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Evaluation of Hormone Replacement Therapy in Breast Cancer Patients

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ABSTRACT

The aim of the study is to evaluate hormone replacement therapy for breast cancer patients. The goals are to analyses the evaluation of progesterone and estrogen level in a breast cancer in patient, to evaluate and management of hormone replacement therapy breast cancer and to evaluate the role of HER 2 receptor in breast cancer. For a six-month period, a prospective observational study was conducted among the patients in the oncology department at the Erode Cancer Center in Thindal. The investigation was not open to patients who were younger than 20 or who refused to participate in the trial. Reports on prescription patterns, co-morbidity, and individual demography were made available. The current study was conducted in the 100-bed inpatient oncology department. All female and male patients with breast cancer who were at least 20 years old and willing to provide consent were included in the study. The study excluded individuals who are not willing to participating in the study, severally ill patients, Patient who are below 20 years of age, Pediatrics patients. To obtain the necessary patient data, a correctly designed data collection form was utilized to gather information from patient interviews and the medical file. Clinical pharmacy services will be expanded in patient care through the use of a validated questionnaire and concluded that 70% of patients with metastatic breast cancer have hormone receptor-positive, HER2-positive illness, our study concluded that the main reason for the metastatic breast cancer is that HER-2-positive hormone levels was found to be increased.

Keywords- Breast Cancer, Hormone therapy, Metastatic disease

INTRODUCTION

Breast cancer is the most prevalent cancer among young adult (YA) women in Japan, with it making up 21.8% of all cancers, while cervical cancer (12.8%) and malignant germ cells and other gonadal tumors (8.5%) are second and third. Overall, 50% of breast cancer cases occurred among adolescents and young adults (AYA) [1] .In the age group of 15-44 years old, the survival rate for localized cancer was nearly 90%, regional cancer was 80%, and distant metastatic cancer was 35%. Breast cancer survivability is generally high when surgery, chemotherapy, and radiation treatment are combined. As a consequence, due to the increased prevalence of infertility caused by chemotherapy. The National Cancer Registry Program observes data from cancer registries from 1988 to 2013 to track trends in cancer incidence. In the registries of Bangalore (23.0% vs 15.9%), Bhopal (23.2% vs 21.4%), Chennai (28.9% vs 17.7%), Delhi (21.6% vs 20.3%), and Mumbai (24.1% vs 16.0%), the cervix was the most common location of cancer in India in 1990. The breast was the most common site in Bhopal (23.2% vs 16.0%) [6.] The scenario had changed by 2000–2003, when the breast had overtaken the prostate. Proteins called receptors are present in or on cells and have the ability to attach to particular blood molecules. Progesterone and estrogen receptors are present in both healthy breast cells and some breast cancer cells, and the proliferation of these cells depends on these hormones.ER-positive: Breast cancers that express estrogen receptors are known as ER-positive (also known as ER+) cancers[1, 2].

PR-positive: Progesterone receptor-positive breast cancers are known as PR-positive (or PR+) malignancies. Hormone receptor-positive: The term hormone-receptive positive (HR+) breast cancer may be used if the cancer cell possesses one or both of the aforementioned receptors. Hormone receptor-negative: A cancer cell is categorized as hormone-receptor negative if it does not have an estrogen or progesterone receptor

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Breast Biopsy: A biopsy involves a physician taking tiny samples of breast tissue from the suspected location to be examined in a lab to check for the presence of cancer cells[4.]

HER 2 Receptor: Gene expression profiling has demonstrated the diversity of breast cancer, revealing at least five subgroups within the disease. About 25% of breast cancers have HER2-positive status, which denotes an aggressive nature. The natural history of HER2-positive breast cancer has considerably improved, although, since the advent of HER2 targeted therapy, most notably trastuzumab[3.]

AIMS AND OBJECTIVES

To evaluate the hormones replacement therapy of breast cancer patient. The goals are to analyses the evaluation of progesterone and estrogen level in a breast cancer in patient, to evaluate and management of hormone replacement therapy breast cancer, to evaluate the role of HER 2 receptor in breast cancer.

METHODOLOGY

A prospective observational study was carried out among the patients in the oncology department at the Erode Cancer Center, Thindal, for a period of six months. Patients with or without comorbid problems, regardless of sex, who were older than 20 years old were included. The investigation was not open to patients who were younger than 20 or who refused to participate in the trial. Reports on prescription patterns, co-morbidity, and individual demography were made available. The current study was conducted in the 100-bed inpatient oncology department. All female and male patients with breast cancer who were at least 20 years old and willing to provide consent were included in the trial. The study excluded individuals who are not willing to participating in the study, severally ill patients, Patient who are below 20 years of age, Pediatrics patients. Data is collected from patient's interview, records, caretakers and medical record department (MRD). The oncology ward was visited daily for six days a week, and information regarding the patient's demographics and medication use was recorded on a semi-structured form. Prior to receiving a patient information leaflet, patients and/or careers were sought for their informed consent. A correctly designed data collection form was used to collect information from patient interviews and the medical file in order to obtain the necessary patient data. Clinical pharmacy services will be expanded in patient care through the use of a validated questionnaire.

RESULTS:

During the prospective observational study took in Erode cancer center in Erode, Tamilnadu. For the total of six months, sum of 65 breast cancer patient participated in this trial. With regard patient age group (<25 years), study duration (6 months), and prevalence at study site, we had chosen the sample size.

4.1. STUDY PARTICIPANTS BASED ON HORMONES RECEPTORS CHANGES:

4.1.1. Age Wise Distribution of the Study Participants

Out of 65 patients, for the most part, 25 patients were found to be in the age group of 40–50; after that 20 patients were in the range of the age group of 50–60; 12 were in the age group of 30–40; and 5 were in the age group of 60–70, 3 among the age groups was 70–80 years as shown in Fig: 1.

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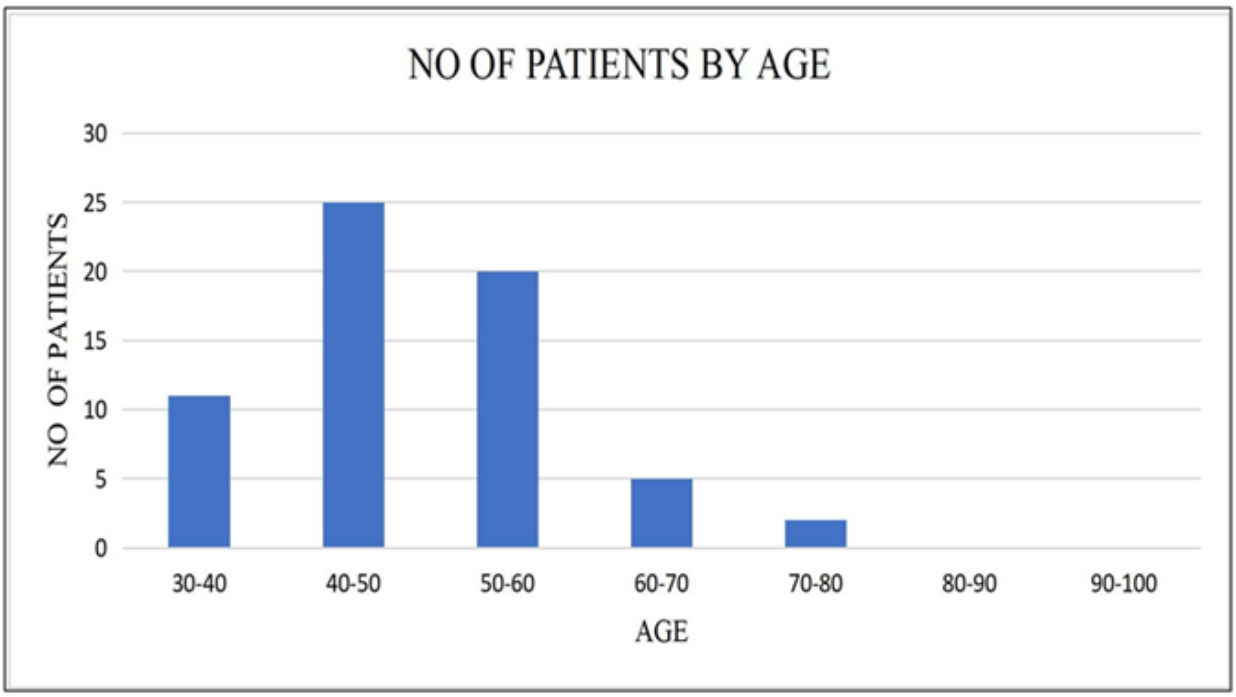

Fig: 1. Age Wise Distribution of the Study Participants

4.1.2. Social Habits and Pulse Rate to the Study Participants

Only 7 patients out of 65 have social habits such as betel nut remainders who do not participate in their activities table 1. The pulse rate was then monitored in 15 (23%) patients with a majority range of (70-80), 18 (28%) patients with a range of (80-90), 21 (32%) patients with a range of (90-100), 9 (14%) patients with a range of (100-110), and 2 (3%) patients with a range of (110-120).

Table: 1. Social Habits to the Study Participants

S.No	Social Habits	No of patients	Percentage of Patients
1.	Betal Nuts	7	10.7%
2.	None	58	89.3%

Table: 2. Pulse Rate to the Study Participants

S. No	Pulse Rate	No. of patients	Percentage of Patients
1.	70-80	15	23%
2.	80 - 90	18	28%
3.	90 - 100	21	32%
4.	100 - 110	9	14%
5.	110 -120	2	3%

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4.2. Estrogen Hormones Receptor:

The present study included 65 patients, and it was shown that individual patients' estrogen hormone receptors levels are greater; more than 33 patients are positive (51%), while the remaining 32 patients are negative (49%).

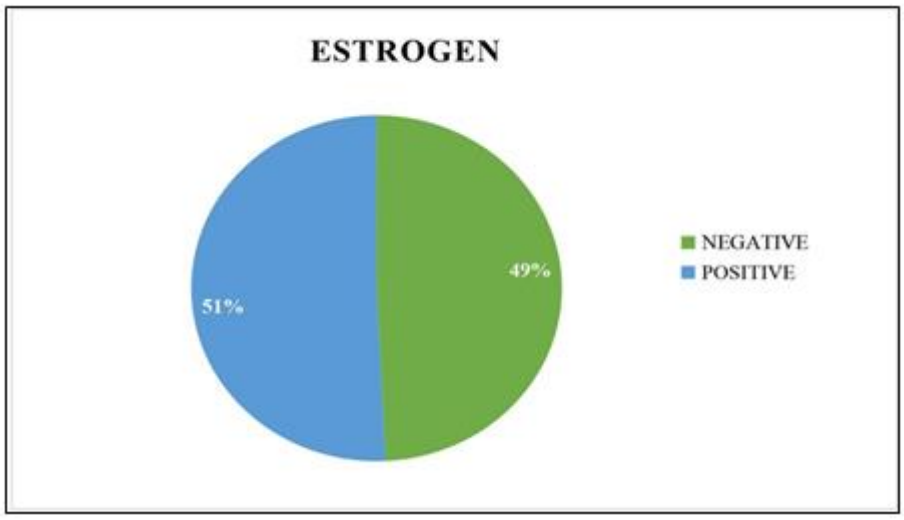

Fig 1: Distribution of the Study Participants Based Estrogen Hormones Level

4.3. Progesterone Hormones:

The present study included 65 patients, and it was shown that individual patients' progesterone hormone receptors levels are lower; more than 21 patients are positive (32%), while the remaining 44 patients are negative (68%).

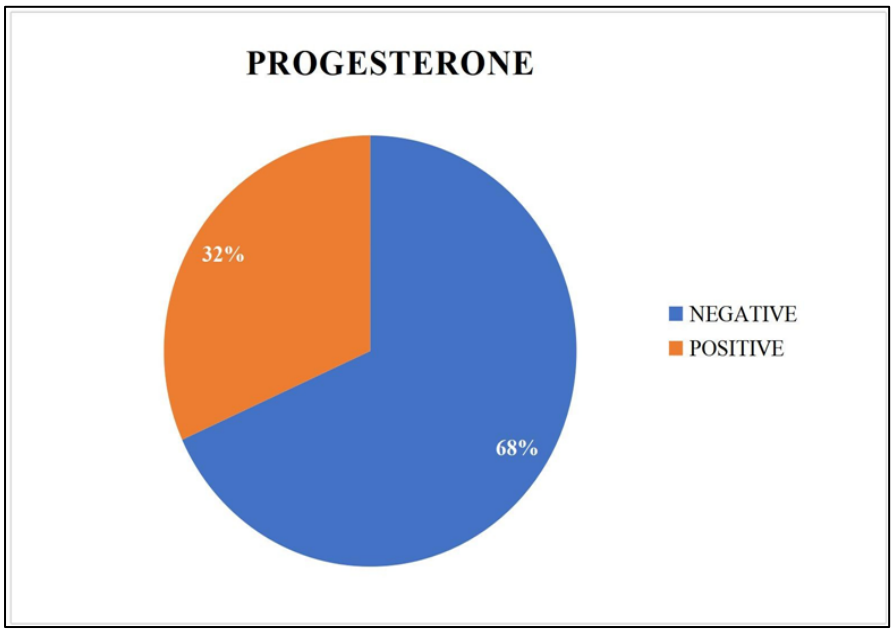

Fig: 2: Distribution of the Study Participants Based Progesterone Hormones Level

4.4. HER (Human Epidermal Growth Factor Receptor):

The present study included 65 patients, and it was shown that individual patients' Human Epidermal Growth Factor Receptor levels are greater; more than 49 patients are positive (75%), while the remaining 16 patients are negative (25 %).

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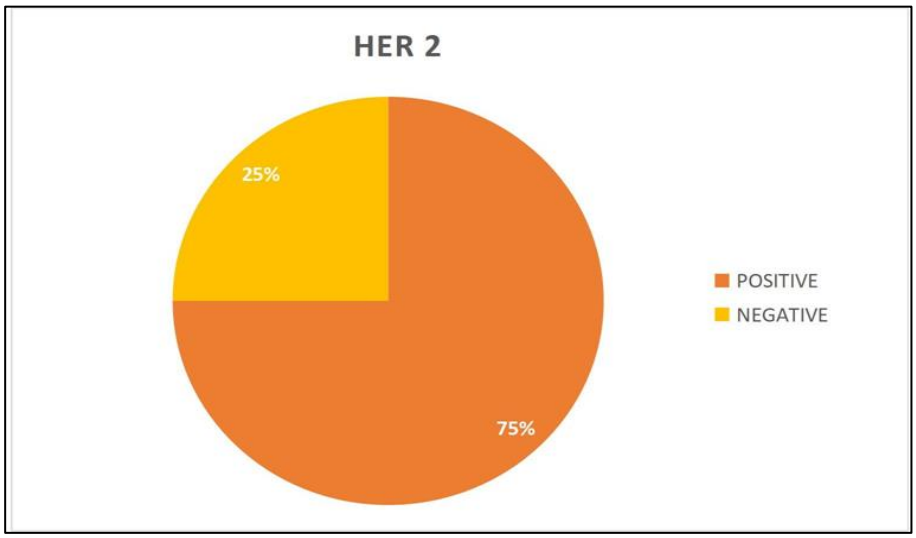

Fig: 3: Distribution of the Study Participants Based HER Level

DISCUSION

Out of the 65 participants that were enrolled in the trial, 33 were found to be positive for estrogen and 32 to be negative. This study found that the positives outweighed the negatives. The results are probably consistent with the studies conducted by Santen R et al[7, 8.]

Both estrogen exposure and genetic factors influence the development of breast cancer. Estradiol (E2) may have a role in the development of tumors. E2's ER-independent activities can speed tumor growth, according to reductionist research, suggesting that Advances in breast cancer may be a better preventative measure for breast cancer than antiestrogens. In contrast, according to Mayodan et al.'s study [9, 10], breast cancer accounts for up to 30% of all cancer diagnoses in women, making it the most common malignancy in this population.

Although hormone replacement therapy (HRT) has been linked to an increased risk of breast cancer, women who received estrogen replacement therapy experienced a significant decrease in breast cancer incidence and death, according to randomized research by the Women's Health Initiative (WHI). The current study's progesterone level matches Progesterone receptor-positive tumors and lobular histological types were associated with hormone treatment, according to Mastorakos G et al[11, 12, 13] There is evidence that using tibolone raises risk. Progesterone, as opposed to progestins (synthetic progestogens), is actually associated with a lower risk of breast cancer in women who are on HRT/MHT, according to our study Peter J. Lewis [14,15,16.]. According to Michael J. Kerin et al., around 12% of persons worldwide currently have breast cancer [19, 20 .]

A lower age of diagnosis is linked to a higher death rate, even though the incidence of breast cancer rises with age [21, 22.]

We review key concepts and identify important areas that need more research as we address age-related factors influencing breast cancer diagnosis, treatment, and management. We examine the role that age plays in the diagnosis and treatment of breast cancer, and the relationship that age has with genetic status, breast cancer subtype, hormone variations, and nodal status [23, 24, 25.] We study how age affects the adoption of population-wide breast cancer screening programs, but our findings contradict the notion that age is not a significant risk factor for breast cancer[26, 27]. Our Study finding was HER Positive patients 49(75%) have more risk of breast cancer.

CONCLUSION

Our Study Concluded that the patients with metastatic breast cancer have hormone receptor-positive, HER2-positive illness, our study concluded that the main reason for the metastatic breast cancer is that HER-2-

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positive hormone levels was found to be increased.

REFERENCES

1. Heer E, Harper A, Escandor N, Sung H, McCormack V, Fidler- Benaoudia MM. Global Burden and Trends in Premenopausal and Postmenopausal Breast Cancer: A Population-Based Study. Lancet Glob Health (2020) 8(8):1027–37.
2. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global Cancer Statistics 2018: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries [Published Correction Appears in CA Cancer J Clin. 2020 Jul;70(4):313]. CA Cancer J Clin (2018) 68(6):394–424.
3. Yersal O, Barutca S. Biological Subtypes of Breast Cancer: Prognostic and Therapeutic Implications. World J Clin Oncol (2014) 5(3):412–24.
4. Jemal A, Siegel R, Ward E, Hao Y, Xu J, Thun MJ. Cancer statistics, 2009. CA Cancer J Clin. 2009; 59:225–49.
5. Wingo PA, Tong T, Bolden S. Cancer statistics, 1995. CA Cancer J Clin. 1995; 45:8–30.
6. Boyle P, Ferlay J. Cancer incidence and mortality in Europe, 2004. Ann Oncol. 2005; 16:481–8.
7. Yue W, Wang JP, Li Y, Fan P, Liu G, Zhang N, Conaway M. et al. Effects of estrogen on breast cancer development: Role of estrogen receptor independent mechanisms. Int J Cancer. 2010;127(8):1748–1757.
8. Mikkola TS, Savolainen-Peltonen H, Tuomikoski P, Hoti F, Vattulainen P, Gissler M, Ylikorkala O. Reduced risk of breast cancer mortality in women using postmenopausal hormone therapy: a Finnish nationwide comparative study. Menopause. 2016;23(11):1199–1203.
9. Onwude JL. Response to hormone replacement therapy and the breast. BMJ. 2002; 323:1381.
10. Macon MB, Fenton SE. Endocrine disruptors and the breast: early life effects and later life disease. J Mammary Gland Biol Neoplasia. 2013;18(1):43–61.
11. Review of hormonal treatment of breast cancer IH Abdulkareem 1, I B Zurmi Affiliations expand PMID:
12. Jemal A, Siegel R, Ward E, et al. Cancer statistics, 2009. CA Cancer J Clin. 2009 Jul-Aug;59(4):225– 49.
13. Perou CM, Sorlie T, Eisen MB, et al. Molecular portraits of human breast tumours. Nature. 2000 Aug 17;406(6797):747–52.
14. Slamon D, Clark G, Wong S, et al. Human breast cancer: correlation of relapse and survival with amplification of the HER-2/neu oncogene. Science. 1987 Jan 9;235(4785):177–82.
15. Slamon DJ, Godolphin W, Jones LA, et al. Studies of the HER-2/neu proto-oncogene in human breast and ovarian cancer. Science. 1989 May 12;244(4905):707–12.
16. American Cancer Society. Breast cancer facts & figures 2017-2018. Atlanta: American Cancer Society, Inc; 2017.
17. Xiong Q, Valero V, Kau V, Kau SW, Taylor S, Smith TL, et al. Female patients with breast carcinoma age 30 years and younger have a poor prognosis: the M.D. Anderson Cancer Center experience. Cancer. 2001;92(10):2523–2528.
18. Kothari AS, Beechey-Newman N, D'Arrigo C, Hanby AM, Ryder K, Hamed H, et al. Breast carcinoma in women age 25 years or less. Cancer. 2002;94(3):606–614.
19. Cancer.org 1.800.227.2345 survibal rates of breast cancer.
20. Cancer.org 1.800.227.2345 breast cancer hormones receptor status)
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22. Klapper LN, Glathe S, Vaisman N, et al. The ErbB-2/HER2 oncoprotein of human carcinomas may function solely as a shared coreceptor for multiple stroma-derived growth factors. Proc Natl Acad Sci US 1999 Apr 27;96(9):4995–5000. [PMC free article] [PubMed]
23. Tzahar E, Waterman H, Chen X, et al. A hierarchical network of interreceptor interactions determines signal transduction by Neu differentiation factor/neuregulin and epidermal growth factor.

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Mol Cell. Biol. 1996 Oct;16(10):5276–87. [PMC free article] [PubMed].
24. Wolff AC, Hammond MEH, Schwartz JN, et al. American Society of Clinical Oncology/College of American Pathologists Guideline Recommendations for Human Epidermal Growth Factor Receptor 2.
25. Testing in Breast Cancer. Journal of Clinical Oncology. 2007 Jan 1;25(1):118–45. [PubMed]
26. Sauter G, Lee J, Bartlett JMS, et al. Guidelines for Human Epidermal Growth Factor Receptor 2 Testing: Biologic and Methodologic Considerations. J Clin Oncol. 2009 Mar 10;27(8):1323–33. [PubMed
27. Le XF, Pruefer F, Bast RC., Jr HER2-targeting antibodies modulate the cyclin-dependent kinase inhibitor p27Kip1 via multiple signaling pathways. Cell Cycle. 2005 Jan;4(1):87–95. [PubMed]