ORIGINAL RESEARCH PAPER

General Surgery

CRUCIAL IMPORTANCE OF HORMONE RECEPTOR STATUS IN CA BREAST - A CLINICAL ASSESSMENT.

KEY WORDS: .

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ABSTRACT

Breast cancer is one of the most common cancers among women of all age groups.. Breast cancer treatment involves a multidisciplinary approach. Hormone therapy is one among the treatment modality. Estrogen, progesterone and Her2 neu receptor status estimation is very crucial at present in order to predict the tumor response to the hormone therapy. In our study a total of 75 female patients with breast cancer in our institute were studied. The incidence of ER, PR, Her2 neu receptors among them correlating with age, tumor size, histological type and the pathological grading was evaluated. The results were comparable with the previous studies and thus reinforce the usefulness of estimation of the receptor status for treatment purpose in breast carcinoma

AIM OF STUDY: Role of Receptor status positivity as an indicator in relation to manipulation of endocrine therapy in Ca Breast. To assess the incidence of hormone receptor positivity in females with carcinoma breast.

OBJECTIVES OF THE STUDY :

1. To identify hormonal receptor status in female patients with breast malignancies.
2. To predict the tumor response to endocrine therapy.
3. To compare hormonal receptor status with clinico-pathological grading of the tumor.
4. To formulate the adjuvant treatment modality.

INTRODUCTION:

Estrogen receptors are proteins found inside cells. They are activated by the hormone estrogen (17□-estradiol).

There are two different forms of the estrogen receptor.
- ER α
- ER β

Encoded by genes
ESRI and ESR2 respectively.

Hormone-activated estrogen receptors form dimers.
- o Homo dimers - ERα (αα) or ERβ (ββ)
- o hetero dimers -ERαβ (αβ)

Why this causes tumorigenesis, is explained by two hypotheses:

Binding of estrogen to ER
⇩
stimulates the proliferation of mammary cells
⇩
increase in the cell division
⇩
DNA replication
⇩
leading to mutations.
Estrogen metabolism.
⇩
Produces genotoxic waster
⇩
mutations
Both these processes
⇩
Disruption of the cell cycle, apoptosis and DNA repair
⇩
Carcinogenesis

PROGESTERONE RECEPTOR:

The progesterone receptor (also known as NR3C3) is a protein found inside cells belonging to nuclear receptor subfamily. It is activated by progesterone, a steroid hormone.

PR is encoded by a single PGR gene on chromosome 11q22. It has two main forms
- PR A
- PR B

After progesterone interacts with its receptor, dimerization occurs and the Pg- PgR complex enters into the nucleus and then binds to DNA.

Her 2 new (erbb2) receptors:

ERBB2 a proto-oncogene located at the human chromosome 17 (17q12).

The ErbB family consists of 4 membrane-bound receptor tyrosine kinases.

The other members of this family are
- epidermal growth factor receptor
- erbB-3
- erbB-4

HER2 can dimerise with any of the other three receptors. Dimerisatin results in autophosphorylation of the tyrosine residues and initiates a variety of signaling pathays. It promotes cell proliferation and also opposes apotosis.

ERBB2 gene amplification occurs in nearly 15-30% cancers. It results in increased recurrence of the disease and poor prognosis. The estrogen, progesterone and the Her2 new receptors are estimated from the sample using immuohistochemistry technique.

MATERIALS AND METHODS

A study of 75 cases of carcinoma breast in females were done. Patients for clinical study were selected from the general surgical wards of Madras medical college hospital for a period of 18 months. The study subjects were selected accordingly,

Inclusion criteria

Clinically diagnosed breast malignancy in females of all age groups.

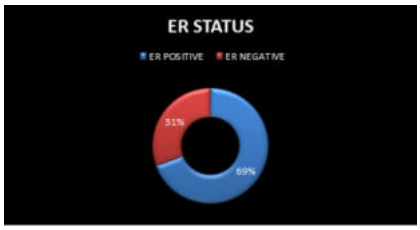
Age of patient, tumor size, histological subtype and grading of the tumor.

Trucut biopsy and mastectomy specimens.

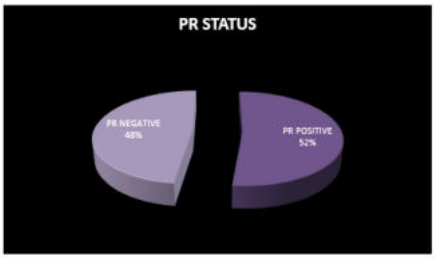
Exclusion criteria:
Patients already treated for contralateral breast carcinoma.
Male breast carcinoma.

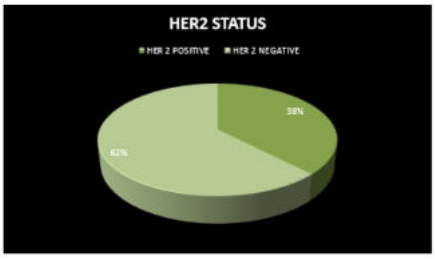
Methods used:
Biopsy samples (either Trucut biopsy or post-op mastectomy specimens) were sent to pathology lab where they were processed and analysed for the histological subtype of the tumor,grading . Hormonal receptor assay was done using Immunohistochemistry technique in our college pathology department and results were interpreted.

RESULTS:



In our study a total of 75 female patients with breast cancer in our institute were studied the incidence of ER, PR, Her2 neu receptors among them correlating with age, tumor size, histological type and the pathological grading was evaluated. 52 patients (69.33%) were positive for estrogen receptor and 23 (30.66%) were negative. 39 patients (52%) were progesterone receptor positive and 36 (48%) were progesterone receptor negative. 28 (37.33%) patients had Her 2 receptor positive and 47 (62.66%) were negative.





CONCLUSION:
Most of the tumors in women above 45 years of age were hormone receptor positive. In women younger than 45 years both positive and negative were nearly equal. Similar results were observed in tumors less than 5 cm where positivity predominated and more than 5 cm where both positive and negative were utmost equal. Her 2 was more negative in most of the patients of our study irrespective of age and tumor size.

These results were comparable with the previous studies and thus reinforce the usefulness of estimation of the receptor status for treatment purpose in breast carcinoma. .All patients with hormone receptor positivity were started with tamoxifen 10 mg bd for a total duration of 5 years and their compliance is good till date with minimal side effects.

References:

1. Hawkins RA, Roberts MM, Forest APM. Oestrogen receptors and breast cancer current status. Br J Surg 1980, 67: 162-165.
2. Rosen PP, Menendez - Botet CJ, Nisselbau, JS. Pathological review of breast lesions analysed for ER protein: Cancer 1975; 35 : 3187-3194.
3. Reiner A, Reiner G, Spona J. Histopathologic characterization of human breast cancer in correlation with ER status: A comparison of immunocytochemical and biochemical analysis. Cancer 1988; 64 : 1149-1154.
4. Lesser ML, Rosen, PP, Seine RT. Estrogen and progesterone receptors in breast carcinoma; correlations with epidemiology and pathology. Cancer 1981; 48: 299-309.
5. Nadji M. Immunohistochemistry of estrogen and progesterone receptors reconsidered : experience with 5,993 breast cancers. Am J Clin Pathol 2005; 123(1) : 21-27.
6. Onitilo AA, Engel JM, Greenlee RT, Mukesh BN. Breast cancer subtypes based on ER/PR and Her2 expression: Comparison of clinicopathological features and survival. Clinical Medicine And Rapid Release 2009 February. Available from : URL: http://www.clinmedres.org/cgi/content/abstract/cmr.2008.825vl.