CarciKnow News

the voice of Carcinogenesis Foundation

http://www.carciknowgenesis.org

April 2009

Carcinogenesis Foundation in Cancer prevention efforts

Editorial Thoughts

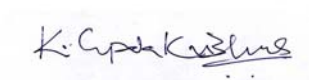
Carciknow News is being brought out every month as a **voice of the Carcinogenesis Foundation**. The content of the newsletter is intended to be of interest to general public as well as researchers and medical professionals. We love to hear your suggestions and feedback so that we can further enhance the reach of the Carciknow News.

Every month, we are focusing on one particular type of cancer and writing stories relevant to that cancer. April issue of Carciknow News is focusing on testicular cancer which is successfully treatable and curable. We are trying to bring information on cancer prevention tips from various parts of the world and cultures. If you have any story to contribute, please do not hesitate to write to us.

Concerns of Cancer Incidence by 2020

Cancer incidence rates could further increase by 50 percent to 15 million new cases in the year 2020, according to the World Cancer Report, the most comprehensive global examination of the disease to date. In 2000, 5.3 million men and 4.7 million women developed a malignant tumor and 6.2 million of them died of the disease. The predicted sharp increase in new cases – from 10 million new cases globally in 2000, to 15 million in 2020 - will mainly be due to steadily aging populations in both developed and developing countries and also to current trends in smoking prevalence and the growing adoption of unhealthy lifestyles.

However, healthy lifestyles and public health action by governments and health practitioners could stem this trend, and prevent as many as one third of cancers worldwide. Carcinogenesis Foundation likes to be a part of this effort and call for urgent global cancer prevention initiatives.



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Testicular cancer: Incidence around the world

Unlike other cancers, testicular cancer (TC) is relatively rare. The incidence rate of TC has been increasing since the middle of the 20th century in many western countries. About 49,000 new cases annually detected among men. It is more prevalent in developed countries than in developing countries. The highest rates are observed in western Europe (7.9 per 100,000), northern Europe, Australia/New Zealand, and North America (5.4 per 100,000). The incidence is low in Asia: 0.4 per 100,000.

The highest incidence rates occur in men aged 15 to 44, and TC is the most common cause of cancer among men in this age range in developed countries (13.4% of new cases). Every year testicular cancer claims about 9,000 lives.

Despite increase in TC incidence, according to the National Cancer Institute, the 5-year relative survival rate for all men with this cancer is 96 percent. If the cancer hasn't spread outside the testicle, the 5-year relative survival rate is 99 percent. Even if the cancer has spread to nearby lymph nodes, the 5-year relative survival rate is 96 percent.

Special points of interest:

- Story of Cisplatin
- Armstrong's battle
- April - Testicular , head, and neck cancer Awareness Month

Carcinogenesis Foundation has a new web site.

http://www.carciknowgenesis.org

Please visit the site and send us your suggestions.

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Alfred Werner n Cisplatin

Accidental discovery of a cancer cure: story of Cisplatin

Cisplatin is widely prescribed to treat testicular, ovarian, bladder, lung, and stomach cancers. Marketed as Platinol, cisplatin disrupts the growth of cancer cells. Popularly known as 'penicillin of cancer drugs', its discovery has a fascinating tale. It was first synthesized by Italian chemist Michel Peyrone in 1845. Then it was known as Peyrone's chloride. In 1893, Alfred Werner, a chemistry professor at the University of Zurich, and a Nobel Laureate in Chemistry, shed light on its structure.

In the early 1960s, its anti-cancer activity came to light through an accidental discovery. In 1965, Barnett Rosenberg and his colleagues at Michigan State University began a series of experiments to study the effect of electrical currents on bacterial cell growth. The electrical treatment only prevented cell division of bacteria – not any other growth processes.

The electrical fields didn't do any trick. Instead, the researchers found that a compound was formed in a reaction between the platinum electrodes and solution containing the bacteria. The compound was determined to be cisplatin. This encouraging finding led Rosenberg's group to test cisplatin against tumours in mice. The compound was found effective and entered clinical trial in 1971.

Cisplatin, as Rosenberg dubbed *cis*-diamminedichloroplatinum (DDP), was approved by United States Food and Drug Administration (FDA) for use as a cancer drug in 1978. Cisplatin binds to DNA of cancer cells and cripples the repair mechanism of cells. initiating death of cancer cells.

Male Infertility may be a risk factor for TC

Infertile men may be at increased risk for testicular cancer, claims a study published in the February 23 issue of the Archives of Internal Medicine.

The researchers calculated that men in couples seeking fertility treatment were 1.3 times more likely to develop testicular cancer than those of the same age in the general population.

Men with male infertility factor were 2.8 times more likely to develop testicular cancer than other men.

Types of Testicular Cancers

Testicular cancer typically develops in one or both testicles in young men aged between 15 and 44. It is a curable type of cancer.
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Germ Cell Tumors

More than 90 per cent of cancers of the testicle develop in special cells known as germ cells and are inherited. A recent research suggests that risks of cancer in family members of men with testicular germ cell tumors are elevated. These germ cells also produce sperm. There are two main types of germ cell tumors (GCTs): *seminomas* and *nonseminomas*.

Seminomas

Seminomas originate in sperm-producing germ cells of the testicle. There are two main subtypes of these tumors - classical (or typical) seminomas and spermatocytic seminomas. It is possible to distinguish these two types of cells with cells with the help of microscope. More than 95 per cent of seminomas are classical. These usually occur in men when they are between their late 30s and early 50s.

NonSeminomas

Occurring between late teens and early 40s, there are four main types of nonseminoma tumors: embryonic carcinoma (when seen under a microscope, these tumors can look like tissues of very early embryos), yolk sac carcinoma (looks like the yolk sac of an early human embryo), choriocarcinoma (aggressive type) and spread to organs like lungs and and teratoma (look like each of the 3 layers of a developing embryo).

Testicular Cancer: the Underlying Causes

Researchers are yet to pinpoint precise cause of testicular cancer. Occupational exposure to carcinogens, lifestyle, socioeconomic and other risk factors have shown mixed associations with testicular cancer. Lifestyle and occupational exposures occurring later in life may play a role in triggering the disease, although they are not likely involved in cancer initiation. In recent years, researchers have learned a lot about certain changes in chromsomes and DNA that may tweak normal testicular germ cells to develop into germ cell tumors. Chromosomes are giant molecules of DNA and protein that carry genetic information about inherited traits. Each sperm or egg cell has half as many chromosomes as other body cells. When the sperm and egg fuse, the resulting offspring has a normal number of chromosomes - half of which are from each parent. Meiosis is a cell division process by which germ cells with 46 chromosomes develop into sperm or egg cells with 23 chromosomes. If anything goes wrong during meiosis, testicular germ cell tumors may form.

Testicular cancer cells often have extra copies of a part of chromosome 12. Changes in chromosomes and the factors that regulate cell division and the cell cycle have been associated with testicular cancer, both in animals and in humans. Some men whose mothers took a hormone called DES (diethylstilbestrol) during pregnancy to prevent miscarriage have testicular abnormalities. Scientists are not sure whether there is a direct link between this compound and testicular cancer.

Lance Armstrong: A Man Who Defied Testicular Cancer

It is possible to defy death when it looms large. No one knows this better than Lance Armstrong who has won a battle against cancer. In 1996, Armstrong, an internationally famous bicycle racer, was diagnosed with advanced testicular cancer. He began to cough up blood and had a painful testicle. To make matters worse, cancer spread to his lungs and brain.

Amid slim hope of survival, his treatment started. First his testicle was removed. Then he received chemotherapy with cisplatin and etoposide.

By 1998, he completed his treatment. Then something unbelievable happened. In 1999, he won the Tour de France, the most grueling athletic event in the world.

He went on to win this event a record 7 consecutive times between 1999 and 2005. He has also founded the Lance Armstrong Foundation, a charitable organization dedicated to promoting cure of cancer and help patients coping with its consequences.

Armstrong at a seminar

Tobacco and Cancer

Tobacco use is the single most preventable cause of death worldwide, responsible for the deaths of approximately half of all long-term users.

An estimated five million people died from tobacco use in 2000, representing about 12 percent of adult deaths. Of these, about 30 percent (1.42 million deaths) resulted from cancer, with 8,50,000 annual deaths from lung cancer alone.

The number of deaths attributable to tobacco use is increasing rapidly due to widespread smoking in populous developing countries.

If current smoking patterns continue, the number of tobacco-related deaths will rise to 8.3 million deaths per year by 2030, with more than 70 percent of these deaths occurring in developing countries.

Overall, tobacco killed about 100 million people globally in the 20th century. Tobacco is projected to kill more than one billion people in the 21st century, with the great majority of these deaths occurring in developing countries.

Halting the rapid increase in tobacco consumption in developing countries is an urgent global health priority.

Cancer: Herbs to the Rescue

A few millennia ago, herbs were the only way out to combat diseases including deadly cancer. Then things changed during the first half of last century which saw a surge of synthetic drugs. Shrouded in myths, herbs took a backseat until synthetic drugs unleashed their harmful side effects. Looking for alternatives, modern medicines began to probe herbs' medicinal values and came up with interesting insights.

China and India have strong bases of traditional medicines dating back to 4000 years ago. Burgeoning research in labs reveals the efficacy of herbs to combat various cancers. One such versatile herb is *Scutellaria baicalensis popularly known as skullcaps*. It has been extensively used in traditional medical systems of China, India, Korea, Japan, European countries, and North America. In skullcaps, researchers have identified four active compounds – *baicalin, wogonoside, baicalein, and wogonin*. The pure compound *wogonin* significantly inhibited cyclooxygenase 2 (COX-2) activity in lipopolysaccharide (LPS)-stimulated macrophages. The herb components act on different anticancer pathways.

Self-exam to detect Testicular Cancer

Besides being curable, testicular cancer is highly preventable before it turns aggressive.

For this, one should know the risk factors– undescended testicle, white race, and a family history of the disease.

In most cases, first sign is a lump on the testicle. Finding a lump is important to seek doctor's advice and even start anti-cancer treatment.

Testicle can enlarge for reasons other than cancer. In hydrocele, fluid can collect in testicles. In varicocele, dilated veins can enlarge the testicle.

Clove against Lung Cancer

A recent research from India has discovered that clove, a commonly used spice, could combat lung cancer. In studies with mice, the researchers found that clove infusion (powdered cloves in distilled water) inhibited the growth of mice lung cancer cells and caused mass death of the cancer cells.

Research-Awareness-Care-Education

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Mission of the Carcinogenesis Foundation

The mission and activities of Carcinogenesis Foundation can be summarized by an acronym PRIME (Prevention-Research-Innovation-Medicine-Education). Prevention is the best medicine for any disease, especially cancer. Carcinogenesis Foundation believes that innovative research and development of medicinal agents coupled with education will be the key to the global vision of eradicating cancer incidence. The Foundation will catalyze and support innovations in carcinogenesis research and education.

Please contact us for further details and opportunities to get in-

Publish your research in the Journal of Carcinogenesis

Journal of Carcinogenesis is a peer-reviewed, online journal designed to bring together many aspects of research to develop the understanding of carcinogenesis.

Edited by Dr. Gopala Kovvali, Journal of Carcinogenesis is supported by an international Editorial Board.

Journal of Carcinogenesis considers manuscripts in many areas of carcinogenesis and Chemoprevention. Primary areas of interest to the journal include: physical and chemical carcinogenesis and mutagenesis; processes influencing or modulating carcinogenesis, such as DNA repair; genetics, nutrition, and metabolism of carcinogens; the mechanism of action of carcinogens and modulating agents; epidemiological studies; and, the formation, detection, identification, and quantification of environmental carcinogens.

Manuscripts that contribute to the understanding of cancer prevention are especially encouraged for submission.

For further details. please contact us at Editor@carcinogenesis.com or visit our web site http://www.Carcinogenesis.com

Oral, Head and Neck Cancer: Causes and Prevalence

Most head and neck cancers begin in the region of mouth, nose and throat. Head and neck cancers grow in the cells that line the mucosal surfaces, moist tissues lining the hollow organs and cavities like mouth, nose and throat. As normal mucosal cells look like scales (squamous) under the microscope, head and neck cancers are often dubbed as squamous cell carcinomas.

Head and neck cancers mainly hit oral cavity, salivary glands, nasal cavity, and pharynx (a hollow tube that starts behind the nose and leads to esophagus).

Tobacco (including 'chewing tobacco) and alcohol use are the main risk factors for head and neck cancers. Eighty-five percent of head and neck cancers are associated with tobacco use.

Other risk factors for cancers of the head and neck include sun exposure, human papillomavirus infection, radiation to head and neck and exposure to airborne particles of asbestos, especially in the workplace.

Immigrants from Southeast Asia who use paan (betel quid) in the mouth should be aware that this habit has been strongly associated with an increased risk for oral cancer.

Also, consumption of mate, a tea-like beverage habitually consumed by South Americans, has been associated with an increased risk of cancers of the mouth, throat, esophagus, and larynx.

These cancers are more common in men and in people over age 50.

Head and neck cancers account for approximately 3 to 5 percent of all cancers in the United States.

Do you have a story to tell or a healthy recipe to share with people around the world?

Please write to us to discuss it further.