A REVIEW ON: BREAST, LUNG AND OVARY CANCER

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Abstract

Cancer is a circumstance which arises while a cell starts disobeying the check mechanisms, which control the rate of cell proliferation and starts dividing in an uncontrolled manner. This leads toward the formation of a neoplastic tumor, which is normally benign at this stage, but becomes malignant, when it starts metastasizing, i.e. starts spreading to other tissues. Cancer arises mainly due to two reasons: (1) Gain of function of a proto-oncogene, and it becomes oncogenic (2) failure of the function of a tumor suppressor gene. Inside this review make know general idea regarding breast, lung, and ovary with all proposal point.

Introduction

The word ‘Cancer’ was coined by a Greek physician Hippocrates (460-370 BC), who is furthermore well thought-out as the “Father of Medicine.” Hippocrates used the terms carcinoma and carcinoma to describe non-ulcer forming and ulcer-forming tumors. Galen (130-200 AD), another Roman physician, used the word oncos (Greek for swelling) to describe tumors. A mature human comprises about $10^{15}$ cells; scores of them divide and differentiate in order to renew organs and tissues, which require cell turnover (Bertram, 2001). However, if the cells do not stop dividing, they may show the way to cancer. Characteristically, cancer is an uncontrolled proliferation of cells which become structurally abnormal and possess the ability to detach them from a tumor and begin a new lump at a remote site within the host (National Cancer Institute, 2009). Worldwide, cancer represents a considerable burden of disease in the community and appears to be a most important cause of concern. Every year over 200,000 people are diagnosed with Cancer in the United Kingdom only and approximately 120,000 die as an aftermath of the disease (Department of Health, 2000). According to the International Agency for Research on Cancer, in 2002, cancer killed > 6.7 million people around the world and another 10.9 million new cases were diagnosed. If the results are extrapolated, at the same rate, an estimated 15 million people will have cancer, annually, by 2020. According to an estimate given by American Cancer Society (2009), about 1,500,000 new cases and over 500,000 deaths are expected in the US by 2009. The National Cancer Registry of South Africa has spotted the cancers of bladder, colon, breast, cervix, lungs and melanoma commonly among inhabitants (Mqoqi et al., 2004).

What is breast?

Breast is the upper ventral region in left and right sides, which in a female contains the mammary gland that secretes milk used to nourish infants. As a mammary gland, the breast is an inhomogeneous anatomic structure composed of layers of different types of tissue, with be in the majority two types: (I) adipose tissue (ii) glandular tissue, which special effects to lactation functions of the breasts. Breasts also cover much of the chest area and the chest walls.

Breast cancer

Breast cancer is a malignant tumor that starts in the cells of the breast. The Breast Cancer is most part in Lumps found within lymph nodes located in the armpits (Merck Manual of Diagnosis and Therapy 2003). Breast cancer is a disease of humans and other mammals; while the vast majority of cases in humans are women, men can also develop breast cancer (US NIH: Male Breast Cancer SEER 2006). The earliest breast cancers are detected by a mammogram (American Cancer Society 2007). Indications of breast cancer other than
a lump may include changes in breast size or shape, skin dimpling, nipple inversion, or spontaneous single-nipple discharge. Malignant breast neoplasms is cancer originating from breast tissue, most commonly from the inner lining of milk ducts or the lobules that supply the ducts with milk (Sariego, J. 2010).

Genetics factor
Recently, study has been shown that germ line mutations in the BRCA1 and BRCA2 genes account for a large proportion of cases of hereditary breast cancer (Ford D et al 1995), and additional studies may help in identifying these genes in the future. Throughout indication in the direction of 5% to 10% of breast cancer cases are thought to be hereditary (McGraw-Hill Science & Technology Encyclopedia). Frequently BRCA1 and BRCA2 the most common reason of breast cancer (Palma M et al 2006). Additional genes mutations lead hereditary breast cancers (CHEK-2, PTEN, CDH-1 and STK-11). These genes also dependable various types of cancer, as well as breast cancer (Wooster R, et al 2003 and Tischkowitz M, et al 2010).

Epidemiology
Breast cancer is the second important type of cancer among women and worldwide incidence of breast cancer has increased from 720,000 cases per year in 1985 to 1,000,000 new cases in the year 2000 (Ahmad. M 2003). National Cancer Institute estimates that about 1 in 8 women in the United States (approximately 13.3 percent) will extend breast cancer. This estimate is based on cancer rates from 1997 through 1999 (Ries Lag et al).and American Cancer Society estimates that in 2003 approximately 211,300 new invasive cases of breast cancer will be diagnosed amongst women in the United States (3,800 of those cases will be diagnosed in Louisiana). In North America, breast cancer is the most frequent malignancy diagnosed in women, with 200,000 new cases diagnosed and 50,000 mortalities occurring every year (Maggiolini et al., 2001). just about 1/3rd (32%) of all cancer cases in women are reported to be due to breast cancer (Ahmad. M 2003). In the twelve world regions, the annual age-standardized incidence rates per 100,000 women are as follows: in Eastern Asia, 18; South Central Asia, 22; sub-Saharan Africa, 22; South-Eastern Asia, 26; North Africa and Western Asia, 28; South and Central America, 42; Eastern Europe, 49; Southern Europe, 56; Northern Europe, 73; Oceania, 74; Western Europe, 78; and in North America, 90 (Stewart B. W. and Kleihues P 2003). Estimated 178,480 women are expected to be diagnosed with invasive breast cancer (Breast cancer fact and figure 2006-2007). Breast cancer is strongly related to age with only 5% of all breast cancers occurring in women under 40 years old (Breast Cancer in Young Women WebMD 2009). Breast cancer is the most frequently diagnosed and the leading cause of cancer death in females’ worldwide, accounting for 23% (1.38 million) of the total new cancer cases and 14% (458,400) of the total cancer deaths in 2008 Ahmedin Jemal, (DVM et al 2011).

**What is lung?**
Lung is the necessary respiration organ in many air-breathing animals. Their principal task is to transport oxygen from the atmosphere into the bloodstream, and to discharge carbon dioxide from the bloodstream into the environment. Deoxygenated blood from the heart is pumped from side to side the pulmonary artery to the lungs, where oxygen diffuses into blood and is exchanged for carbon dioxide in the hemoglobin of the erythrocytes. Human lungs are located in two cavities on either side of the heart.

Lung cancer
Lung cancer is called "primary" if the cancer originates in the lungs and "secondary" if it originates elsewhere in the body but has metastasized to the lungs. These two types are considered different cancers from diagnostic and treatment perspectives. Lung cancer can be broadly classified into two main types based on the cancer’s appearance under a microscope: non-small cell lung cancer and small cell lung cancer. Non-small cell lung cancer (NSCLC) accounts for 80% of lung cancers, while small cell lung cancer accounts for the remaining 20%. NSCLC can be further divided into four different types, each with different treatment options:

- Squamous cell carcinoma or epidermoid carcinoma
- Adenocarcinoma
- Bronchioalveolar carcinoma
- Large-cell undifferentiated carcinoma.

Genetics factor
Lung cancer is initiated through activation of oncogenes or inactivation of tumor suppressor genes (Fong, KM et al 2003). Mutations in the K-ras proto-oncogene are responsible for 10–30% of lung adenocarcinomas (Herbst, RS et al 2008 and Aviel-Ronen et al 2006). And Mutations in EGFR are common in non-small-cell lung cancer (Yuh-Min Chen 2005). Frequent genetic polymorphisms and inactivation of tumor suppressor genes Damage to chromosomes 3p, 5q, 13q, and 17p are predominantly regular in small-cell lung carcinoma (Trivedi Upama N et al 2010).

Epidemiology
Lung cancer is the third-most commonly diagnosed cancer in both men and women. Cigarette smoking is the major risk factors for lung cancer, accounting for about 87% and 70% of the cases in men and women, respectively and the incidence rate for men were 77.7 per 100,000 and 52.5 per 100,000 for women. In England and Wales, nearly 29,000 deaths were contributed to lung cancer in 2002 (NICE 2005). Lung cancer is the most common cause of cancer death for men, who account for 60% of lung cancer cases. For Wales, the latest figures on survival for people diagnosed between 1994 and 1998 showed 1-year relative survival of 20.5% for both men (NICE 2005). The age-adjusted death rate for lung cancer is higher for men (67.0 per 100,000 persons) than for women (40.0 per 100,000 persons). It also is higher for Blacks (56.8 per 100,000
What is ovary?
Ovary is an ovum-producing reproductive organ, often initiate in pairs as part of the vertebrate female reproductive system. Ovaries in anatomically female those are similar to testes in anatomically male individuals. The ovaries aren't attached to the fallopian tubes but to the external layer of the uterus via the ovarian ligaments. Usually each ovary takes turns releasing eggs every month. Ovaries found in the female reproductive system that employ sexual reproduction.

Ovarian cancer
The surface epithelial cells are the primary locus of ovarian cancer, with almost 90% of all ovarian cancers derived from the surface epithelium (Weiss et al., 1977). Most ovarian cancers are either ovarian epithelial carcinomas (cancer that begins in the cells on the surface of the ovary) or malignant germ cell tumors (cancer that begins in egg cells). Ovarian cancer is recognized when cells in the ovaries grow abnormally and invades adjacent tissues and spread to other parts of the body. These abnormal growths of tissues are called tumors. The types of ovarian cancer are categorized according to the nature of cells:

- Epithelial ovarian cancer
- Germ cell ovarian cancer
- Stromal ovarian cancer

Genetic factor
The hereditary component of ovarian cancer appears to be due to mutations in BRCA genes, with two-thirds of those cases linked to BRCA1 gene mutations and one-third associated with BRCA2 (Frank et al., 1998). Roughly 1 in 800 women in the general population carry BRCA1/2 mutations (Roa et al., 1996). Hereditary factors for ovarian cancer require further investigation, as women with BRCA1/2 mutations are 10 times more likely to develop ovarian cancer than women without these mutations (Boyd et al., 2000). Hereditary forms of ovarian cancer can be caused by mutations in specific genes most notably BRCA1 and BRCA2. recent review revealed that Infertile women and those with a condition called endometriosis, those who have never been pregnant and those who use postmenopausal estrogen replacement therapy are at increased risk.

Epidemiology
Ovarian cancer is the fifth leading cause of cancer death among women in the U.S., accounting for an estimated 23,400 new cases and 13,900 deaths in 2001 (American Cancer Society). According to data of the International Cancer Study Agency every year more than 200,000 new cases of ovarian cancer are registered in the world and more than 120,000 women die from ovarian malignant tumors. The total, 22.2% of new cases are registered among populations of reproductive age (15-44 years). Ovarian cancer incidence rate in general equals to 6.6, and in the age group 15-44 is 3.2 per 100,000 female population (IARC, 2004). More than half of the deaths from ovarian cancer occur in women between 55 and 74 years of age and approximately one quarter of ovarian cancer deaths occur in women between 35 and 54 years of age. In 2010, in the United States, it is estimated that 21,880 new cases were diagnosed and 13,850 women died of ovarian cancer. According to age group approximately 1.2% was diagnosed under age 20; 3.5% between 20 and 34; 7.3% between 35 and 44; 19.1% between 45 and 54; 23.1% between 55 and 64; 19.7% between 65 and 74; 18.2% between 75 and 84; and 8.0% 85+ years of age. 10-year relative survival ranges from 84.1% in stage IA to 10.4% in stage IIIIC (Kosary, Carol L. 2010 and National Cancer Institute 2011).

Conclusion
In the current time researcher creating innovative approaches that would avoid cancer and their correlate genetics diseases. With the intention of so many researcher paved the way for identification and their genetically analysis, these advances technology for understanding of the genetics of different cancer. Now a day’s emerging molecular technologies, suggest that genetic defects of cancer cells could revolutionize and management of related disease. There are number of bioinformatics tools as well as online server for analysis predicts function and structural annotation. These program users friendly and give much aware results about cancer and their genetics.

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Bibliography


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