



STUDYING PREVELLENCE OF DIFFERENT TYPES OF CANCER IN PRESENT TIMES

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ABSTRACT

In this brief report, we offer a concise overview on current cancer epidemiology garnered from the official databases of World Health Organization and American Cancer Society and provide recent information on frequency, mortality, and survival expectancy of the 15 leading types of cancers worldwide. Overall, cancer poses the highest clinical, social, and economic burden in terms of cause-specific Disability-Adjusted Life Years (DALYs) among all human diseases. The overall 0–74 years risk of developing cancer is 20.2% (22.4% in men and 18.2% in women, respectively). A total number of 18 million new cases have been diagnosed in 2018, the most frequent of which are lung (2.09 million cases), breast (2.09 million cases), and prostate (1.28 million cases) cancers. Beside sex-specific malignancies, the ratio of frequency between men and women is >1 for all cancers, except thyroid (i.e., 0.30). As concerns mortality, cancer is the second worldwide cause of death (8.97 million deaths) after ischemic heart disease, but will likely become the first in 2060 (~18.63 million deaths). Lung, liver, and stomach are the three most deadly cancers in the general population, while lung and breast cancers are the leading causes of cancer related-mortality in men and women, respectively. Prostate and thyroid cancers have the best prognosis, with 5-year survival $\sim 100\%$, while esophagus, liver, and especially pancreas cancers have the worst prognosis, typically $<20\%$ at 5 years. We hope that this report will provide fertile ground for addressing health-care interventions aimed at preventing, diagnosing, and managing cancer around the world.

Keywords: Cancer, epidemiology, statistics, frequency, mortality.

I. INTRODUCTION

CANCER

Cancer is nothing but one of the complex diseases, in which a group of cells divided abnormally form a tissue without control in different parts of organ. Cancer cells can spread to other parts of the body through the blood circulation or lymph system. The cell is a basic fundamental unit of life to make body parts and these cells grow and divide in a controlled

manner to keep the body healthy. When cells become old or damaged, they die and are replaced with new cells in a programmed manner; this process is called as apoptosis. However, sometimes this programmed process goes wrong. The genetic material (DNA) of a cell regulates the normal cell growth and division. If DNA is damaged or changed, cells do not die and cells keep dividing when the body does not need them, these extra cells form a mass of tissue which is called as tumor (Figure-1.1)

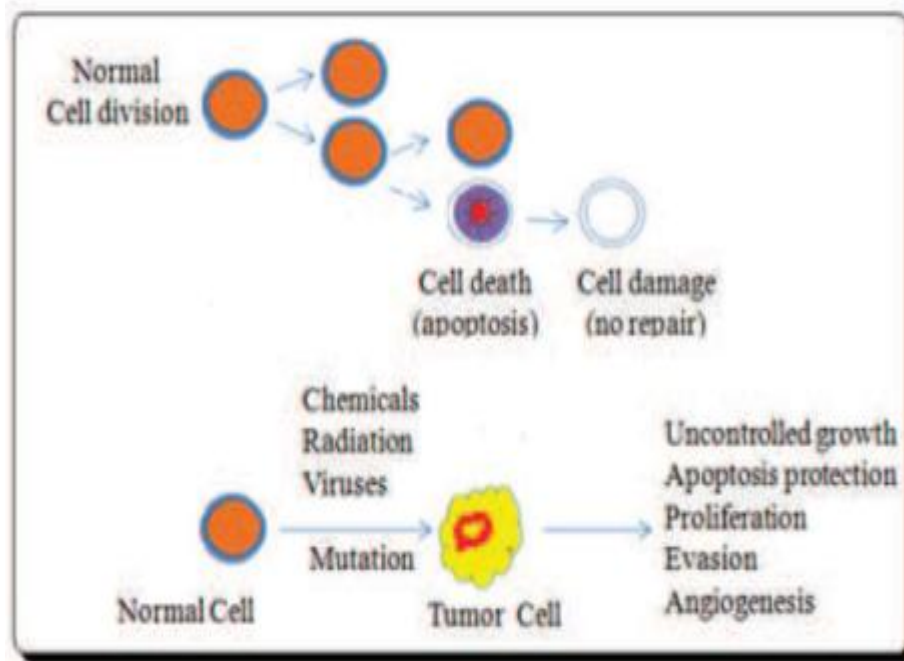


Figure 1.1 Cell division in normal cell and cancer cells forming tumor.

II. CERVICAL CANCER

Cervical cancer is the term for a malignant tumor found in the cervix uteri. Human papillomavirus (HPV) infection appears to be a necessary factor in the development of almost all cases (90 %) of cervical cancer. Though squamous cell carcinoma is the cervical cancer with the most incidences, the incidence of adenocarcinoma of the cervix has been increasing in recent decades.

1. Cervical cancer statistic

Cervical cancer is the third most common type of cancer in women worldwide. At least 80 percent of these type of cancer deaths occurs in developing countries with most occurring in the poorest regions of south Asia, Sub Saharan Africa and parts of Latin America. As reported



by WHO, the international agency on research for cancer, it kills more than 288,000 women each year worldwide. In India, this is the second most common cancer in women aged 15 to 44 years, one woman dies of cervical cancer every 8 minutes. In the year 2012 about 122,844 new cervical cancer cases are diagnosed.

2. Vaccine for cervical cancer:

Two vaccines, Gardasil and Cervarix, are available to prevent HPV infection. Gardasil (Merck & Co.), also known as Gardasil or Silgard is a vaccine for use in the prevention of certain types of human papillomavirus (HPV), specifically HPV types 6, 11, 16 and 18 HPV types 16 and 18 cause an estimated 70% of cervical cancers, and are responsible for most HPV-induced anal, vulvar, vaginal, and penile cancer cases. HPV types 6 and 11 cause an estimated 90% of genital warts cases. Gardasil has been used in prevention of two types of HPV infections, associated with approximately 70% of HPV cases. It does not treat existing infection. Therefore, to be effective it must be given before HPV infection occurs. The HPV strains that Gardasil protects against are sexually transmitted. It was approved in the US on June 8, 2006 by the U.S. Food and Drug Administration (FDA).

III. BREAST CANCER

The tumor is found in breast tissue called as Breast cancer (cancer originating from breast tissue). The tumor development starts from the inner lining of milk ducts or the lobules that supply the ducts with milk. These malignant tumors can spread to other parts of body.

1. Breast cancer statistic

Breast cancer is the most common cancer in Western and American women. The American Cancer Society's estimates for breast cancer in the United States for 2012. About 226,870 cases of invasive breast cancer will be diagnosed among women and 2,190 cases among men in the U.S. About 39,510 women and 410 men will die from breast cancer. In India, the incidence of breast cancer is rising. Over 100,000 new breast cancer patients are estimated to be diagnosed annually. As per the ICMR-PBCR data, breast cancer is the commonest cancer among women in urban area where accounts for > 30% of all cancers in females.

The peak occurrence of breast cancer in developed countries is above the age of 50 whereas in India it is above the age of 40.

2. Anatomy of breast



The purpose of the female breast is to produce milk. The breast is made up of lobules, which are milk glands that produce the milk, and ducts, which carry the milk from the lobule to the nipple during lactation (when milk is being produced). Breast cancer can form either in the lobules or in the ducts. The ducts and lobules are connected like branches on a tree trunk, forming a closed system.

3. Different Types of breast cancer

A breast cancer that is contained within this closed system is said to be “insitu” or “non-invasive”. A cancer that forms in the lobules is known as “lobular carcinoma” while a cancer that forms in the ducts is known as “ductal carcinoma”. There are many types of breast cancer, but some of them are very rare. Sometimes a breast tumor can be a mix of these types.

4. Ductal carcinoma in situ (DCIS)

DCIS means that abnormal cells start in the cells lining the ducts without growing (invading) through the walls of the ducts into the tissue of the breast. Because the cells haven’t invaded, DCIS is also sometimes called a non-invasive breast cancer. Since the cells haven’t grown through the duct wall, they cannot spread to lymph nodes or other organs. But sometimes DCIS can go on to become an invasive cancer. That is why it is sometimes called a pre-cancer.

5. Invasive (or infiltrating) ductal carcinoma (IDC)

This is the most common breast cancer. It starts in the cells lining and duct, and then the abnormal cells break through the wall of the duct and grow into (invade) the tissue of the breast. From there, the cancer cells can spread to nearby lymph nodes or other parts of the body.

6. Invasive (infiltrating) lobular carcinoma

This cancer starts in the cells lining of the milk glands (the lobules). The cells grow through the wall of the lobules and then can spread to nearby lymph nodes or other parts of the body.

7. Inflammatory breast cancer (IBC)

This is a rare type of invasive breast cancer. Often, there is no single lump or tumor. Instead, IBC makes the skin of the breast look red and feel warm.

It also may make the skin look thick and pitted, something like an orange peel. The breast may get bigger, hard, tender, or itchy.



IV. OVARIAN CANCER

Ovarian cancer begins in the ovaries. Ovaries are reproductive glands found in females (women). The ovaries produce eggs (ova) for reproduction. The eggs travel through the fallopian tubes into the uterus where the fertilized egg implants and develops into a fetus. The ovaries are also the main source of the female hormone's estrogen and progesterone. Malignant (cancerous) or low malignant potential ovarian tumors can spread (metastasize) to other parts of the body and can be fatal. Their treatment is discussed later in this document.

1. Ovarian cancer statistic

Ovarian cancer is the fifth most rank in cancer deaths among women, accounting for more deaths than any other cancer of the female reproductive system. According to American Cancer Society estimates for ovarian cancer in the United States for 2016 are: 1) About 22,280 women will receive a new diagnosis of ovarian cancer. 2) About 14,240 women will die from ovarian cancer.

2. Anatomy of Ovaries

Ovaries are female reproductive organs. Every women has 2 ovaries, which are located in the pelvic region, on each side of the uterus. Each ovary is approximately the size of an almond. The ovaries play a crucial role in the reproductive system. They produce and release eggs, which travel through the fallopian tubes and attach to the uterus after fertilization by a sperm. The ovaries are also responsible for producing the female sex hormones, estrogen, and progesterone. **(Figure-1.2.)**



Figure 1. 2 Anatomy of ovaries

Types of ovarian cancer include:

Ovarian cancer refers to malignant tumors originating in the ovaries, which can spread (metastasize) to other places in the body. There are 3 main types of ovarian tumors.

1. **Epithelial tumors:** These tumors are the most common type of ovarian tumors. These tumors originate from cells that make up the outer surface (epithelium) of the ovaries.
2. **Germ cell tumors:** These tumors originate from cells that produce eggs.
3. **Stromal tumors:** These tumors originate from cells in the ovarian stroma. Stromal cells connect the parts of the ovary together and secrete female hormones.

V. CONCLUSION

The rapid spread of cervical cancer, breast cancer and ovarian cancer are the most common type of cancer in women in the developing world. This has encouraged an intense worldwide search for new compounds which may have less side effect and also overcome the problem of resistance by becoming a new addition to the existing class of vascular disrupting agents and anti-mitotic agents. After adequate literature survey that indolylchalcone is associated with a wide range of biological activities such as anticancer, anti-inflammatory, analgesic anthelmintic etc. And hence such indolylchalcone have the potential to improve selectivity of chemotherapeutic agents. It may also reduce unwanted side effects and multi drug resistance MDR syndrome, hence, taking this in account, chemistry of 3-substitution on indole moiety shows that these has various



biological activity and synthesis of such derivatives which has a skeleton that contains an indole cores and are also in chemistry of benzimidazole 2-substitution are valid for biological activities. Accordingly, in this research study, a series of 30 indolylchalcone hybrids were synthesized by ClaisenSchmidt condensation of N-1 substituted indole-3-carboxaldehyde and N-1substituted 2-acetyl- benzimidazole.

REFERENCES

1. Macaev F, Boldescu V, Pogrebnoi S, Duca G Chalcone Scaffold based Antimycobacterial Agents. Medicinal chemistry (2014), 4: 487-493.
2. Li Q, Sham HL. Discovery and development of antimitotic agents that inhibit tubulin polymerization for treatment of cancer. Exp Opin Ther Patents ; (2002),12:1663–1702.
3. Danielle D. Jandial, Christopher A. Blair, Molecular Targeted Approaches to Cancer herapy and Prevention Using Chalcones Current Cancer Drug Targets, (2014), 14, 181-200.
4. HatishPrashar, AnshulChawla, Anil Kumar Sharma and Rajeev KharbChalcone As A Versatile Moiety For Diverse Pharmacological Activities, International Journal pharmaceutical sciene and research., (2012) Vol. 3(7): 1913-1927
5. Crooksa P. A. ThirupathiReddya Y. ,NarsimhaReddya P. Kodurub S. , Damodaranab C. , Synthesis and anti-proliferaive activity of substituted(Z)-5-(N-benzylindol-3ylmethylene)idazolidine-2,4-diones. Bioorg Medicinal Cheistry. (2010), 18(10), 35703574.
6. Magdy, AH Zahran and Atef M. Ibrahim. , Synthesis and cellular cytotoxicites of new N-substituted indole-3- carboaldehyde and their indolylchalcone, Journal Of Chemical Science, (2009),121(4), 455-462