering from benign and malignant ascites. Combined detection of these tumor markers in serum and ascites fluid increases the sensitivity index in comparison to only serum level estimation of these markers. The sensitivity of these markers in ascites was found to be 98.4% by Zhu F, et al. [11]. Furthermore, it was noted that CA 125, CA 19-9 and AFP were more sensitive for ascites caused by any malignancy than benign ascites. Singhal A, et al, studied 161 chronic liver disease patients, who were in advanced disease stage with high MELD scoring. CA-125 and CA 19-9 level was measured in all patients, it was concluded that 51.5% patients had raised CA 125 level and 36% patients had raised CA 19-9 level, irrespective of cause of ascites. Thus, raised serum markers level was associated with advanced liver disease; pathological changes caused in body by hepatocytes damage. Patients with high MELD score had higher

level of markers in comparison to low MELD scoring patients [9].

A multicenter study was conducted on 243 study population in China, in which serum CA-125 level of patients suffering from primary Budd Chiari syndrome was measured. A significant increase in serum level of CA-125 was observed and strong association was present between severity of disease, amount of ascites and degree of liver damage [10].

CONCLUSION:

There is moderate correlation between extent of ascites and serum cancer antigen 125 levels in patients with chronic liver disease. Thus CA – 125 can be used as a marker for ascites in CLD patients.

REFERENCES:

- 1- Zuckerman E, Lanir A, Sabo E, et al. Cancer antigen 125: a sensitive marker of ascites in patients with cirrhosis. *The American Journal of Gastroenterology*; 94 (6): 1613 – 1618.
- 2- Qureshi MO, Dar FS, Khokhar N. Cancer antigen- 125 a marker of ascites in patients with liver cirrhosis. *Journal of College of Physicians and Surgeons Pakistan* 2014; 24 (4): 232- 235.
- 3- Devarbhavi H, Kaese D, Williams AW, et al. Cancer antigen 125 in patients with chronic liver disease. *Mayo Clinic Proceedings* 2002; 77(6): 538-41.
- 4- Connie G, Rodriguez GP, Steagall WK, Haughey ME, Patricia A, et al. CA 125 in disease progression and treatment of lymphangioleiomyomatosis. *Chest Journal* 2018; 153(2): 339-348.

- 5- Bast RC. Commentary: CA 125 and the detection of recurrent ovarian cancer: a reasonably accurate biomarker for a difficult disease. 2010; 116 (12): 2850-2853.
- 6- Gupta D, Lis CG. Role of CA 125 in predicting ovarian cancer survival: a review of the epidemiological literature. *J Ovarian Res.* 2009; 2:13.
- 7- Park Y, Kim Y, Lee EY, Lee JH, Kim HS. Reference ranges for HE4 and CA125 in a large Asian population by automated assays and diagnostic performances of ovarian cancer. *Int. J. Cancer.* 2012; 130: 1136-1144.
- 8- Xiao W, Liu YL. Evaluation of serum and ascites cancer antigen 125 levels in patients with liver cirrhosis. *Journal of gastroenterology and hepatology* 2003;18 (11): 1315-16.
- 9- Singhal A, Lander E, Karachristos A, Daly E, Dowling P, Patel V, et al. Elevation of CA 125 and CA 19-9 in patients with end stage liver disease. *Int J Biol Markers* 2012; 27 (2): 147-151.
- 10- Cheng DL, Xu H, Lv W, Hua R, Du H, et al. The significance of serum 125 elevation in Chinese patients with primary Budd-Chiari Syndrome: a multicenter study. *Gastroenterology Research and Practice* 2015
- 11- Zhu F, Ling A, Wei Q, Ma J, Lu G. Tumor markers in serum and ascites in the diagnosis of benign and malignant ascites. *Asian Pacific Journal of Cancer Prevention* 2015: 16.