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Research Article

KICK OFF THE BREAST CANCER

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A B S T R A C T

Kick off "Breast Cancer" Nurse your baby. Wash your bra Daily. Avoid black bra in summer. Do not wear a bra while sleeping. Do not wear an underwire bra very often. Wearing a bra that is too tight for too long can greatly increase your risk of cancer. Women who wear bras more than 12 hours a day are 21 times more likely to develop breast cancer. Women who wear bra to bed are 125 times more likely to get breast cancer than women who don't wear a bra at all. Always cover your chest entirely by your dupatta or scarf when you are under the Sun. Use a deodorant, not an antiperspirant. This is a Public service message from Tata Cancer Hospital, (India). Breast cancer is one of the most common cancers and the leading cause of cancer-related deaths. Breast cancer affects about 12% of women. It is the most frequently diagnosed cancer in women. Breast cancer is the second common illness suffered by women after cervical cancer. Cell growth cell marker detects this disease among women. If your mother, and even your grandmother, had breast cancer, you are not doomed. Researchers used to think that women with the strong family history of breast cancer had five times the risk of getting the disease. But new research shows that those women are only 2.5 times more likely to develop breast cancer by 70. Smoking will single-handedly shoot your breast cancer. Alcohol seems to boost your estrogen levels, which increases your breast cancer risk. Dietary habits can affect the risk of cancer Frying can release cancer-causing substances from foods more efficiently. Eating more carrots, cabbage, broccoli and cauliflower and other foods rich in calcium, vitamin A, and Vitamin D appears to lower the risk of breast cancer. Breast cancer is cancer that develops from breast tissue.

Breast cancer most commonly develops in cells from the lining of milk ducts and the lobules that supply the ducts with milk. Risk factors for developing breast cancer include being female, obesity, lack of physical exercise, drinking alcohol, hormone replacement therapy during menopause, ionizing radiation, early age at first menstruation, having children late or not at all, older age, prior history of breast cancer, and family history. A lump in the breast or underarm that persists after the menstrual cycle. This is often the first apparent symptom of breast cancer. Lumps associated with breast cancer are usually painless, although some may cause a prickly sensation. Lumps are usually visible on a mammogram long before they can be seen or felt.

INTRODUCTION

Cancer is a disease driven by accumulated somatic mutations which lead to abnormal cell proliferation (1, 2, 3) One such target is the poly (adenosine diphosphate [ADP]-ribose) polymerase (PARP) family of proteins, which comprise 17 different enzymes.

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PARP plays a role in numerous cellular functions, ranging from DNA transcription/repair to genomic stability, cell cycle regulation, cell signaling, and programmed cell death. (4,5). Despite these specificities, the majority of breast cancer genetics studies performed in North Africa remain restricted to the investigation of the BRCA1 and BRCA2 genes. Thus, comprehensive data at a whole exome or whole genome level from local patients are lacking. (6) These changes include a globally hypomethylated tumor cell genome and the focal hypermethylation of numerous 5'-cytosine-phosphate-guanine-3' (CpG) islands, many of them associated with gene

promoters. (7) The link between metabolism and DNA damage/DNA repair in cancer has yet to be appreciably explored. (8) Chromatin packaging and remodeling, through different histone posttranslational modifications including acetylation, methylation, phosphorylation, and ubiquitination, as well as through DNA modifications such as methylation-can regulate gene expression.(9,10). Recently, numerous studies have reported an association between single nucleotide polymorphisms in base-excision repair genes and the risk of developing breast cancer, however, there is no consensus. (11) Risk factors for developing breast cancer include unhealthy lifestyles, other medical conditions, and genetic susceptibility. (12)Aromatase inhibitor (AI) may cause breast tenderness and other symptoms, but it may also serve as a forewarning for increased self-health awareness (13) The established risk factors for breast cancer are age, menopausal status, body mass index, duration of breastfeeding, age at first pregnancy, and postmenopausal hormone use. (14,15) A better understanding of the local characteristics of risk factors may help in devising locally effective prevention strategies for breast cancer. (16) Breast cancer is the most frequent form of cancer affecting women, and estrogen-receptor positive (ER+) tumors account for 60-70% of all reported cases. For patients with early-stage ER+ disease, endocrine therapy: tamoxifen or an aromatase inhibitor (AI) are preferred first-line therapies. Despite these treatments, at least 1 in 4 patients develop a fatal endocrine therapy resistance (17, 18). BC is a heterogeneous disease, and therefore, a "golden standard" treatment, suitable for all the molecular types of cancer, is not available (19) The most important biological markers, not only for classification of BC but also for, the therapeutic strategy are the hormonal receptors (estrogen [ER] and progesterone [PgR] receptor) and the HER2 receptor status (20).

History

The oldest discovered evidence of breast cancer is from Egypt and dates back 4200 years, to the Sixth Dynasty. The study of a woman's remains from the necropolis of Qubbet el-Hawa showed the typical destructive damage due to metastatic spread. (21) The Edwin Smith Papyrus describes 8 cases of tumors or ulcers of the breast that were treated by cauterization. Ancient medicine, believed that breast cancer was generally caused by imbalances in the fundamental fluids that controlled the body, especially an excess of black bile. (22) Alternatively, it was divine punishment. (23)In the 18th century, a wide variety of medical explanations were proposed, including a lack of sexual activity, too much sexual activity, physical injuries to the breast, curdled breast milk, and various forms of lymphatic blockages, either internal or due to restrictive clothing(24) In the 19th century, the Scottish surgeon John Rodman said that fear of cancer caused cancer and that this anxiety, learned by example from the mother, accounted for breast cancer's tendency to run in families(25). Mastectomy for breast cancer was performed at least as early as AD 548 when the court physician Aetius of Amida proposed it to Theodora. (26) The French surgeon Jean Louis Petit (1674–1750) performed total mastectomies which included removing the axillary lymph nodes, French surgeon, Bernard Peyrilhe (1737-1804), who additionally removed the pectoral muscle underlying the breast, as he judged that this significantly improved the prognosis. (27) The Scottish surgeon Benjamin Bell (1749-1806) advocated the removal of the entire breast, even when only a portion was affected. (28)

Their successful work was carried on by William Stewart Halsted who started performing radical mastectomies in 1882. This often led to long-term pain and disability but was necessary to prevent cancer from recurring. (29) Before the advent of the Halsted radical mastectomy, 20-year survival rates were only 10%; Halsted's surgery raised that rate to 50% (30) Modern chemotherapy developed after World War 11(31) In the 1980s and 1990s, thousands of women who had successfully completed standard treatment then demanded and received high-dose bone marrow transplants, thinking this would lead to better long-term survival. However, it proved completely ineffective, and 15–20% of women died because of the brutal treatment. The 1995 reports from the Nurses' Health Study and the 2002 conclusions of the Women's Health Initiative trial conclusively proved that hormone replacement therapy significantly increased the incidence of breast cancer.

Significant Gap in Research

Cancer is a cellular tumor that unlike benign tumor cells, can metastasize and invade the surrounding and distant tissues. Cancers of the lungs, colon/rectum and prostate are the principal leading causes of death in males and in females, breast, colorectal and uterine cancers are most common. (32) To study the Cancer markers is mind -Boggling. It is the new dawn of immunotherapy. This new dawn brings a new beginning. The study gives an idea that How far we have come and where we need to go. Biochemistry, Microbiology, and Pathology are the evidenced-based medicine subjects. Cancer biomarker refers to a substance or process that is indicative of the presence of cancer in the body. A biomarker may be a molecule secreted by a tumor or a specific response of the body to the presence of cancer. Cancer remains the second leading cause of death in the US, behind heart disease. Tumor markers may be used to help to diagnose cancer, predict and monitor response to treatment and determine whether cancer has recurred after treatment.

Major Advances and Discoveries

The future is promising for new markers, the discovery of which is greatly enhanced by the availability of molecular-based techniques. Genomic analysis, Gene expression, profiling, investigation of epigenetic changes, proteomic-focused studies and isolation/analysis circulating tumor cells all offer new opportunities for biomarker discovery. (33) An accurate universal blood test is the most viable basis for a future population-wide screening program for cancer. (34) BRCA1 and BRCA2 genes act as a tumor suppressor, transcriptional regulation, repair of double-stranded DNA breaks.TP53 acts as a tumor suppressor with critical roles in cell cycle control, DNA replication, DNA repair, and apoptosis. TP53 gene most commonly mutated the gene in sporadic breast cancer CHEK2 functions as cell cycle checkpoint kinase, recognition, and repair of DNA damage, activates BRCA1 and P53 by phosphorylation. It may increase the risk of breast cancer after radiation (35) A new study shows that the cells surrounding the breast's milk ducts form an active barrier that extends and grabs cancer cells before they spread to the rest of the body. (36)

Ideas where the Research go Next?

Nuts contain so much fat. Brazil nuts are high in selenium. Selenium is an anti-cancer mineral. In several studies, scientists exposed to rats to chemicals known to cause cancer and gave some of the rats a high dose of selenium. The rats fed selenium developed cancer at a much lower rate than the other rats. To conduct this type of tests on the human is unethical, illegal and ultrawide. But researchers have found that people who live in areas where the soil contains a lot of selenium have a much lower risk of cancer than people who live in low selenium areas. Higher blood levels of selenium may protect against certain cancers, while supplementing with selenium may help to improve quality of life in people undergoing radiation therapy. Higher levels of selenium may be beneficial for boosting the immune system in patients with HIV, influenza, tuberculosis, and hepatitis C.(37).Breast cancer affects about 12% of women. It is the most frequently diagnosed cancer in women. Breast cancer is the second common illness suffered by women after cervical cancer This disease is detected by cell growth cell marker among women. If your mother, and even your grandmother, had breast cancer, you are not doomed. Researchers used to think that women with the strong family history of breast cancer had five times the risk of getting the disease. But new research shows that those women are only 2.5 times more likely to develop breast cancer by 70. Smoking will single-handedly shoot your breast cancer. Alcohol seems to boost your estrogen levels, which increases your breast cancer risk. Dietary habits can affect the risk of cancer Frying can release cancer-causing substances from foods more efficiently. Eating more carrots, cabbage, broccoli and cauliflower and other foods rich in calcium, vitamin A and Vitamin D appears to lower the risk of breast cancer Tofu, tempeh, soy sauce, soy milk, miso, textured vegetable protein-all products made from the lowly soy bean-may contain compounds that help prevent cancer, especially breast cancer. In the recent Japanese study, scientists showed that miso, a type of fermented soy paste used as a seasoning or pickling ingredient in Asian cuisine is an antioxidant. It absorbs free radicals associated with tumor growth. (38)

Current Debate

Breast cancer most commonly develops in cells from the lining of milk ducts and the lobules that supply the ducts with milk. Risk factors for developing breast cancer include being female, obesity, lack of physical exercise, drinking alcohol, hormone replacement therapy during menopause, ionizing radiation, early age at first menstruation, having children late or not at all, older age, prior history of breast cancer, and family history. A lump in the breast or underarm that persists after the menstrual cycle. This is often the first apparent symptom of breast cancer. Lumps associated with breast cancer are usually painless, although some may cause a prickly sensation. Lumps are usually visible on a mammogram long before they can be seen or felt. (39) Modern treatment started in the 1880s with Halsted's mastectomy. Breast cancer mortality is declining in rich countries, but treatments have become more demanding. Your natural body rhythm may play a vital role in combating deadly cancer cells that spread after breast cancer surgery.Researchers believe that having breast cancer surgery in the last half of your menstrual cycle may keep cancer from spreading after the surgery. It is attributed because of high level of estrogen and very little progesterone in your body in the first half of your cycle. Estrogen encourage the growth of cancer cells ,that may escape during surgery. Progesteron discourages the cancer from growing.(40)

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