



## INDO AMERICAN JOURNAL OF PHARMACEUTICAL RESEARCH



### BREAST CANCER: A GLOBAL CHALLENGE

**Sandip S. Kshirsagar, Vaishali R. Shinde, Manjusha Nevase, Sayali Dudhal**

*Kasturi Shikshan Sanstha's College of Pharmacy, Shikrapur, Pune-412207, Maharashtra, India.*

#### ARTICLE INFO

##### Article history

Received 27/05/2019

Available online

30/06/2019

##### Keywords

Breast Cancer,  
Lifestyle,  
Stem Cells.

#### ABSTRACT

In recent days many women's affected by breast cancer. Years between 1990 to 2014 rates of breast cancer dropped by 34 % in the US attributable to the combination of effective adjuvant therapies & improving in the earlier detection. In low & middle income countries breast cancer is increasingly problems. Historically it is observed that low incidence rates have been rising per year up to the 5%. Breast cancer cause due to various social causes also that is hormonal changes, Life style, weight. Stem cell have also important role in breast cancer. Because of these various reasons there is need to aware about breast cancer. In present study we tried to explain causes of breast cancer so we can easily understand that breast cancer is serious challenge that we have to carry and need to find out proper and cheap treatment on same.

#### Corresponding author

**Dr. Sandip Sharad Kshirsagar**

AssociateProfessor

svtk5151@gmail.com

+917304705151

Please cite this article in press as **Dr. Sandip Sharad Kshirsagar et al. Breast Cancer: A Global Challenge. Indo American Journal of Pharmaceutical Research.2019:9(06).**

Copy right © 2019 This is an Open Access article distributed under the terms of the Indo American journal of Pharmaceutical Research, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

## INTRODUCTION

Many women suffering by breast cancer now days. It has been veryfastly spreade out globally but mostly found in wel developed countries of united states and united kingdom & those countries which having high income. In recent days breast cancer is diagnosed in women to form of the breast cell. There is a vast changes happened in current scenario to reduce rate of proliferation of breast cancer in womens. Rate of survival of breast cancer have increase this happen because of introduction of advance treatment undergone by medical field<sup>1</sup>.

### Causes:

Cancer can occur when damage of cell's DNA Occur & not repaired at cellular level. There are various stages the development of cancer from pre-cancerous changes to malignant tumours. Starting of cancer is from one cell. In cancer many factors are available to play a different role for genetics (for example the BRCA genes) and habits which are related to our lifestyle (such as sun-tanning, diet & smoking) to environmental exposures to harmful substances. Bacteria & virous which are causes cancer for example in liver cancer hepatitis virus, Stomach cancer Helicobacter pylori & in cervical cancer HPV Virus. Function of immune system also play important role in preventing cancer<sup>2</sup>.

### Several factors are available to developed cancer stages:

- Tumour size within the breast.
- Type of cancer i.e. invasive or non-invasive.
- Affected the number of lymph nodes (close to the tumour).
- Number of affected auxiliary part lymph nodes
- Metastasis in bones, liver, lungs, or brain.

Stages has been observed after studying histology of patient and concluded for one stage for the better treatment according to physician.

### Symptoms:

- Changes in Shape from normal breast
- Colour changes of nipple
- Nipple areola may crushy.
- Excessive redness around breast.

### Stages of Breast Cancer & Development:

#### Normal Stage:

In normal stage invasion takes place where cancerous cells are skipped from breaking towards proliferation.

#### First Stage:

In the invasive tumor stage lymph size up to 2 cm enlarge and no lymph nodes are involved during stage, there is no tumor in the breast – instead, small groups of cancer cells are found in the lymph nodes.

#### Second Stage:

Growth of tumor is 2 - 5cm, or the cancer has spread to the lymph nodes under the arm on the same side as the breast cancer. No tumor should be found in the breast, but larger cancer cells are found in few axillary lymph nodes or in the lymph nodes near the breast bone. The tumor size is varying from 2cm to 5 cm around axillary.

#### Third Stage:

If the tumor larger than 2 cm - 5cm; small groups of breast cancer cell get in the lymph nodes; cancer has spread to 1-3 axillary lymph nodes or to lymph nodes near the breastbone; or the tumor is larger than 5 cm but has not spread to the axillary lymph nodes. Diameter of tumor in the breast is more than 2 inches diameter across and the cancer is extensive in the under arm lymph nodes, or has spread to other lymph nodes or tissues near the breast.

#### Fourth Stage:

Cancer proliferation throughout the breast around all lymphs and connected other parts of the body.

### Stem Cell Therapies Available For Breast Cancer:

As per our knowledge, no stem cell therapy has received Health Canada or U.S Food & Drug Administration permission to treat of breast cancer at this time. Patients who are verifying their options can come across companies with web sites or materials that say otherwise & offer fee-based stem cell treatment for curing the disease. Many of these claims are not supported by sound scientific evidence & patients considering these therapies are encouraged to review some of the links below before making crucial decision about their treatment plan. However, study on breast cancer is fast-moving & work underway today may uncover new possibilities for more effective treatments tomorrow. Therefore, it is important to keep asking questions & continue seeking advice from qualified experts.

### Stem Cell Play Part in Breast Cancer:

Knowledge Acquisition Is The Key To Making Report On Asking Questions Related History Of Breast Cancer And To Give Knowledge About Stem Cell. Building On The Cancer Stem Cell Hypothesis The Idea That Cancer Is Propagated By A Small Subset Of Cells With Stem Cell Properties Has Been Extremely Important Because This Hypothesis Implies That Cancer Stem Cells Must Be Eliminated To Achieve A Cure. But Identifying And Studying Cancer Stem Cells Are A Challenge Because They Are Often Rare Elements In The Tumour. Two Recent Breakthroughs Are Making A Big Difference In Addressing This Challenge. The Second Breakthrough Has Been The Discovery Of Specific Molecules (Called Biomarkers) On Tumor Cells. Biomarkers Have Been Critical In Identifying And Isolating Breast Cancer Stem Cells From Other Cells In The Tumor. This Kind Of Research Is Opening The Door To Identifying Breast Cancer Earlier, Predicting Its Prognosis, Diagnosing Particularly Aggressive Forms Of The Disease, And Providing Possible Targets For Drug Therapy<sup>4</sup>. (Fig. 1)

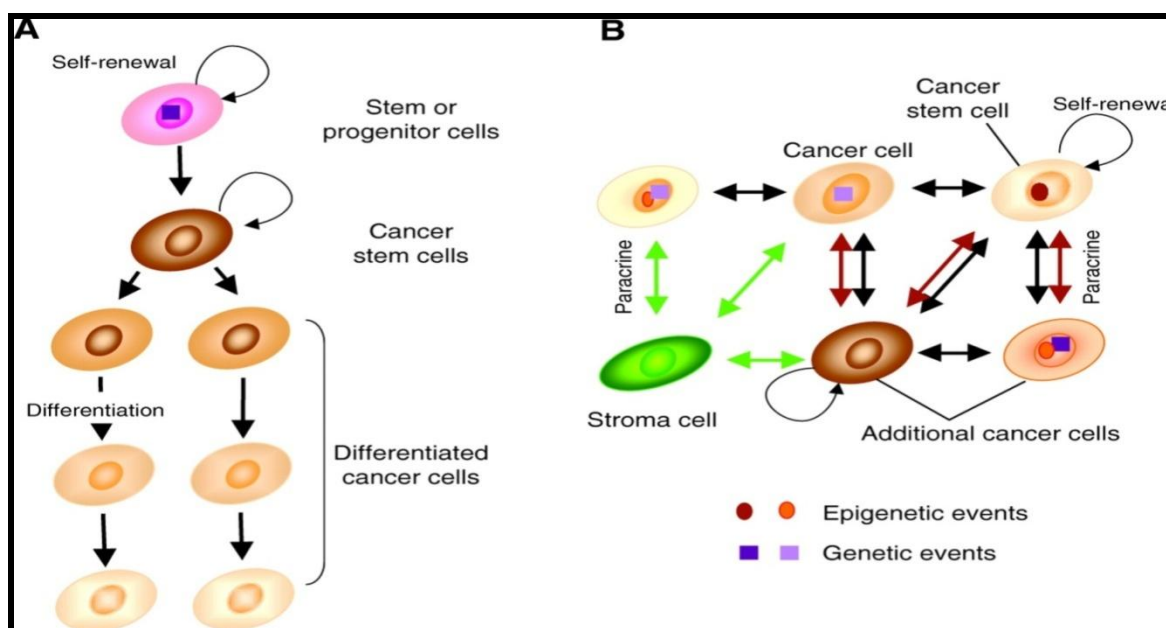


Fig 1 Stem cell & breast Cancer.

### Social Causes of Breast Cancer:

Body burden & ecological research indicates that there is connection by experiment between environmental factor and breast cancer. 85,000 synthetic chemicals are present in market like preservatives used in lipstick to flame retardants present in sofas, from plasticizers used in water bottles to pesticides used in fruits and vegetables.

### Breast cancer & environment Key facts:

1. In all population 70% of people having breast cancer. These peoples don't know the risk factors. These are known as known risk factors, these includes late menopause, having children late in life, & family histories of cancer are present in only 30% of population.
2. In countries which is having less industries having less breast cancer rate than more industrial countries.
3. Breast cancer in mainly due to estrogen hormones. Various chemicals like synthetic or non synthetic present in our body but from these synthetic called as xenoestrogen act like estrogen in our bodies, including common pesticides, plastic additive or by-products & polyvinyl chloride used extensively in the manufacturing of food packing, medical product, appliances, Cars, toys, credit cards & rainwear.

**Changes in Sex Life:**

People are not much mature to discuss about their sex life & changes that taken place in your life socially or in front of doctor. Many females are avoided to do sex due to uncertainty in menstrual and thereby illness in body which may due to preliminary breast cancer & not getting interest in starting & finishing sexual intercourse.

**Lifestyle & Breast Cancer:****Alcohol**

Eserification of alcohol due to extra level of alcohol in body may responsible for breast cancer. That may happen because of daily consumption of alcohol.

**Hormone Replacement Therapy: (HRT)**

In some cases slightly increases risk of breast cancer during symptoms of using HRT to treat menopausal. The greater risk causing because of using longer HRT, But once we stop taking HRT, this risk will begin to fall. Within a year or two, it will be about the same as if you had never taken it.

**The Pill:**

The taking of contraceptive pill as a combination which contains oestrogen and progesterone, it can cause breast cancer. The drop back of risk to normal within a few years of stopping. It's important to mention that breast cancer is rare in young women. Some women's using the combined pill is in their late teens, twenties and early thirties. The extra cases on breast cancer are diagnosed due to small number times of sex, so the risk in breast cancer slightly increases.

**Weight:**

Three major links known between weight & breast cancer are present that are:

- Putting on body weight in adulthood increases the risk of breast cancer development may be in post menopause.
- Being overweight or obese before the menopause slightly reduces your risk of developing breast cancer in premenopausal.
- After menopause loss of control on weight increase your risk of breast cancer.

**Hormonal Imbalances & Breast Cancer:*****Estrogens and Breast Health***

Estradiol the most active form of estrogen as we all know; estrone is present in the inactive form of estrogen. Determining symptoms of estrogens dominance is a smart move since an imbalance of high estrogens to low progesterone that goes undetected for too long is not a risk worth taking<sup>8-9</sup>.

**Hormonal imbalance and Estrogen:**

The primary reasons for this imbalance are:

- A progesterone level decrease occurs due to aging, ovaries removal and excessive stress.
- Estrogen level increases to higher because as the body struggles make an egg from aging ovaries.
- Due to environmental hazards like pesticides and plastics.
- Hormone replacement therapy
- Disturbance in digestive system.

All of these factors contribute to an excess of estrogen in the body known as Estrogen Dominance. Since estrogen stimulates cell growth, a predominance of it, especially in the absence of adequate levels of progesterone, presents an increased risk of cancer, particularly in the breast.

***Estriol & Breast Cancer Prevention***

Estriol, is the low strength estrogen is thought to protect against breast cancer. A revisiting of the literature finds that estriol is vital important, precisely because it is a weak estrogen. Many numbers of studies, published over four decades, have demonstrated that estriol's unique and perhaps most important role may be to oppose the growth of cancers, including breast cancer. The topically used the lower-strength of estriol, they does not raise the risk of breast cancer as stronger or synthetic estrogens do<sup>11</sup>.

***Biomarkers In Breast Cancer:***

The invasive breast cancer of biomarkers plays an important role in management of patients. In some cases selecting patients likely to respond to endocrine therapy, for both receptors i.e. oestrogen receptors (ERs) and progesterone receptors (PRs) should be measured in all newly diagnosed invasive breast cancers. And other conditions, for selecting likely response to all forms of anti-HER2 therapy, determination of HER2 expression or gene copy number is mandatory. Where feasible, measurement of ER, PR and HER2 should be performed on recurrent lesions and the primary invasive tumour<sup>12</sup>.

1. Oestrogen and progesterone receptor for predictive endocrine sensitivity.
2. ER and PR for determining prognosis.
3. ER and PR for determining prognosis.
4. ER and PR: recommendation for further research.
5. HER2 for predicting the response to anti-HER2 therapies.
6. Measurement of HER2
7. HER2: EGTM recommendation.
8. HER2: recommendations for further research.
9. Ki67
10. Ki67: EGTM recommendation.
11. Ki67: recommendations for further research.
12. Multigene/multiprotein test.
13. PAI-1 for determining prognosis and therapy response for activating Urokinase plasminogen
14. uPA and PAI-1: EGTM recommendation.
15. uPA and PAI-1: recommendation for further research.
16. Oncotype DX for determining prognosis and therapy response.

**CONCLUSION**

In this review we were tried to include short overview about breast cancer and causes in simple language so people can easily understand and aware about causes. Review won't be concluded because day to day many changes and updation taken place on treatment of breast cancer. We are in process of taking survey of affected womens globally and our in our next review we can publish data of same.

## REFERENCES

1. Colleoni M, Viale G, Zahrieh D, Pruneri G, Gentilini O, Veronesi P, et.al. Chemotherapy is more effective in patients with breast cancer not expressing steroid hormone receptors: a study of preoperative treatment. *Clin Cancer Res* 2004; 10: 6622-6628.
2. Angelo Di Leo a, Giuseppe Curigliano b, Veronique Dieras et al. New approaches for improving outcomes in breast cancer in Europe. *The Breast* 2015; 321-330.
3. Lars-Arne Haldosén, Chunyan Zhao, Karin Dahlman-Wright, Estrogen receptor beta in breast cancer, *Molecular and Cellular Endocrinology*. 2014; 382: 665–672.
4. Reddy DH, Mendelson EB. Incorporating new imaging models in breast cancer management. *Curr Treat Options Oncol* 2005; 6: 135-145.
5. Lee JM, Halpern EF, Rafferty EA, Gazelle GS. Evaluating the correlation between film mammography and MRI for screening women with increased breast cancer risk. *Acad Radiol* 2009; 16: 1323-1328.
6. Laughney AM, Krishnaswamy V, Rizzo EJ, Schwab MC, Barth RJ, Pogue BW, Paulsen KD, et.al. Scatter spectroscopic imaging distinguishes between breast pathologies in tissues relevant to surgical margin assessment. *Clin Cancer Res* 2012; 18: 6315-6325
7. R. Talamini, C. La Vecchia, A. Decarli, S. Franceschi, E. Grattoni, E. Grigoletto, A. Liberati, and G. Tognoni et al. Social factors, diet and breast cancer in a northern Italian population. 1984;49(6):723–729.
8. Janet K. Horton, MD, MHS, Reshma Jagsi, MD, DPhil, *Breast Cancer Biology: Clinical Implications for Breast Radiation Therapy*, 2018; 100 (1): 23-37.
9. Hayes DF, Bast RC, Desch CE, Fritsche Jr H, Kemeny NE, Jessup JM, et al. Tumor marker utility grading system: a framework to evaluate clinical utility of tumor markers. *J Natl Cancer Inst*. 1996; 88: 1456-66.
10. Duffy MJ, Lamerz R, Haglund C, Nicolini A, Kalousova M, Holubec L, et al. Tumor markers in colorectal cancer, gastric cancer and gastrointestinal stromal cancers: European group on tumor markers 2014 guidelines update. *Int J Cancer*. 2013; 134: 2513-2522.
11. Sturgeon CM, Duffy MJ, Stenman UH, Lilja H, Brunner N, Chan DW et al. National Academy of Clinical Biochemistry. National academy of clinical biochemistry laboratory medicine practice guidelines for use of tumor markers in testicular, prostate, colorectal, breast, and ovarian cancers. *Clin Chem*, 2008; 54: 11-79.
12. Francine B. De Abreu, Wendy A. Wells and Gregory J. Tsongalis The Emerging Role of the Molecular Diagnostics Laboratory in Breast Cancer Personalized Medicine, *The American Journal of Pathology*. 2013; 183: 1075-1083.



54878478451190521



Submit your next manuscript to **IAJPR** and take advantage of:

Convenient online manuscript submission

Access Online first

Double blind peer review policy

International recognition

No space constraints or color figure charges

Immediate publication on acceptance

Inclusion in **Scopus** and other full-text repositories

Redistributing your research freely

Submit your manuscript at: [editorinchief@iajpr.com](mailto:editorinchief@iajpr.com)

