

**TO CORRELATE THE ASSOCIATION OF THYROIDISM AND GALLBLADDER STONES WITH CARCINOMA OF BREAST**

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**ABSTRACT**

**Introduction:** There are number of diseases that can be associated with developing high risk of breast cancer; notably, among them are: thyroid disorder (thyroidism) and gallbladder stones (cholelithiasis). To find a link between these diseases and mechanism, a number of studies have been done in the last decade. The review article explores the studies done to evaluate the possible association of thyroid disorders and gallbladder stones with carcinoma of breast. A number of breast cancer patients are found to have a history of thyroid problems and/or gallbladder stones indicating a possible role of these diseases in the development of breast cancer. **Method:** Extensive electronic search has been done to find relevant studies from

EMBASE, PubMed, Cochrane etc. These studies were analyzed and summarized to throw light on the subject for better understanding of the role of certain disease in carcinogenesis.

**KEYWORDS:** Thyroidism, Gallbladder, Gallstone, High Risk, Carcinoma Breast.

**INTRODUCTIONS**

In India, breast cancer is commonly in most cities like Mumbai, Delhi, Bangalore, **Bhopal**, Kolkata, Chennai, Ahmadabad etc. Breast cancer is the most prevalent cancer for 25% to 32% of all female cancers in all these cities. Breast cancer has been rising progressively and the breast cancer seems to be more common in the younger age group in India since the last decade or two, which is alarming since in young females it is generally found to be more aggressive.

In UK, breast cancer is the most common cancer. It mainly affects older women but in rare cases men can get breast cancer too. Breast cancer can cause lump in breast tissues. Around 55,000 women and 370 men are diagnosed with breast cancer every year in the UK. Further, around 7,000 people are diagnosed with ductal carcinoma in situ (DCIS) each year. Research suggests that breast cancer is caused by combination of lots of different factors. The left breast is 5-10% more likely to develop cancer than the right breast. The left side of the body is also roughly 5% more prone to melanoma a type of skin cancer. Robert W. Franz expert staff of breast cancer research centre, Portland reviewed that breast cancer has to divide 30 times before it can be felt. Even if it divided up to the 28<sup>th</sup> cell division it cannot be detected. Each division takes one to two months, so by the time you can feel a cancerous lump. On an average, the cancer stays in our body for two to five years.

The most important risk factor for the development of breast cancer are gender being more common in females; age; cancer risk increases with age, genetic risk factor of BRCA1 and BRCA2 gene mutation, breast cancer risk higher among women whose close blood relatives have this disease, personal history of breast cancer: a women with cancer in one breast has a greater chance of getting a new cancer in the other breast or in another part of the same. Certain benign breast problems can also cause higher risk of breast cancer development i.e.; women who have certain benign breast change may have an increased risk of breast cancer. Early menarche or late menopause also can cause slightly increased risk of breast cancer. Another known risk factor is breast radiation early in life, women who have had radiation treatment to the chest area as a child or young adult, have a greatly increased risk of breast cancer. Overweight women are at a higher risk of developing breast cancer. In other hand, modifiable risk factors like tobacco smoking may also increase the risk of breast cancer. A few studies have suggested that women who work at night have a higher risk of breast cancer (Kaminska *et al.*, 2015).

In addition to these known risk factors, certain diseases are related to breast cancer development. Among these diseases, thyroid disorders and gallbladder stones are notable. A number of studies have explored the association of thyroidism and gallbladder stones with breast cancer development. Thyroid disorders can range from a small harmless goiter that needs no treatment to life threatening cancer. The most common thyroid problems involve abnormal production of thyroid hormones; too much thyroid hormone result in a condition known as hyperthyroidism and insufficient hormone production leads to hypothyroidism.

Hyperthyroidism is linked with breast cancer risk. Gall bladder stones on the other hand are caused when minerals build up in the gallbladder and form into small stones mostly affecting older male. These stones can be very uncomfortable and painful but there are a number of treatment options available.

Cases of thyroid disease and gallbladder stones have increased exponentially in recent times as well and in females these diseases are linked to breast cancer development. A number of studies have been done to find a possible link but it is still debatable. Several meta-analysis studies to find out the link between these diseases have indeed shown an increased risk of breast cancer in gallbladder stone as well as thyroid disease females and the study did find higher percentage of gallbladder stones and thyroidism in the diseased group.

A study was done to find association between hypothyroidism and hyperthyroidism and breast cancer risk (Mette Sogaard *et al.*, 2016). In the study, 61,873 women diagnosed with hypothyroidism and 80,343 women diagnosed with hyperthyroidism were enrolled and evaluated for breast cancer. The overall conclusion was that there was a slightly decreased risk of breast cancer in women with hypothyroidism and increased risk of breast cancer in women with hyperthyroidism indicating an association between the thyroid function level and the breast cancer risk.

Cari M. Kitahara *et al.*, 2017, did a study to explore the association of hyperthyroidism and hypothyroidism and breast cancer risk. The study revealed an elevated risk of breast cancer mortality in the rear age of 60 in thyroid disease as compared to women without thyroid disease.

A study done by Ching-Henglin and Tseng-Hsitin showed a significantly increased risk of breast cancer in women with hyperthyroidism under the age of 55 years. They concluded that Asian women under 55 years of age with history of hyperthyroidism have a significantly increased risk of breast cancer regardless of treatment.

Rawat Alibha, N. Ganesh (2018) carried out a study to find a link between thyroid disorders, diabetes mellitus and breast cancer risk by cytogenetic analysis of breast cancer females along with females with diabetes and thyroid. The cytogenetic analysis from the peripheral blood of 50 registered breast cancer patients of age group 18-65, thyroid disorder females as

well as healthy females was done and showed that females having breast cancer, thyroid disorders have more chromosomal anomalies than their healthy counterpart.

Liango Dong *et al.*, (2015), did study to find possible association between thyroid and breast carcinoma and they found out that breast cancer and thyroid cancer are two malignant diseases with maximum frequency in females and these studies evaluated the etiological roles of these factors linked with breast and thyroid cancer may also improve our knowledge and identify new therapeutic approaches.

Wysowski DK, Goldbery EL, 1986, in their study found out that there is a possible association between breast cancer and gallbladder disease. The study was carried out to determine if women with breast cancer have an increased risk of prior gallbladder disease. According to their study, gallstones and breast cancer were reported to share many risk factors.

In a case study reported by M. Jones *et al.*, (2009), it was reported that breast cancer was diagnosed on a patient initially presenting as a gallbladder puncture. They postulated that the rupture may be the result of increased pressure in the gallbladder due to obstruction of the cystic duct by metastatic breast carcinoma. Thus, this case study again points towards the co-existence of gallbladder disease and breast cancer.

M. Di Vita *et al.*, 2011, carried out a study to find evidence of the patterns of gallbladder metastases of breast cancer. These metastases were found to be synchronous in 28% cases.

Flora Zagouri *et al.*, 2007, carried out a case study on breast cancer metastases to gallbladder. Breast cancer commonly metastasize to lungs, bones, liver, breast carcinoma metastasizing to the gallbladder is very rare. In their case study, a 59 year old woman presented with bilateral synchronous breast injury which was diagnosed as lobular breast carcinoma. Following treatment, the patient developed symptoms of cholecystitis after surgery at 12 month. This extremely rare case confirms on a single patient the results of large series having demonstrated the preferential metastasis of lobular breast cancer to the gallbladder. It pointed towards the fact that symptoms of cholecystitis should not be neglected in such patients, as they might indicate metastasis to the gallbladder.

In a study by Michelle Azu (2009), a possible association between thyroid and breast cancer was done. It was found that a history of breast cancer can increase your risk for thyroid

cancer and also a thyroid cancer can increase your risk for breast cancer. A woman with breast cancer is 1.55 times more likely to develop a second cancer of the thyroid and thyroid cancer is 1.18 times more likely to develop breast cancer. Some research has indicated the risk of second cancer increase after radioactive iodine and iodine is used to treat the thyroid cancer.

C Giani *et al.*, (1996), did a study to evaluate prospective thyroid function in breast cancer. The relationship between breast cancer and thyroid dysfunction is debated to clarify this issue. The study provided evidence that the overall prevalence of thyroid disorder is increased in patients with breast cancer.

## CONCLUSION

The several studies provides insight into the diseases like thyroid disorders and gallbladder stones that can pose high risk for developing breast cancer the mechanism of which is yet to be understood and more studies needs to be done to explain the triggers caused by these diseases that leads to breast carcinogenesis. In case of thyroid disorders, the high concentration of thyroxin in hyperthyroidism seems to be the culprit which interferes with female estrogen hormone and acts like a growth hormone triggering unwanted cell proliferations in breast cells. The mechanism of association between gallbladder stones and cancer is yet to be understood. The studies support the idea that aggressive measures should be taken to prevent breast cancer in individuals with these diseases by annual mammography screening and other health seeking behaviour so that it can be caught early.

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