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RESEARCH ARTICLE
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CHARACTERIZING BREAST CANCER STAGES ON THE BASIS OF CORRELATION

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ABSTRACT:
Aim of the study was to characterize the different stages of breast cancer and their role in early diagnosis and prognosis. Qualitative data in different stages of breast cancer showed maximum cases of stage 3 (T3) n= 85 among all stages. Out of 85 patients n=67 belong to T3N0M0, means carcinoma in situ with size of tumor greater than 5cm, no nodal involvement and metastasis. Cases n=2 belong to T3NIMO and T3N2M1, means carcinoma in situ with size of tumor greater than 5cm, fixed nodal involvement with or without metastasis. Maximum frequency of patients noted in stage 4 then stage 2 frequency noted increased. Least were of stage 1. Metastasis to ipsilateral, non-matted and small in size lymph node was more frequent after that to contralateral, either bigger in size or matted lymph nodes. Correlation between different stages and metastasis showing a significant association noted among stages and metastasis to nodes and other organs.

CONCLUSIONS: The study shows good prognosis and beneficial role of TNM staging in hormone receptor-positive breast cancer as it shows delay metastasis to lymph nodes and other tissues.

KEY WORDS: TNM classification, metastasis, correlation

INTRODUCTION:

In 1953 tumor classification at the name of TNM classification was printed in research journals, by Dr Pierre Denoix.[1] In 1958, the Union for International Cancer Control (UICC) decided to implement the TNM classification for breast and larynx cancers Globally. Since 1960 to 1967, the UICC printed in journals about recommendation of TNM classification for 23 solid tumors, and the first TNM official version was edited in 1968.[2]

Staging of cancer is essential step to classify the disease and recognize its state at time of diagnosis as well as to make decision for proper treatment. After the diagnosis revision of staging determine the result of therapy and prognosis. Staging gives the information about tissue morphology and molecular type. Information via staging system about local or distant dissemination with involvement of different tissues and deterioration in their function is corner stone for physician's steps regarding treatment.[2,3] Standardization related to the focused test, type and timing for initial staging system is essential to prevent variability among different hospitals.

Most of the breast cancer case diagnosed earlier before the dissemination and at that time staging is of little importance which defines the lack of base line investigation for staging system.[4-10]. The benefit of staging investigations is virtually less for patients with early diagnosis but owe the great yield for patients with late diagnosis.[11-13] Mistake in staging can lead to misuse of facilities and deception with patient. This misdealing can be harmful.[14] Authentic experimental research and experience are inspiring in making treatment plane and improving health care system.[15] Breast cancer is increasing health burden and treatment facilities should be rationale. Cancer causes unrest in whole family as well as it leads to depression in the patient as chronic illness leads to mental distress[16].

Anticancer drugs, radiotherapy and surgery are the main stay of treatment but chronically ill patients also use herbal medicine as a natural source of treatment [17,18]. Implication and designing of staging especially in new cases of breast cancer should be more considerable for physicians. Upcoming strategies to use minimum diagnostic tools for early cases of breast cancer staging are admiring.[19-20]

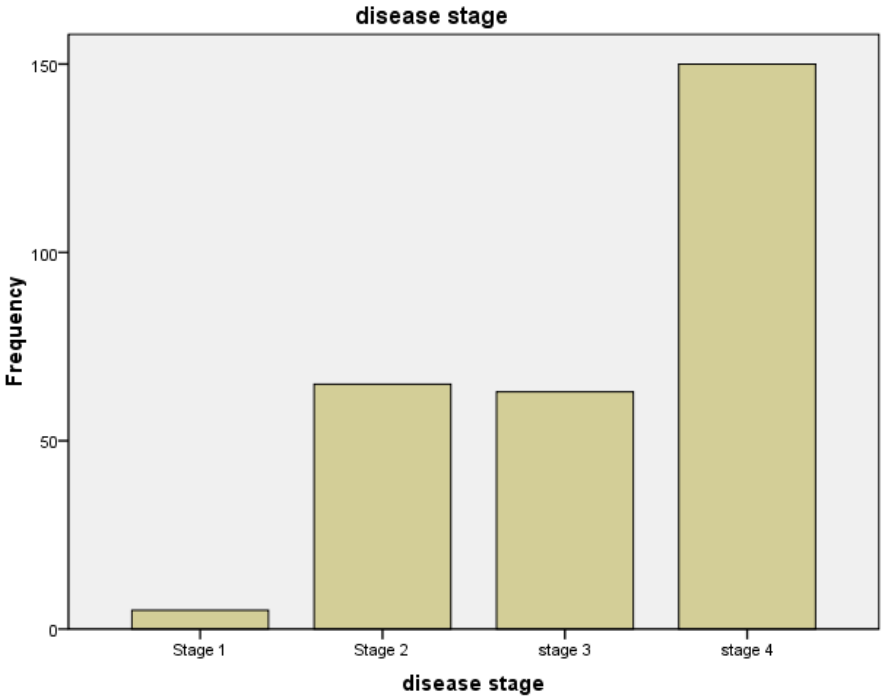
METHODOLOGY:

The present study was carried out on 280 known patients of breast cancer taken from Jinnah Post Graduate Medical Centre, (department of oncology) randomly selected from community. Inclusion Criteria was Clinically and histopathologically diagnosed cases of breast cancer . Selected patients passing through different stages like stage 1, stage II, stage III and stage IV. The staging was done on the basis of TNM staging system of breast cancer. TNM staging criteria describes observations related to tumor size (T), degree of involvement of regional lymph nodes (N) and metastasis (M). Exclusion Criteria was Male patients, Patients suffering from primary Bone diseases, Diabetes, Hepatobiliary disease and previous history of any other type of malignancy were excluded from the study.

Consent form was described orally to every patient and signature was taken. Study design was approved by Board of Advance Studies, University of Karachi and ethical committee of Jinnah Post Graduate Medical Centre. Polyurethane boxes containing dry ice are used to ship and transport samples and stored at –70 degree C. Tumor tissues for histopathology collected (Formalin-fixed paraffin-embedded tissue specimens). Tissues were examined for tumor characteristics at chromosome and molecular level at JPMC and BMSI.

RESULTS:

Maximum frequency of patients noted in stage 4 then stage 2 frequency noted increased. Least were of stage 1. Metastasis to ipsilateral, non-matted and small in size lymph node was more frequent after that to contralateral, either bigger in size or matted lymph nodes. Correlation between different stages and metastasis showing a significant association noted among stages and metastasis to nodes and other organs. Diagram showing most frequent cases were stage 4



Frequency Table

Table 1:Showing percentage and frequency of different stages in diseased persons. Maximum frequency of patients noted in stage 2 after that of stage 4 noted. Least were of stage 1.

Stage T

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	22	7.8	7.8	7.8
	2	102	36.0	36.0	43.8
	3	70	24.7	24.7	68.6
	4	89	31.4	31.4	100.0
	Total	283	100.0	100.0	

Showing frequency and percentage of nodal metastasis. Metastasis to ipsilateral, non-matted and small in size lymph node was more frequent after that to contralateral, either bigger in size or matted lymph nodes.

Stage N

Stage N

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	91	32.2	32.2	32.2
	1	104	36.7	36.7	68.9
	2	70	24.7	24.7	93.6
	3	18	6.4	6.4	100.0
	Total	283	100.0	100.0	

Table-: Showing frequency and percentage of metastasis and non- metastasis cases. Metastasis was found more frequent as compare to non-metastasis.

Stage M

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no metastasis	131	46.3	46.3	46.3
	metastasis present	152	53.7	53.7	100.0
	Total	283	100.0	100.0	

Inter-Item Correlation Matrix

	Stage T	Stage N	Stage M
Stage T	1.000	-.148	.208
Stage N	-.148	1.000	.185
Stage M	.208	.185	1.000

Table showing correlation between different stages and metastasis. A significant association is noted among stages and metastasis to nodes and other organs.

		Stage T	Stage N	Stage M
Stage T	Correlation	1	-.148*	.208**
	Sig. (2-tailed)		.012	.000
	N	283	283	283
Stage N	Correlation	-.148*	1	.185**
	Sig. (2-tailed)	.012		.002
	N	283	283	283
Stage M	Correlation	.208**	.185**	1
	Sig. (2-tailed)	.000	.002	
	N	283	283	283

DISCUSSION:

TNM classification not only categorized the cancer spread into stages but also important for the treatment planning. The TNM staging system determines the prognosis and out-come of treatment. Related morbidity of different stages and side effects of selected medicines on body are also can be recognized by revising staging. TNM staging is still a hot topic for researchers. Because of increasing number of cases oncology is becoming a great field of interest since two decades. TNM system of cancer classification is more superior among other classification because it describes the cancer tissues size, site, involvement of other local or distant tissues and lymph nodes simultaneously. This information is necessary to understand the depth and extent of cancer to decide the treatment and prognosis. TNM staging system connects the advancement in diagnostic and therapeutic fields to molecular biology thereby solves the current problems of oncology.[21,22]I our study maximum frequency of patients noted in stage 4 then stage 2 related cases frequency noted increased. Least were of stage 1. Metastasis to ipsilateral, non-matted and small in size lymph node was more frequent after that to contralateral, either bigger in size or matted lymph nodes. Correlation between different stages and metastasis showing a significant association noted among stages and metastasis to nodes and other organs.

A large observation at St. Gallen by attendees has been done and in a Consensus Meeting during 2011, it has been decided by AJCC[23,24] that breast cancer should be classified on the basis of bio-molecular subtypes: luminal A [estrogen receptor (ER) positive and/or progesterone receptor (PR) positive, human epidermal growth factor receptor 2 [HER-2] negative], luminal B (ER positive and/or PR positive, HER-2 positive), HER-2 positive (ER negative, PR negative, HER-2 positive), and triple negative (ER negative, PR negative, HER-2 negative)[25,26]. Now breast cancer is entitled as a complex disease with different molecular aspects. Theses aspects are responsible for versatility in

treatment and its response which could be due to different risk factors like genetics, environment, and nutrition as well as life pattern.[25-28].

Out-come of disease and decision regarding treatment depends upon biological subtypes and TNM staging. This combination has brought a great diversity in therapeutic field of cancer[29]. The 8th edition of the AJCC staging system consider the amendment in TNM staging with tumor grade, triple hormone receptors such as ER and PR expression, HER-2 expression and presence or absence of BRCA genes rather than alone.[23].

The 8th edition of the AJCC staging system is purely prognostic and complete, which solely enlightens the more authentic way for cancer cure. Staging system which covers anatomic and biological aspects of cancer tissues are more successful in determination of morbidity and mortality as well as in selection of medicines.[30]

CONCLUSIONS:

The data shows good prognosis and beneficial role of TNM staging in hormone receptor positive breast cancer. As it shows delay metastasis to lymph nodes and other tissues.

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