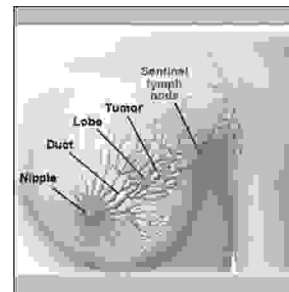


ORIGINAL

PROF-744

BREAST CANCER; EVALUATION OF CA 15-3 SERUM LEVELS



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ABSTRACT... Introduction: CA 15.3 is a useful parameter in the management of patients in different stages of the breast cancer. **Objectives:** (1) To evaluate the level of CA 15-3 in stage III carcinoma of breast. (2) To study the role of immunoglobulin G and cathepsin D. **Patients & Methods:** Serum CA 15-3 was assayed in a group of 25 female breast cancer patients with stage III. Method used for determination of CA 15-3 is IMMULITE Automated Immunoassay System. **Result:** 25 patients were taken in the study. It was observed that the level of CA 15-3 and cathepsin D is significantly increased in patients as compared to control subjects. Although the level of IgG was also increased but it shows no significant difference. **Conclusion:** It is concluded that CA 15-3 can be used as tumor marker especially in the 3rd stage of breast cancer and also for monitoring the treatment. IgG shows the role of body defense mechanism system in breast cancer. Whereas protease like cathepsin D shows the extent of metastasis.

Key words: CA 15.3 cathepsin D, IgG, Breast cancer.

INTRODUCTION

Carcinoma of breast is characterized by a variable course and prognosis, which depends on disease stage at presentation. The role of blood tumor markers in monitoring response of advanced breast cancer to endocrine therapy and standard chemotherapy is established. A number of studies reported the significance of CA 15-3¹.

CA 15.3 (also referred as CA 27.29), a new tumor marker, is a glycoprotein antigen produced in greater

amounts by breast tumor cells. Its biological function is not well defined, but it may play a role in intracellular recognition, regulation of immune response a metastasis cancer. It is mainly used to follow response to therapy in metastatic disease. A study² reported that serum CA 15-3 level in breast cancer patients could be correlated with early stages of disease (I+II) and those with more advanced cancer (III+IV) revealed statistically significant ($p < 0.01$) difference in the mean serum CA 15-3 value².

A group of workers concluded that the CA 15.3 is a

useful parameter in the management of patients in different stages of the disease levels above 36 U/ml are suggestive of metastasis and above 86 U/ml are indicator of metastasis . On the other hand, CA 15-3 does not seem to be helpful in the pre operative differential diagnosis of breast lumps.

It was found that CA 15-3 values increased after every 3 months on average before clinical diagnosis. In treated patients there was a better correlation with a clinical course of disease for CA 15-3 as compared to other determined markers⁴. Quantitative measurement of immunoglobulin G (IgG) is useful in a variety of clinical conditions that involve the assessment of immunocompetence and function, response to immunization abnormality and neoplastic proliferation of lymphocytes⁵.

PURPOSE OF STUDY

To evaluate the level of CA 15-3 in stage III carcinoma of breast using standard kit method.

PATIENTS & METHODS

The usefulness of post operative serum CA 15-3 was assayed in a group of 25 female breast cancer patients with stage III. Method used for determination of CA 15-3 is IMMULITE Automated Immunoassay System⁶

Subjects	CA-15-	IgG(g/1)	Cathepsin
Normal	28.50 ± 3.99	23.93	2.90 ±0.21
Patients	60.47 ±	26.30 ±	5.2 ± 0.37**

*P**<0.001= Highly significant difference*

RESULTS

Variation of biochemical parameters like CA 15-3, cathepsin D and immunoglobulin G was observed in patients with stage III of breast cancer (table). CA 15-3 and cathepsin D were significantly ($p<0.001$) increased in patients as compared to normal subjects. Although the level of immunoglobulin G was increased in patients as compared to normal subejcts but shows no significant

difference

DISCUSSION

Metastatic dissemination of cancer rather than the primary tumor is primarily responsible for treatment failure and death in cancer patient. Metastasis is already present in more than 70% of patients at the time of their diagnosis⁷. The ability to cure primary malignancies with local intervention, surgery or radiation is limited. Less than one third of patients fall into curable category⁸.

Present study showed that the level fo CA 15-3 was significantly increased in patient with stage III of breast cancer. **The study is proved by a group of workers, who found that mean CEA serum levels independent of TNM staging.** During follow up, 21 (20.4%) patients showed recurrence of cancer and overall CA 15-3 sensitivity was 61.1%, with 91.2% specificity. They suggested that tumor marker measurement may be useful in post surgical follow up, but at present they are neither sensitive nor specific enough for early diagnosis of malignancy. On the other hand, a group of workers¹⁰ assayed 166 breast cancer patients at all stages. In 99 pre treatment sera, only 9.1 % sera gave CA 15-3 positive. They found that an abnormal CA 15-3 after primary treatment was of poor prognosis.

Besides tumor marker CA 15-3, level of IgG was also raised in patients. Many studies suggest a relationship between immune response and tumor. It was proposed that the immune system plays an important role in delaying the growth by causing regression of established tumor. A variety of evidence has supported these idea. Its frequency is more in the neonatal period and old age, when the immune system functions less effectively¹¹. It was reported that when reference values of IgG exceeded, the possibility of chronic diseases such as inflammation, autoimmune diseases or neoplasm should be considered¹². Another group of workers reported that when breast cancer patient were immunized with the vaccine of IgG they showed a clinical response¹³. Protease have been implicated in a number of pathophysiologic processes including cell proliferation, bone resorption, arthritis tumor growth and / or

metastasis¹⁴.

We also observed the significant increased level of cathepsin D in patients as compared to normal subjects. According to a number of reports elevated levels of proteases are present in solid tumor of breast, ovary, prostate, lung etc. These proteases not only degrade the tissue components of the extra cellular matrix but also activates proenzymes and thus help to support tumor cell invasion and metastasis¹⁵⁻¹⁸. whereas some reported data is in contradiction¹⁹.

CONCLUSION

It is therefore concluded that CA 15-3 may be used as tumor marker especially in the stage III of breast cancer and also for monitoring the treatment. IgG shows the role of body defense system in cancer. Whereas the protease like cathepsin D shows the extent of metastasis.

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