

Breast cancer research paper examples

[Science](#), [Genetics](#)



Breast cancer can be referred to as a cancer type that originates from breast tissue, mostly from the milk ducts' inner lining or the lobules, which supply the ducts with milk (Sariego, 2010). Cancers arising from ducts are called ductal carcinomas, as those from lobules are called lobular carcinomas.

Breast cancer affects humans, as well as other mammals. Breast cancer also affects in men.

Breast cancer occurs due to an environmental factor's interaction with a host that is genetically susceptible. Normal cells undergo division as many times as required and stop. They get attached to other cells where they stay in place in tissues. Cells turn cancerous if they lose their ability to stop dividing, to adhere to other cells, to remain in their position, as well as to die timely.

Normal cells undergo apoptosis if they are no longer required. Until this point, several protein pathways and clusters protect them. The pathways include the PI3K/AKT pathway and RAS/MEK/ERK pathway, among others. At times, the genes on these pathways get mutated in a manner that turns them on permanently, making the cell unable to commit suicide when not needed. This is among the steps that lead to cancer together with other mutations. Under normal condition, the PTEN protein switches off the PI3K/AKT pathway if the cell is ready for suicide. In several breast cancers, the PTEN protein gene is mutated; thus PI3K/AKT pathway stays on, and the cancer cell does not undergo suicide. Breast cancer causing mutations have been associated with exposure to estrogen (Cavalieri, Chakravarti, & Guttenplan, 2006).

In the U. S., 10-20 percent of breast cancer patients have a first- or second-degree relative who has the disease. Several mutations linked to cancer

BRCA2, like BRCA1 and p53 occur in errors correction mechanisms, in DNA. These mutations can either be inherited or acquired following birth. Presumptively, they permit further mutations that permit a lack of attachment, uncontrolled division, as well as metastasis to distant organs. Nevertheless, a strong prove of residual risk variation, which goes well beyond mutations of inherited BRCA gene between families that carry the gene. This arises from unseen risk factors. This implicates environmental, as well as other causes as breast cancers inducers. The mutation in BRCA2 or BRCA1 genes that are inherited can interrupt DNA double strand breaks and DNA cross links repair. These carcinogens lead to damage of DNA like cross links of DNA, as well as double strand breaks that frequently need repairs through pathways that contain BRCA2 and BRCA1. Nevertheless, BRCA genes mutations account for just 2 to 3% of all breast cancers. The initial noticeable breast cancer symptom is characteristically a lump, which feels different from the other breast tissue. Over 80% of cases of breast cancer are noticed when a lump is felt. To detect early breast cancers, it requires a mammogram. Lumps detected in lymph nodes situated in the armpits may as well suggest breast cancer. Besides a lump, breast cancer may also be indicated by thickening that is different from the other tissue of the breast and enlargement of one breast or becoming lower. It may also be indicated by a nipple changing shape or position or getting inverted, dimpling or puckering of the skin, a rash around or on a nipple, secretion of discharge from nipple, ceaseless pain in the breast part or armpit, as well as swelling around the collarbone or beneath the armpit. Pain is, however, an undependable tool in assessing the absence or presence of cancer of the

breast, even though it may be suggestive of other health issues of the breast.

Several breast cancer types are diagnosed easily through microscopic analysis of a sample of the breast area that is affected. The two most commonly screening methods that are used in the diagnosis include breasts' physical examination and mammography. These can provide an approximate possibility that a lump is cancer, and can as well detect several other lesions, like a simple cyst (Saslow, et al., 2004). Other biopsy options include a vacuum-assisted breast biopsy or core biopsy, procedures where a breast lump section is removed. An excisional biopsy may as well be done where the whole lump is removed.

Surgery is usually carried out, and it entails the physically getting rid of the tumor, characteristically along with a number of the nearby tissues. The Standard surgeries performed include mastectomy, quadrantectomy and lumpectomy. There is also use of drugs following and in addition to surgery, which are termed adjuvant therapy. Chemotherapy or other therapy types before surgery are termed neoadjuvant therapy. Aspirin can lower breast cancer mortality. Currently, there are three major categories of medication applied for the treatment of adjuvant breast cancer namely chemotherapy, hormone-blocking agents, as well as monoclonal antibodies. Radiotherapy is also a form of treatment given following surgery to the area of the tumor bed, as well as regional lymph nodes, to damage microscopic tumor cells, which may have been left after surgery. It can as well be of benefit to the microenvironment of the tumor (Massarut, et al., 2006; Belletti, Vaidya, & D'Andrea, 2008).

Reference lists

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