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RESEARCH ARTICLE

TO ACCESS LEVEL OF CA 19.9 (CARBOHYDRATE ANTIGEN 19.9) & CA125 (CARBOHYDRATE ANTIGEN 125) IN PATIENTS OF CANCER (OVARIAN, ENDOMETRIAL & PANCREATIC)

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Abstract

Purpose: To investigate the diagnostic value of CA 19.9 & CA125 in patients of cancer.

Methods: 100 randomly selected patients coming to Medicine & Gynae OPD with symptoms of cancer. Serum was taken and CA19.9 & CA 125 was analyzed by Electrochemiluminescent Immunoassay.

Results: It showed serum levels of CA19.9 & CA125 of patient with malignant ovarian, endometriosis & pancreatic tumor significantly higher than the control group. Out of total 50 patients for CA19.9, 45 were females & 5 males. Out of 45 females, 14 females & 3 males have raised value. All 3 males have significantly raised value more than 500 U/ml & All 3 had pancreatic carcinoma. Out of 14 females those had value more than 1000 had features of malignancy whereas rest females of value more than 100 had features of endometriosis. For CA125 total of 50 patients were taken out of which only 10 patients had raised CA125 level. All were females and 60% had value more than cut off that was 35u/ml. Out of the 10 females who had raised CA125, 6 had carcinoma & metastasis & rest 4 had endometriosis.

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Introduction:-

Tumour markers are substances that are produced by cancer or other cells of the body in response to cancer or certain benign conditions. Such substances are found in cells, tissues or body fluids and can be measured qualitatively or quantitatively by chemical, immunological, or molecular biological methods. Tumor markers are widely used in conjunction with radiology & histopathology to determine the type & course of therapy & to differentiate between remission & progression.

CA19.9 is a carbohydrate tumor associated antigen that was first discovered from colon cancer cell line (1). It is an O linked glycoprotein that was expressed as glycolipid on cell surface and was called as sialyl Lewis- a. CA19.9 is preferentially synthesized in normal non- malignant gastrointestinal or other epithelial cells. However in cancer cells because of aberrant sialylation process, sialyl Lewis-a which is simpler molecule is synthesized(2). Therefore CA19.9 is a marker for both Colorectal & Pancreatic carcinoma & used for monitoring patients with these cancers. CA19.9 levels >100U/ml is more likely to indicate the presence of malignant disease especially early stage of ovarian cancer(3).

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CA19.9 level >1000U/ml was often found in some benign disease such as common bile duct stone, acute cholangitis, acute pancreatitis and liver cirrhosis (4). CA19.9 & CEA are traditional screening criteria for gynecological pelvic malignancy without high specificity. CA 19.9 has relatively high sensitivity & specificity for pancreatic & biliary duct tumors(5-6). According to previous studies the sensitivity of CA19.9 in diagnosing pancreatic cancer ranges between 79% & 95% and specificity ranges between 82% & 91%(7-8). However markedly raised level of >10000U/ml were observed in advanced stages of malignancy(9). CA19.9 tumor marker rises in some ovarian masses although it commonly elevates in gastrointestinal & pancreatic malignancies.

CA125 is a glycoprotein with about 200KDa molecular weight and is the most frequently used biomarker for ovarian cancer. Around 90% of women with advanced ovarian cancer have elevated levels of CA 125 in blood serum making CA125 a tool for detecting ovarian cancer after onset of symptoms.

CA125 is a type of cell surface glycoprotein which is best known tumor marker of ovarian carcinoma as it rises in more than 80% of non mucinous epithelial ovarian carcinoma(10). One of the most common benign disease that are associated with increase level of CA125 is endometriosis(11-14). But rarely elevates more than 100 IU/ml(15). In case of rupture of endometrioma the concentration of CA125 elevates more than 10000IU/ml(16).

Purpose:

To investigate the diagnostic value of CA 19.9 & CA125 in patients of cancer.

Methods:-

100 randomly selected patients coming to Medicine & Gynae OPD with symptoms of cancer. Serum was taken and CA19.9 & CA 125 was analyzed by Electrochemiluminescent Immunoassay.

Results:-

It showed serum levels of CA19.9 & CA125 of patient with malignant ovarian, endometriosis & pancreatic tumor significantly higher than the control group. Out of total 50 patients for CA19.9, 45 were females & 5 males. Out of 45 females, 14 females & 3 males have raised value. All 3 males have significantly raised value more than 500 U/ml & All 3 had pancreatic carcinoma. Out of 14 females those had value more than 1000 had features of malignancy whereas rest females of value more than 100 had features of endometriosis. For CA125 total of 50 patients were taken out of which only 10 patients had raised CA125 level. All were females and 60% had value more than cut off that was 35u/ml. Out of the 10 females who had raised CA125, 6 had carcinoma & metastasis & rest 4 had endometriosis.

A total of 100 patients were taken 50 for CA19.9 & 50 for CA 125.

Out of total 50 patients for CA19.9, 45 were females & 5 males. Out of 45 females, 14 females have raised value & 3 males have raised value. All 3 males have significantly raised value more than 500 U/ml. All 3 had pancreatic carcinoma.

The mean±SD age of 50 patients for CA 19.9 was 44.96±13.59 years ranging from 17-80 years. And for CA 125 was 39.4±12.85. There was no significant difference in age between both the levels and had no correlation with each other.

Mean ±SD for raised/unraised value of CA19.9 was 3540±8809 & 44.43±212.4 & mean for age/SD for raised & unraised was 46.70±116.0 & 44.75±26.78 Mean for male/female value of CA19.9 for male mean±SD 1164±5490 & for females 3751±28.8.

Mean & SD for raised & unraised and for male & females was significant with P<0.05.

Table No 1:- (CA19.9 Raised & Unraised).

CA19.9 RAISED/ UNRAISED

Parameter	Mean±SD Raised	Mean±SD Unraised	T value	P value	Significant
CA19.9(Age)	46.70±116.0	44.75±26.78	0.0927	0.9265	NS(P≥0.05)
Observed value	3540±8809	44.43±212.4	2.3009	0.0258	S(P<0.05)

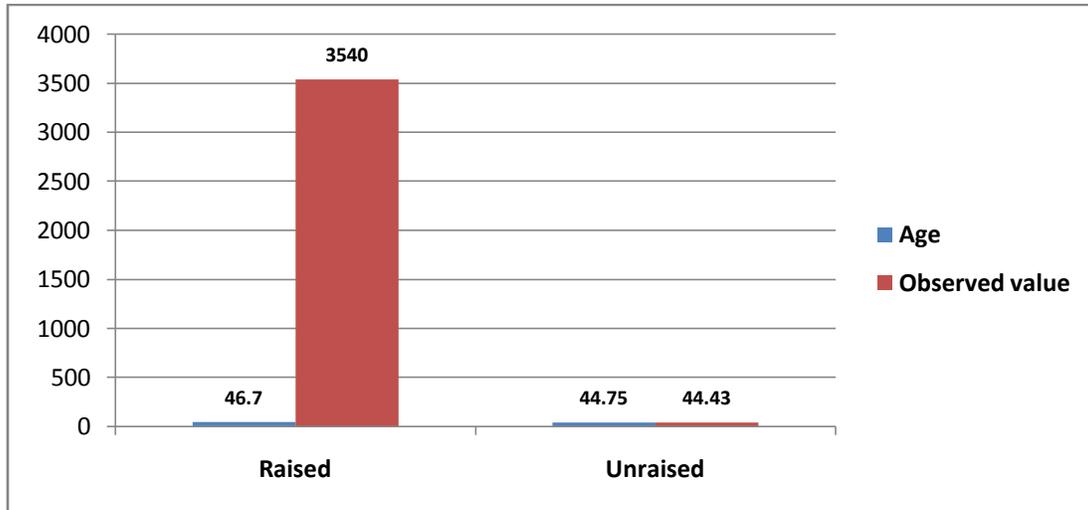


Table No 2:- Gender CA19.9 (Male/ Female).

CA19.9 MALE/ FEMALE					
Parameter CA19.9	Male Mean±SD	Female Mean±SD	T value	Pvalue	Significant
Age	43.58±47.68	59.33±16.16	0.0216	0.9829	NS(P≥0.05)
Observed value	1164±5490	3751±28.38	3.4622	0.0011	S(P<0.05)

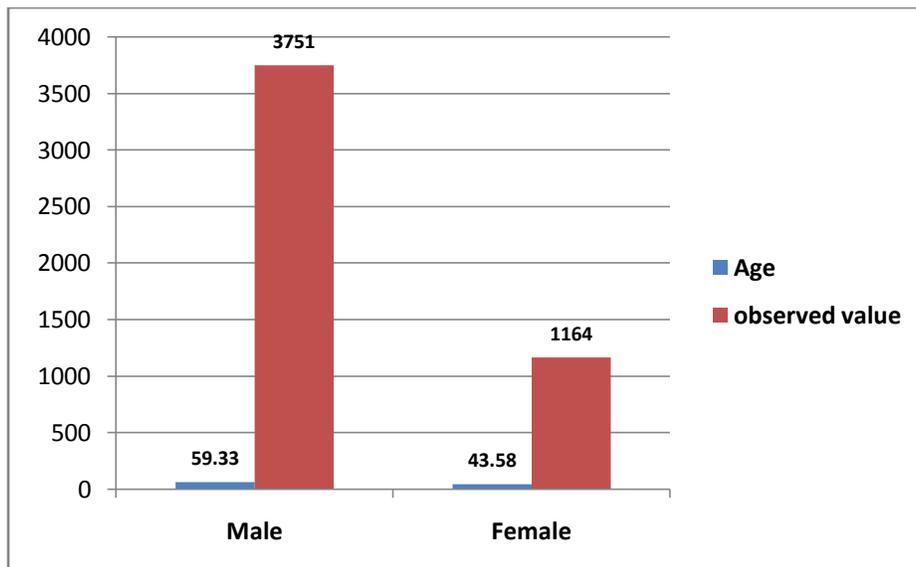
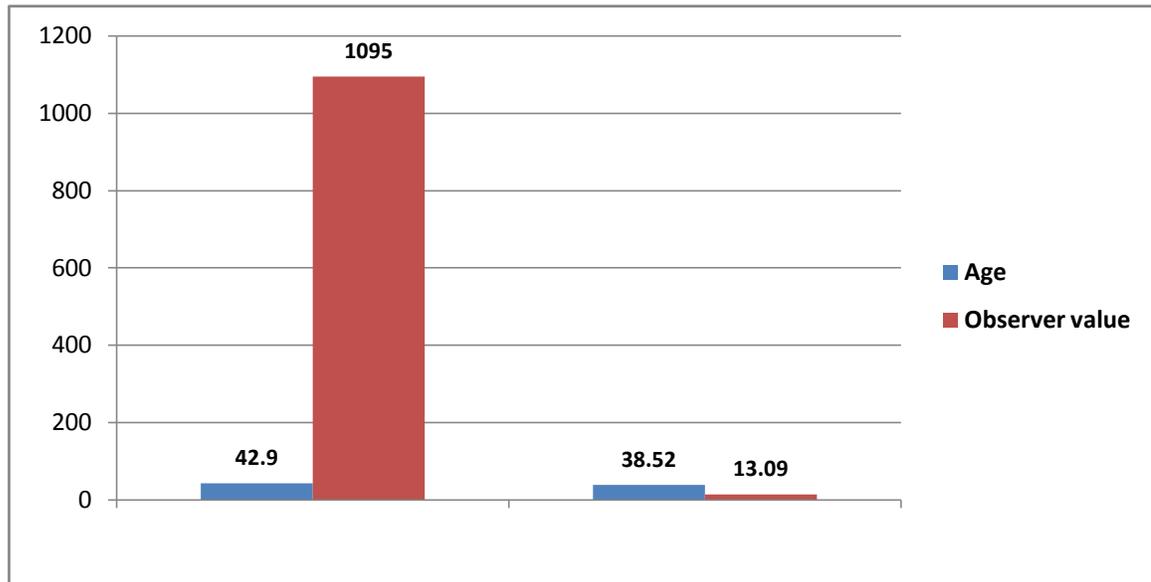


Table No 1:- (CA 125 Raised & Unraised).

CA125 Raised/Unraised					
Parameter	Raised Mean±SD	Unraised Mean±SD	T value	Pvalue	Significant
Age	42.9±17.01	38.52±11.69	0.9636	0.3401	NS(P≥0.05)
Observed value	1095±2118	13.09±8.646	3.3365	0.0016	S(P<0.05)

**Discussion:-**

We documented that serum CA 19.9 level are significantly higher in patients with malignant disease than in with benign clinical conditions & cut off value can be determined for differentiating benign conditions from malignant ones.

Therefore below reference range CA19.9 serum levels do not rule out the presence of malignant disease even for cases of gastrointestinal malignant disease in which CA19.9 is commonly used as tumor marker.

An important caveat when interpreting high serum CA 19.9 levels is that it is not specific marker for gastrointestinal disorders. Serum CA19.9 levels have been reported to be elevated in benign gynaecological conditions, such as dermoid cysts, mucinous cystadenoma & benign ovarian cysts as well as malignancies such as epithelial ovarian carcinomas & borderline ovarian tumours.

In about 25 patients out of 100 both CA125 & CA19.9 was done only 5 patients had both raised which had clearcut signs of malignancy.

References:-

1. Del Villano BC, Brennan S, Brock P, Bucher C, Liu V, Mc Clure M, et al. Radioimmunoassay for monoclonal antibody defined tumor marker, CA19.9. Clin Chem 1983;29:549-52.
2. Tuccillo FM, de Laurentis A, Palmieri C, Fiume G, Bonelli P, Borrelli A, et al. Aberrant glycosylation as biomarker for cancer: Focus on CD43. BIOMED Res INT 2014;74:28-31.
3. Saluja SS, Sharma R, Pal S et al. Differentiation between benign and malignant hilar obstruction using laboratory and radiology investigation: a prospective study. HPB (Oxford) 2007;9:373-82.
4. Mimidis K, Anagnostoulis S, Iakovidis C, et al. Remarkably elevated serum levels of carbohydrate antigen 19.9 in cystic duct and common bile duct lithiasis. J Gastrointest Liver Dis 2008;17:111-2
5. Boeck, S., Stieber, P., Holdenrieder, S, Wilkowsky, R and Heinemann, V. Prognostic and therapeutic significance of carbohydrate antigen 19-9 as tumor marker in patients with pancreatic cancer. Oncology 70(4), 255-264 (2006).

6. Tian, F, Appert, H. E, Myles, J & Howard, J. M. Prognostic value of serum CA19.9 levels in pancreatic adenocarcinoma. *Ann, Surg.* 215(4), 350-355(1992).
7. Safi, F, et al. High sensitivity and specificity of CA19.9 for pancreatic carcinoma in comparison to chronic pancreatitis. Serological and immune-histochemical finding. *Pancreas* 2(4)398-403 (1987).
8. Goonetilleke, K. S & Siriwardena, A. K. Systematic review of carbohydrate antigen (CA19.9) as a biochemical marker in the diagnosis of pancreatic cancer. *Eur. J. Surg. Oncol.* 33(3),266-270(2006).
9. Lao G, Liu C, Guo M, Cheng H, Lu Y, Jin K et al. Potential Biomarkers in Lewis Negative Patients with pancreatic cancer. *Ann,Surg* 2017;265:800-805[CrossRef].
10. Park CM, Kim SY. Rupture of an endometrioma with extremely high serum CA125 level (>10000 IU/ml) and ascites resembling ovarian cancer. *Eur J Gynaecol Oncol* 2014 ;35: 469-472.
11. Tsaco KC, Hong JH, Wu TL, Chang PY, Sun CF, Wu JT. Elevation of CA19-9 and Chromogranin A, in addition to CA125, are detectable in benign tumors in Leiomyomas and endometriosis. *J Clin Lab Anal* 2007; 21:193-196.
12. Shiau CS, Chang MY, Chiang CH, Hsien CC, Hsieh TT. Ovarian endometriosis associated with very high serum CA 125 levels. *Chang Gung Med J* 2003; 26:695-969.
13. Phupong V, ChenO, Uitchaswadi P. High level of CA 125 due to large endomerioma. *J Med Assoc Thai* 2004;87:1108-1111.
14. Kahraman K, Ozguven I, Gungor M, Atabegoglu CS. Extremely elevated serum CA 125 levels as a result of unruptured unilateral endometrioma: The highest value reported. *Fertil Steril* 2007;88:967-968.
15. Kurata H, Sasaki M, Kase H, Yamamoto Y, Aoki Y, Tanaka K. Elevated serum CA 125 and CA 19-9 due to the spontaneous rupture of ovarian endometrioma. *Eur J Obstet Gynecol Reprod Biol* 2002; 105:75-76.
16. Park BJ, Kim TE, KIM YW. Massive peritoneal fluid and markedly elevated serum CA125 and CA19-9 Levels associated with an ovarian endometrioma. *J Obstet Gynaecol Res* 2009;35:935-939.