ANEPIDEMOLOGICAL STUDY AND MANAGEMENT OF EARLY BREAST CANCER

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ABSTRACT
Breast cancer is one of the commonest malignant diseases of women next to cancer cervix. It accounts for 30-40% of all female cancers and is responsible for 20% of cancer related deaths in women. The study period is from August 2011 to September 2013 and study was done in Rajah Muthiah Medical College and Hospital in tertiary teaching hospital. A complete clinical evaluation of the case including history, general physical examination and clinical breast examination was done. Necessary investigations were done to confirm the diagnosis, stage the disease and for definitive treatment. Fine needle aspiration cytology was done for all cases to confirm the diagnosis. Routine blood investigations, chest x-ray and ECG were done for all cases. Bilateral mammogram, liver function tests and ultrasound abdomen was done to stage the disease. The discussion part is about strategic incidence of breast cancer, age incidence, age at menarche, age at first child birth, parity, menopausal stages, clinical presentations, side wise incidence, treatment modalities and follow up. The highest incidence of early breast cancer was between 41-50 years. This indicates the necessity for screening the population with mammography for detection of breast cancer in early stages after the age of 40 years. 93.9% of cases were diagnosed by FNAC. The commonest HPE type in early breast cancer was invasive ductal carcinoma. ER and PR positivity rates were more in post menopausal women 53.3%. when compared to pre menopausal women 27.7% indicating better prognosis in post menopausal women.

KEY WORDS: Breast Cancer, menopausal, mammography, ductal carcinoma.
INTRODUCTION
Breast cancer is one of the commonest malignant diseases of women next to cancer cervix. It accounts for 30-40% of all female cancers and is responsible for 20% of cancer related deaths in women. Since 1940 the incidence is steadily increasing. Breast cancer increases with age and it is the most common cause of cancer deaths in women over 65 yrs of age.

The international incidence of female breast cancer varies markedly, being highest in the United States and Northern Europe, intermediate in Southern and Eastern Europe and South America, and lowest in Asia. However, incidence rates have been rising in traditionally low-incidence Asian countries, particularly in Japan, Singapore, and urban areas of China, as these regions make the transition toward a Western-style economy and pattern of reproductive behavior.

Since the 1950s, breast cancer incidence has been increasing in many of the lower-risk countries, as well as in high-risk Western countries. Some of the recent increases in incidence in high-risk populations may be due in part to greater use of mammography, as in the United States. This appears to be the case in Sweden and England and Wales. However, in Norway, a substantial increase in breast cancer incidence occurred between 1983 and 1993 despite low use of mammographic screening.

Breast cancer incidence rates have nearly doubled in recent decades in traditionally low-risk countries such as Japan and Singapore and in the urban areas of China. Dramatic changes in lifestyle in such regions brought about by growing economies, increasing affluence, and increases in the proportion of women in the industrial workforce have affected the population distribution of established breast cancer risk factors, including age at menarche and fertility and nutritional status, including height and weight. These changes have resulted in a convergence toward the risk-factor profile of Western countries.

Breast cancer is a kind of cancer that develops from breast cells. Breast cancer usually starts off in the inner lining of milk ducts or the lobules that supply them with milk. A malignant tumor can spread to other parts of the body. A breast cancer that started off in the lobules is known as lobular carcinoma, while one that developed from the ducts is called ductal carcinoma. The vast majority of breast cancer cases occur in females. Breast cancer is the most common invasive cancer in females worldwide. It accounts for 16% of all female cancers and 22.9% of invasive cancers in women. 18.2% of all cancer deaths worldwide,
including both males and females, are from breast cancer. Breast cancer rates are much higher in developed nations compared to developing ones. There are several reasons for this, with possibly life-expectancy being one of the key factors - breast cancer is more common in elderly women; women in the richest countries live much longer than those in the poorest nations. The different lifestyles and eating habits of females in rich and poor countries are also contributory factors, experts believe. According to the National Cancer Institute, 232,340 female breast cancers and 2,240 male breast cancers are reported in the USA each year, as well as about 39,620 deaths caused by the disease. Cancer that begins in the lactiferous duct (milk duct), known as ductal carcinoma, is the most common type. Cancer that begins in the lobules, known as lobular carcinoma, is much less common. Invasive breast cancer - the cancer cells break out from inside the lobules or ducts and invade nearby tissue. With this type of cancer, the abnormal cells can reach the lymph nodes, and eventually make their way to other organs (metastasis), such as the bones, liver or lungs. The abnormal (cancer) cells can travel through the bloodstream or the lymphatic system to other parts of the body; either early on in the disease, or later. Non-invasive breast cancer - this is when the cancer is still inside its place of origin and has not broken out. Lobular carcinoma in situ is when the cancer is still inside the lobules, while ductal carcinoma in situ is when they are still inside the milk ducts. "In situ" means "in its original place". Sometimes, this type of breast cancer is called "pre-cancerous"; this means that although the abnormal cells have not spread outside their place of origin, they can eventually develop into invasive breast cancer.

**Signs And Symptoms Of Breast Cancer**

The first symptoms of breast cancer are usually an area of thickened tissue in the woman's breast, or a lump. The majority of lumps are not cancerous; however, women should get them checked by a health care professional.

According to the National Health Service, UK, women who detect any of the following signs or symptoms should tell their doctor:

1. A lump in a breast
2. A pain in the armpits or breast that does not seem to be related to the woman's menstrual period
3. Pitting or redness of the skin of the breast; like the skin of an orange
4. A rash around (or on) one of the nipples
5. A swelling (lump) in one of the armpits
6. An area of thickened tissue in a breast
7. One of the nipples has a discharge; sometimes it may contain blood
8. The nipple changes in appearance; it may become sunken or inverted
9. The size or the shape of the breast changes
10. The nipple-skin or breast-skin may have started to peel, scale or flake

Causes

Few risk factors can impact on a woman's likelihood of developing breast cancer. Getting older - the older a woman gets, the higher is her risk of developing breast cancer; age is a risk factor. Over 80% of all female breast cancers occur among women aged 50+ years (after the menopause).

Genetics - women who have a close relative who has/had breast or ovarian cancer are more likely to develop breast cancer. If two close family members develop the disease, it does not necessarily mean they shared the genes that make them more vulnerable, because breast cancer is a relatively common cancer. The majority of breast cancers are not hereditary. Women who carry the BRCA1 and BRCA2 genes have a considerably higher risk of developing breast and/or ovarian cancer. These genes can be inherited. TP53, another gene, is also linked to greater breast cancer risk. A history of breast cancer - women who have had breast cancer, even non-invasive cancer, are more likely to develop the disease again, compared to women who have no history of the disease. Having had certain types of breast lumps - women who have had some types of benign (non-cancerous) breast lumps are more likely to develop cancer later on. Examples include atypical ductal hyperplasia or lobular carcinoma in situ. Dense breast tissue - women with more dense breast tissue have a greater chance of developing breast cancer. Estrogen exposure - women who started having periods earlier or entered menopause later than usual have a higher risk of developing breast cancer. This is because their bodies have been exposed to estrogen for longer. Estrogen exposure begins when periods start, and drops dramatically during the menopause. Obesity - post-menopausal obese and overweight women may have a higher risk of developing breast cancer. Experts say that there are higher levels of estrogen in obese menopausal women, which may be the cause of the higher risk. Height - taller-than-average women have a slightly greater likelihood of developing breast cancer than shorter-than-average women. Alcohol consumption - the more alcohol a woman regularly drinks, the higher her risk of developing breast cancer is. Radiation exposure - undergoing X-rays and CT scans may raise a woman's risk of developing breast cancer slightly.
HRT (hormone replacement therapy) - both forms, combined and estrogen-only HRT therapies may increase a woman's risk of developing breast cancer slightly. Combined HRT causes a higher risk. Certain jobs - French researchers found that women who worked at night prior to a first pregnancy had a higher risk of eventually developing breast cancer. Canadian researchers found that certain jobs, especially those that bring the human body into contact with possible carcinogens and endocrine disruptors are linked to a higher risk of developing breast cancer. Examples include bar/gambling, automotive plastics manufacturing, metal-working, food canning and agriculture. They reported their findings in the November 2012 issue of *Environmental Health*. Cosmetic implants may undermine breast cancer survival - women who have cosmetic breast implants and develop breast cancer may have a higher risk of dying prematurely form the disease compared to other females, researchers from Canada reported in the *BMJ (British Medical Journal)* (May 2013 issue). The team looked at twelve peer-reviewed articles on observational studies which had been carried out in Europe, the USA and Canada. Experts had long-wondered whether cosmetic breast implants might make it harder to spot malignancy at an early stage, because they produce shadows on mammograms. In this latest study, the authors found that a woman with a cosmetic breast implant has a 25% higher risk of being diagnosed with breast cancer when the disease has already advanced, compared to those with no implants. Women with cosmetic breast implants who are diagnosed with breast cancer have a 38% higher risk of death from the disease, compared to other patients diagnosed with the same disease who have no implants, the researchers wrote. After warning that there were some limitations in the twelve studies they looked at, the authors concluded "Further investigations are warranted into the long term effects of cosmetic breast implants on the detection and prognosis of breast cancer, adjusting for potential confounders."

**Stages Of Breast Cancer**

**Stage 0**
Stage 0 is used to describe non-invasive breast cancers, such as DCIS (ductal carcinoma in situ). In stage 0, there is no evidence of cancer cells or non-cancerous abnormal cells breaking out of the part of the breast in which they started, or getting through to or invading neighboring normal tissue.

**Stage I**
Stage I describes invasive breast cancer (cancer cells are breaking through to or invading normal surrounding breast tissue) Stage I is divided into subcategories known as IA and IB.
Stage IA describes invasive breast cancer in which
1. the tumor measures up to 2 centimeters AND
2. the cancer has not spread outside the breast; no lymph nodes are involved

Stage IB describes invasive breast cancer in which
1. there is no tumor in the breast; instead, small groups of cancer cells – larger than 0.2 millimeter but not larger than 2 millimeters – are found in the lymph nodes OR
2. there is a tumor in the breast that is no larger than 2 centimeters, and there are small groups of cancer cells – larger than 0.2 millimeter but not larger than 2 millimeters – in the lymph nodes

Microscopic invasion is possible in stage I breast cancer. In microscopic invasion, the cancer cells have just started to invade the tissue outside the lining of the duct or lobule, but the invading cancer cells can't measure more than 1 millimeter.

Stage II
Stage II is divided into subcategories known as IIA and IIB.
Stage IIA describes invasive breast cancer in which:
1. no tumor can be found in the breast, but cancer (larger than 2 millimeters) is found in 1 to 3 axillary lymph nodes (the lymph nodes under the arm) or in the lymph nodes near the breast bone (found during a sentinel node biopsy) OR
2. the tumor measures 2 centimeters or smaller and has spread to the axillary lymph nodes OR
3. the tumor is larger than 2 centimeters but not larger than 5 centimeters and has not spread to the axillary lymph nodes

Stage IIB describes invasive breast cancer in which:
1. the tumor is larger than 2 centimeters but no larger than 5 centimeters; small groups of breast cancer cells -- larger than 0.2 millimeter but not larger than 2 millimeters -- are found in the lymph nodes OR
2. the tumor is larger than 2 centimeters but no larger than 5 centimeters; cancer has spread to 1 to 3 axillary lymph nodes or to lymph nodes near the breastbone (found during a sentinel node biopsy) OR
3. the tumor is larger than 5 centimeters but has not spread to the axillary lymph nodes
Stage III
Stage III is divided into subcategories known as IIIA, IIIB, and IIIC.
Stage IIIA describes invasive breast cancer in which either:
1. no tumor is found in the breast or the tumor may be any size; cancer is found in 4 to 9
   axillary lymph nodes or in the lymph nodes near the breastbone (found during imaging
tests or a physical exam) OR
2. the tumor is larger than 5 centimeters; small groups of breast cancer cells (larger than 0.2
   millimeter but not larger than 2 millimeters) are found in the lymph nodes OR
3. the tumor is larger than 5 centimeters; cancer has spread to 1 to 3 axillary lymph nodes or
   to the lymph nodes near the breastbone (found during a sentinel lymph node biopsy)

Stage IIIB describes invasive breast cancer in which
1. the tumor may be any size and has spread to the chest wall and/or skin of the breast and
   caused swelling or an ulcer AND
2. may have spread to up to 9 axillary lymph nodes OR
3. may have spread to lymph nodes near the breastbone
Inflammatory breast cancer is considered at least stage IIIB. Typical features of inflammatory
breast cancer include
1. reddening of a large portion of the breast skin
2. the breast feels warm and may be swollen
3. cancer cells have spread to the lymph nodes and may be found in the skin

Stage IIIC describes invasive breast cancer in which
1. there may be no sign of cancer in the breast or, if there is a tumor, it may be any size and
   may have spread to the chest wall and/or the skin of the breast AND
2. the cancer has spread to 10 or more axillary lymph nodes OR
3. the cancer has spread to lymph nodes above or below the collarbone OR
4. the cancer has spread to axillary lymph nodes or to lymph nodes near the breastbone

Stage IV
Stage IV describes invasive breast cancer that has spread beyond the breast and nearby lymph
nodes to other organs of the body, such as the lungs, distant lymph nodes, skin, bones, liver,
or brain.
You may hear the words “advanced” and “metastatic” used to describe stage IV breast
cancer. Cancer may be stage IV at first diagnosis or it can be a recurrence of a previous breast
cancer that has spread to other parts of the body. Breast cancer survival depends upon the earliest possible diagnosis. 99% cure rates are possible if detected in early stages. Hence the present study.

**Study Methodology**

**Aim Of This Study**
1. To study about the incidence, epidemiology and environmental factors in the genesis of breast cancer in tertiary teaching hospital.
2. To study about various methods for detection of early breast cancer
3. To study about the receptor status in early breast cancer patients.
4. To study about the various histopathological types in early breast cancer.

**Study Period**

**Observational Study: August 2011- September 2013**

**Study Site**
The prospective observational study was done in Rajah Muthiah Medical College and Hospital, Annamalai university.

**MATERIALS AND METHODS**
This was a prospective study which consisted of patients admitted to all surgical units of Rajah Muthiah Medical College with early breast cancer from August 2011 – September 2013. A complete clinical evaluation of the case including history, general physical examination and clinical breast examination was done. Necessary investigations were done to confirm the diagnosis, stage the disease and for definitive treatment. Fine needle aspiration cytology was done for all cases to confirm the diagnosis. Routine blood investigations, chest x-ray and ECG were done for all cases. Bilateral mammogram, liver function tests and ultrasound abdomen was done to stage the disease.

For loco regional control modified radical mastectomy with or without oophorectomy was done. Adjuvant therapy in the form of Chemotherapy, hormone therapy or radiotherapy was given depending upon the lymph nodal status and receptor status. Periodical follow up of all cases were done to assess the local and systemic metastasis.
RESULT AND DISCUSSION
During the period of study from August 2011 to September 2013, a total number of 186 breast cancer cases attended our institution. Out of this, 33 patients (17.7%) of cases presented with early breast cancer. This study was consistent with that of Fisher B, Jeong JH, Dignam J, et al. early breast cancer 15-20%.

Table No.1: Stage Wise Incidence Of Breast Cancer

<table>
<thead>
<tr>
<th>No. of breast cancer in stages</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of early breast cancer cases</td>
<td>33 cases</td>
</tr>
<tr>
<td>Number of cases in stage 1</td>
<td>27 cases</td>
</tr>
<tr>
<td>Number of cases in stage 2a</td>
<td>6 cases</td>
</tr>
<tr>
<td>Number of cases in stage 2b</td>
<td>74 cases</td>
</tr>
<tr>
<td>Number of cases in stage 3</td>
<td>12 cases</td>
</tr>
<tr>
<td>Number of cases in stage 4</td>
<td>67 cases</td>
</tr>
<tr>
<td>Total number of locally advanced cases</td>
<td>153 cases</td>
</tr>
</tbody>
</table>

Figure No.1: Stage Wise Incidence Of Breast Cancer.

The other patients who presented in late stages 153 cases, were mostly unaware of the disease or they were taking native treatment until late stages. This shows a great need for health education programme and social awareness regarding breast cancer among the public.

Table 2: Age Incidence

<table>
<thead>
<tr>
<th>Age</th>
<th>No. Of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-30 YRS</td>
<td>2</td>
</tr>
<tr>
<td>31-40 YRS</td>
<td>8</td>
</tr>
<tr>
<td>41-50 YRS</td>
<td>10</td>
</tr>
<tr>
<td>51-60 YRS</td>
<td>7</td>
</tr>
<tr>
<td>61-70 YRS</td>
<td>6</td>
</tr>
</tbody>
</table>
There were no cases recorded below 28 years of age. There was an increased incidence of breast cancer between the ages of 40-50 years of age 10 cases. Most of the cases were between 41-50 years. The number of young women detected with breast cancer is increasing. (Early breast cancer trialist’s collaborative group, Lancet 1998). The reasons may be changes in life style, late child birth and beginning of lactation. Therefore early diagnosis is mandatory. This indicates screening of population for detection of breast cancer in early stages with mammography is necessary after the age of 40yrs.

Figure No.2: Age Incidence In Early Breast Cancer

Table No.3: Age At Menarche

<table>
<thead>
<tr>
<th>AGE</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-12 years</td>
<td>7 cases</td>
</tr>
<tr>
<td>12-15 years</td>
<td>18 cases</td>
</tr>
<tr>
<td>16-18 years</td>
<td>8 cases</td>
</tr>
</tbody>
</table>

Age At Marriage : The average age at marriage was 20 years. All patients were arried.
Table No.4: Age At First Child Birth

<table>
<thead>
<tr>
<th>AGE</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 25 years</td>
<td>26 cases</td>
</tr>
<tr>
<td>More than 25 years</td>
<td>6 cases</td>
</tr>
</tbody>
</table>

Figure no.4 age at first child.

Table No.5: Parity

<table>
<thead>
<tr>
<th>Category</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with 2 or more children</td>
<td>29 cases</td>
</tr>
<tr>
<td>Patients with single child</td>
<td>3 cases</td>
</tr>
<tr>
<td>Nullipara</td>
<td>1 case</td>
</tr>
</tbody>
</table>

Figure No: 5 Parity
Table No.6: Duration Of Breast Feeding
Most of them have breast fed their children for about 1 - 1 1/2 years.

<table>
<thead>
<tr>
<th>Duration of breast feeding</th>
<th>No. of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 6 months</td>
<td>6 cases</td>
</tr>
<tr>
<td>6 months to 1 yr</td>
<td>8 cases</td>
</tr>
<tr>
<td>1 yr to 1 1/2 yrs</td>
<td>18 cases</td>
</tr>
</tbody>
</table>

Figure no.6 breast feeding.
There were no cases with family history of breast cancer. Late menarche, early child birth, multiparity and period of breast feeding even though most of them have breast fed for more than 1 yr did not protect our patients.

Table No.7: Menopausal Status

<table>
<thead>
<tr>
<th>Menopausal status</th>
<th>No. of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of premenopausal women</td>
<td>18 cases</td>
</tr>
<tr>
<td>Number of postmenopausal women</td>
<td>15 cases</td>
</tr>
</tbody>
</table>
Table No.8 Clinical Presentation

The most common form of clinical presentation was mass in the breast.

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>No. Of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lump breast</td>
<td>33</td>
</tr>
<tr>
<td>Mastalgia</td>
<td>6</td>
</tr>
<tr>
<td>Nipple discharge</td>
<td>2</td>
</tr>
<tr>
<td>Preexisting breast lesions</td>
<td>2</td>
</tr>
</tbody>
</table>

The commonest site was upper and outer quadrant in 23 cases.

Table No.9 Side Wise Incidence

<table>
<thead>
<tr>
<th>Side</th>
<th>No. Of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left breast</td>
<td>18 cases</td>
</tr>
<tr>
<td>Right breast</td>
<td>15 cases</td>
</tr>
</tbody>
</table>
All patients had lump breast, 6 patients presented with mastalgia and 2 cases had nipple discharge. Two patients had pre existing breast lesions - fibrocystic disease for which they were taking treatment. The commonest site of lump being the upper and outer quadrant in 23 cases and the side was left in 18 cases.

Table No.10 Treatment Modalities

<table>
<thead>
<tr>
<th>Type of surgery done</th>
<th>No. Of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified radical mastectomy (Auchincloss's)</td>
<td>21</td>
</tr>
<tr>
<td>MRM with B/L oophorectomy</td>
<td>10</td>
</tr>
<tr>
<td>Breast conservative surgery with axillary clearance</td>
<td>1</td>
</tr>
<tr>
<td>MRM with TRAM flap</td>
<td>1</td>
</tr>
</tbody>
</table>

Table No.11 Follow Up

<table>
<thead>
<tr>
<th>Period of follow up</th>
<th>No. Of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than 2 yrs</td>
<td>8</td>
</tr>
<tr>
<td>1½ - 2 yrs</td>
<td>10</td>
</tr>
<tr>
<td>1 – 1½ yrs</td>
<td>7</td>
</tr>
<tr>
<td>6 months - 1 yr</td>
<td>6</td>
</tr>
<tr>
<td>Less than 6 months</td>
<td>2</td>
</tr>
</tbody>
</table>
All patients were regularly followed up. As the cases were detected and treated in early stages there was no loco regional recurrence or distant metastasis. So detection of breast cancer in early stages by triple assessment - breast self examination, clinical breast examination and screening mammography is necessary.

CONCLUSION
1. Out of the patients staged for breast cancer most of the cases, i.e; 74 out of 153 are staged under 2B.
2. The highest incidence of early breast cancer was between 41-50 years. This indicates the necessity for screening the population with mammography for detection of breast cancer in early stages after the age of 40 years. 93.9% of cases were diagnosed by FNAC. The commonest HPE type in early breast cancer was invasive ductal carcinoma.
3. ER and PR positivity rates were more in post menopausal women 53.3%, when compared to pre menopausal women 27.7% indicating better prognosis in post menopausal women.
4. Most of the women were presented with lumps in the breasts (18 cases) rather than the other symptoms or presentations.
5. Modified radical mastectomy was carried out in most cases i.e; in 21 cases.
6. Among the women diagnosed with breast cancer, most of them belong to premenopausal status (18 cases). women with 2 or more number of children are the ones mostly diagnosed with breast cancer (29 cases).
REFERENCE


38 Kim T, Giuliano AE Lyman GH. Lymphatic mapping and sentinel lymph node biopsy in early stage breast carcinoma; a meta analysis. Cancer 2006; 106(1): 4-16.
