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## Review Article

# A Brief Review on The Cancer Disease

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## ABSTRACT

Now a day's cancer is the most prevalent life threatening disease which is spreading because of the lifestyle we are living. Cancer is the due to controlled growth of the cell which can be cured if diagnosed in early stage of the life. Treatment of cancer depends on the various internal and external factors causing cancer. Cancer is the screened by test and a number of treatment are now available these days such as gene therapy, chemotherapy, surgery, radiation therapy, immune therapy etc. In future up to 2030 around 22.2 million cases are expected to be diagnosed for cancer.

## INTRODUCTION

Cancer is a general term that refers to the disease that arises when biological alterations lead to unchecked cell growth and division. Simply said, cancer is a collection of over 100 illnesses that affect uncontrollably growing body cells. Any part of the body can develop cancer, and each type of cancer has its own characteristics. Cancer starts when a cell escapes the usual controls on cell division and starts to proliferate on its own. An observation made by "Hippocrates" about 2,300 years ago is where the name "cancer" originates. The Greek word "Korkinoma" was followed by the Latin word "Cancer." "Living tissues are made up of cells, and every cell is a direct descendent of every

other cell, according to Hooke in the 1600s and Virchow in the 1800s. This knowledge has led to other inquiries regarding cancer. An incidence of scrotal cancer was reported among boys who worked as chimney sweepers in 1775, and in the middle of the 1800s, lung cancer was found to be frighteningly common among German pitch-blende miners. These were two of the most significant early observations. Furthermore, toward the end of the 1800s, several doctors believed that cigars were intimately linked to throat and mouth malignancies. Such findings, along with other data, suggested that cancer might have an external origin and cause. More

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importantly, they suggested that cancer might have identifiable and even preventable causes.

**Definition:** “Cancer refers to any one of a large number of diseases characterized by the development of abnormal cells that divide uncontrollably and have the ability to infiltrate and destroy normal body tissue”. Cancer is caused by the changes to DNA. Most of the Cancer causing DNA changes occurs in section of DNA called genes. These changes are also called genetic changes.

### Prevalence Of Cancer in India:

The prevalence of cancer in India is the high, and is projected to increase in the coming years:

**Number of cases** – In 2022, there were an estimated 1,461,427 new cancer cases in India, with a crude incidence rate of 100.4 per 100,000 people. This means that about one in nine people

in India are expected to develop cancer in their lifetime.

**Leading sites** - Lung cancer was the leading site of cancer in men, while breast cancer was the leading site in women.

**Childhood cancers**–lymphoid leukemia was the leading childhood cancer, accounting for 29.2% of cases in boys and 24.2% in girls.

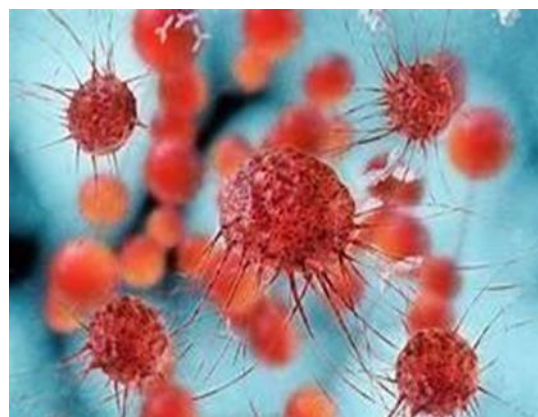


Fig.1.Cancer

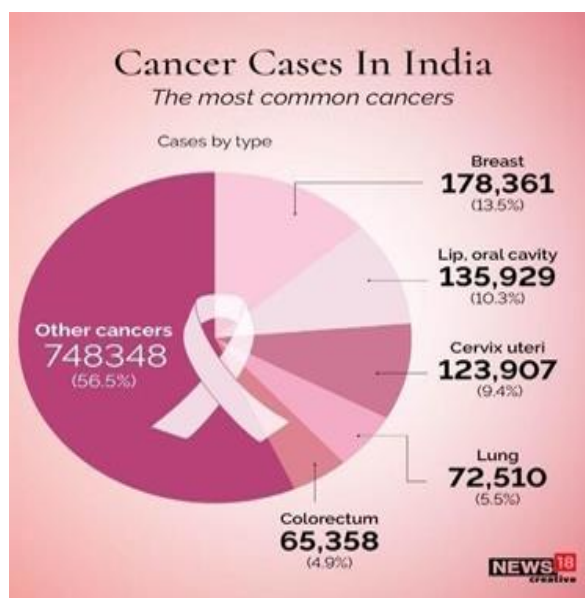


Fig.2.Prevalence of cancer in India

### Types Of Cancer:

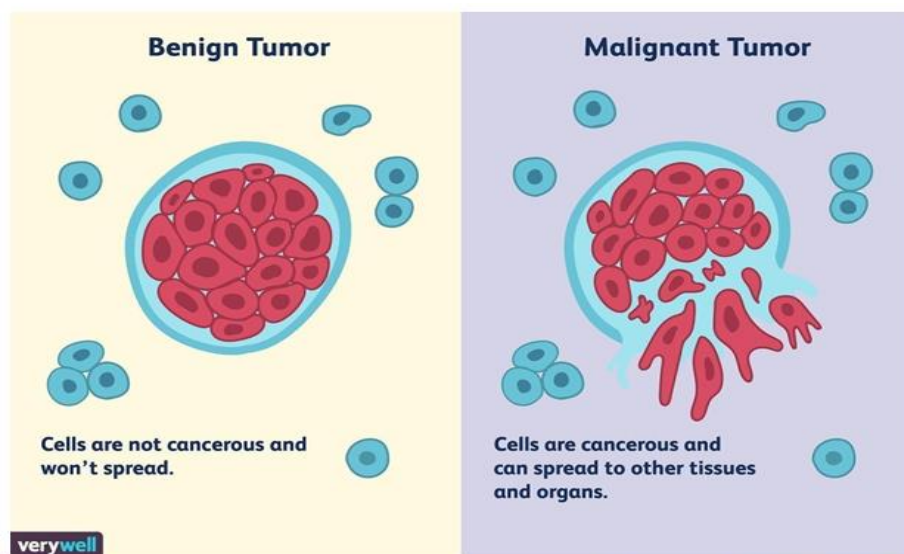
- There is a common pathophysiological mechanism of malignant tumors or cancer formation in the organism, regard less of the

histological and physiological differences between the many forms of cancer.

- A tumor can be either benign or malignant.

- **Benign tumor:** A tumor that remains confined to its original location, neither invading surrounding normal tissue nor spreading to distant body sites is known as benign tumor. For examples; Skin wart

**Malignant tumor:** A tumor which is capable of both invading surrounding normal tissue and spreading (metastasis) throughout the body via the circulatory or lymphatic systems is known as malignant tumor. Only malignant tumors are properly referred to as cancer.



**Pathologically, cancers are classified into three categories:**

This type of cancer arises from epithelial cells or ectodermic tissues lining the internal surface of the various organs. For example: breast cancer, lung

cancer, skin cancer, brain cancer, cancer of pancreas and mouth, esophagus, stomach and intestine.

2) Sarcomas: These cancers arise from connective and muscular tissue derived from mesoderm. For

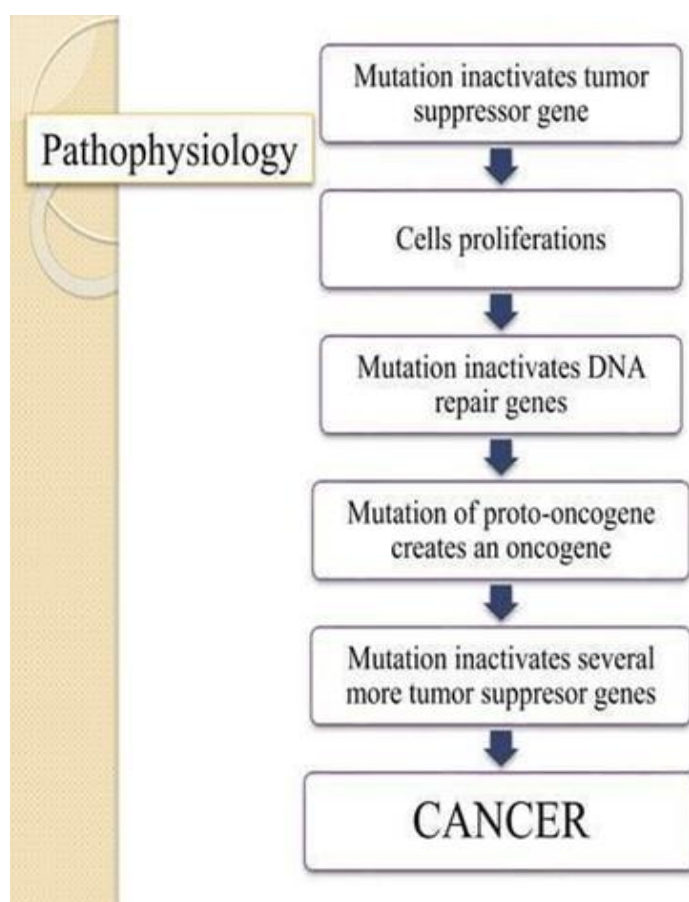
examples: bone tumors, muscle tumors, cancer of lymph nodes.

3) Lymphomas or Leukemia: It is the malignant growth of leucocytes (WBC) Persons affected with this cancer growth excessive production of leucocytes (blood cancer) and cancer of bone marrow.

### Pathophysiology of Cancer:

There are multiple phases in the pathophysiology of cancer. In the first stage, known as initiation, a

mutation in a cell's DNA causes oncogenes—genes that stimulate cell growth—to become active, or tumor suppressor genes—genes that limit cell growth—to become inactive. In the second stage, known as promotion, the mutant cells are encouraged to proliferate and divide quickly, creating a little collection of aberrant cells. The third stage is called progression, during which the aberrant cells keep proliferating and dividing to become a tumor that may infiltrate nearby tissues and travel via the lymphatic or circulatory systems to other areas of the body.



**Fig.3.Pathophysiology of cancer**

### Symptoms Of Cancer:

Symptoms of the disease differ on the type and location of the malignancy. For example, lung cancer might cause coughing, shortness of breath, or chest pain. Blood, constipation, and diarrhea are common symptoms of colon cancer. Certain types of cancer

could not exhibit any symptoms at all. Symptoms of some malignancies, like pancreatic cancers, frequently may not appear until the disease has progressed to a more advanced stage.

The following symptoms can occur with most cancers:



- Chills
- Fatigue
- Fever
- Loss of appetite
- Night sweats
- Weight loss
- Thickening or lumping the body
- Cough or hoarseness that does not go away
- Changes in bowel or bladder habits
- Unexplained bleeding and discharge
- Any sore that does not heal
- Unusual upset stomach or difficulty swallowing

### Causes Of Cancer:

There is not a single cause of cancer. Researchers believe that it is the interactivity of multiple

factors together that generates the cancer. The factors may be environmental, genetic or many others. There are many different kinds of cancer. Cancer can develop in almost any organ or tissue, such as the lungs, colon, breast, skin, bones, or nerve tissue. There are many causes of cancer, including:

- Infection
- Drinking excess alcohol
- Excessive sunlight exposure
- Environmental toxins, such as
- Certain poisonous mushrooms and a type of poison that can grow on peanut plants
- Genetic problems
- Stress
- Obesity

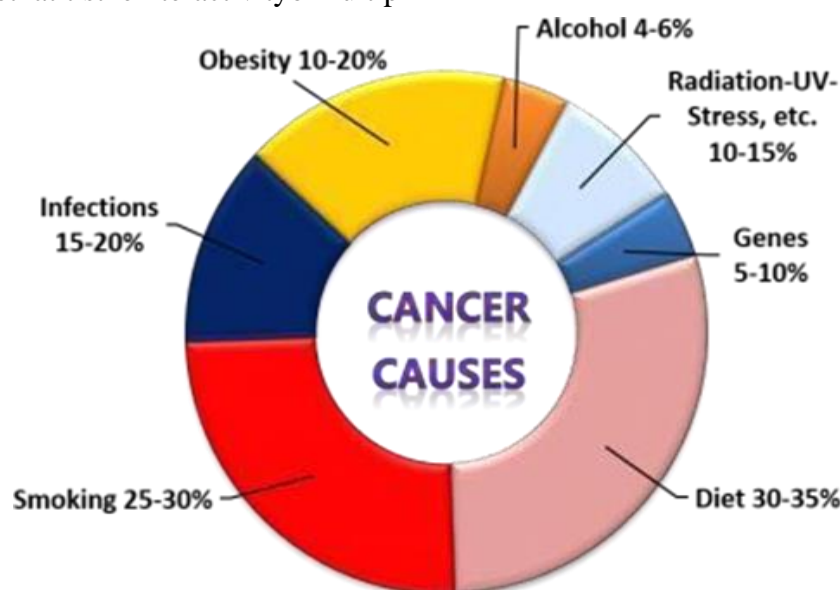


Fig.4 Causes of Cancer

### Diagnosis of Cancer:

**Physical examination:** Your physician may feel for lumps that could be signs of cancer in certain parts of your body. Your doctor may perform a physical examination to check for anomalies that could be signs of cancer, like changes in skin tone or an enlarged organ.

**Laboratory tests:** Your doctor may use laboratory tests, like blood and urine tests, to find anomalies that could be related to cancer. For example, a routine blood test in leukaemia patients may show an abnormally high or low quantity of white blood cells.

**Imaging tests:** These non-invasive procedures let your doctor look at your interior organs and bones. A computed tomography (CT) scan, bone scan, magnetic resonance imaging (MRI), positron emission Tomography (PET) scan, ultrasound, and X-ray are a few examples of imaging procedures that can be used to diagnose cancer.

- **Biopsy:** In a biopsy, your physician takes a sample of cells for laboratory analysis. There are various methods for gathering a sample. The type and location of your cancer will determine which biopsy approach is best for you. A biopsy is typically the only method that can provide a conclusive diagnosis of cancer. Doctors examine cell samples under a microscope in the lab. Normal cells have consistent appearance comparable sizes, and a well-organized structure. Cancer cells are less organized, with different sizes and no discernible structure.

- **Screening:** The best chance of a cure is frequently achieved by detecting cancer in its early stages. In light of this, discuss with your physician the kinds of cancer screening that might be suitable for you. According to research, screening test can save lives by detecting certain cancers early. Only those with a higher risk are advised to get screening testing for other malignancies.

### **Treatment of Cancer:**

There are numerous cancer treatments available. The kind and stage of your cancer, you're overall health, and your personal preferences are some of the variables that will affect your treatment options. To decide which cancer treatment is best for you and your doctor can jointly assess the advantages and disadvantages of each option.

### **Goals of cancer treatment**

**Cancer treatments have different objectives, such as:**

**Cure-**The goal of treatment is to achieve a cure for your cancer, allowing you to live a normal life span. This may or may not be possible, depending on your specific situation.

**Primary treatment-**The goal of a primary treatment is to completely remove the cancer from your body or kill the cancer cells. Any cancer treatment can be used as a primary treatment, but the most common primary cancer treatment for the most common cancers is surgery. If your cancer is particularly sensitive to radiation the chemotherapy, you may receive one of those therapies as your primary treatment.

**Adjuvant treatment -**The goal of adjuvant therapy is to kill any cancer cells that may remain after primary treatment in order to reduce the chance that the cancer will recur. Any cancer treatment can be used as an adjuvant therapy. Common adjuvant therapies include chemotherapy, radiation therapy and hormone therapy.

**Palliative treatment-** Cancer-related signs and symptoms or treatment adverse effects may be lessened with palliative care. When a cure is not attainable, cancer can be controlled in its spread and its symptoms can be alleviated by hormone treatment, chemotherapy, radiation, and surgery. Pain and shortness of breath are the symptoms that medication may alleviate. A palliative treatment can be administered together with other cancer-curing treatments. -

### **Cancer Treatments**

Doctors have many tools when it comes to treating cancer. Cancer treatment options include:



- **Surgery:** The goal of surgery is to remove the cancer or as much of the cancer as possible.

- **Chemotherapy:** Chemo therapy uses drugs to kill cancer cells.

**Radiation therapy:** Radiation therapy uses high-powered energy beams, such as X-rays and protons, to kill cancer cells. Radiation treatment can come from a machine outside your body (external beam radiation), or it can be placed inside your body (brachy therapy).

**Bone marrow transplant:** Another name for a bone marrow transplant is a stem cell transplant. The substance that produces blood cells inside your bones is called bone marrow. You can use donor cells or your own cells for a bone marrow transplant. A bone marrow transplant allows your doctor to use higher doses of chemotherapy to treat your cancer. It may also be used to replace diseased bone marrow.

**Immunotherapy:** Immunotherapy, also referred to as biological therapy, fights cancer by utilizing your body's immune system. Because cancer is not perceived as an invader by your immune system, it can thrive in your body uncontrolled. Through immunotherapy, your immune system will be able to "see" and combat the cancer. **Hormone therapy.** Your body's hormones can fuel certain types of cancer. Prostate and breast cancer are two examples. The cancer cells may cease growing if those hormones are eliminated from the body or their effects are blocked.

### Targeted Drug Therapy:

Targeted drug treatment focuses on specific abnormalities within cancer cells that allow them to survive.

**Clinical trials:** Clinical trials are studies to investigate new ways of treating cancer. Thousands of cancer clinical trials are underway.



### CONCLUSION:

There is still more to be done to maximize the use of these treatments, reduce their toxicity and complexity, and figure out how to incorporate

them into the present standard of care. Incorporating them into healthcare systems in a way that is economically sustainable will also present numerous hurdles. Clinical researchers are

therefore starting to focus on controlling, anticipating, and tracking these toxicities' long-term effects. Clinicians should be encouraged to employ these novel therapies as early in treatment pathways as feasible, as this could result in guidelines on how to manage them. However, there is currently no specific treatment for the sickness; instead, research must be conducted over an extended period of time in order to develop a medicine that can cure the disease without causing toxicity or adverse effects.

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