



# INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

## A Review On Pathophysiology of Cancer

1Payal Mukne, 2Sunil S.Bhagat, 3Dr Swati Deshmukh, 4Aishwarya Khade

1Student Of Bachelor Of Pharmacy, 2asst.prof, 3Principal, 4Student Of Bachelor Of Pharmacy

1Shraddha Institute of Pharmacy Washim,

2Shraddha Institute of Pharmacy ,Washim,

3Shraddha Institute Pharmacy,Washim,

4Shraddha Institute Pharmacy,Washim

### Abstract: -

Cancer is the most widespread life-threatening disease today, which spreads because of the lifestyle we live. Cancer is caused by uncontrolled cell growth, which can be cured if diagnosed at an early stage. Cancer is a genetic disorder that results from genetic or epigenetic changes in somatic cells and has abnormal cell growth that can spread to other parts of the body. According to Nutrition and Cancer Research, diet and lifestyle changes can successfully prevent 30 to 40 percent of all cancers. Obesity, nutrient-poor foods that affect glucose metabolism, such as concentrated sweets and refined wheat products Based on the presence or absence of molecular markers for estrogen or progesterone receptors and human epidermal growth factor. Breast cancer is divided into three primary subgroups. The fifth leading cause of cancer death in the United States is liver cancer. The prognosis of liver cancer is dismal as patients are often diagnosed at an advanced stage. Among all liver cancer cases.

**Keywords:-** cancer, diet and lifestyle, breast cancer, liver cancer.

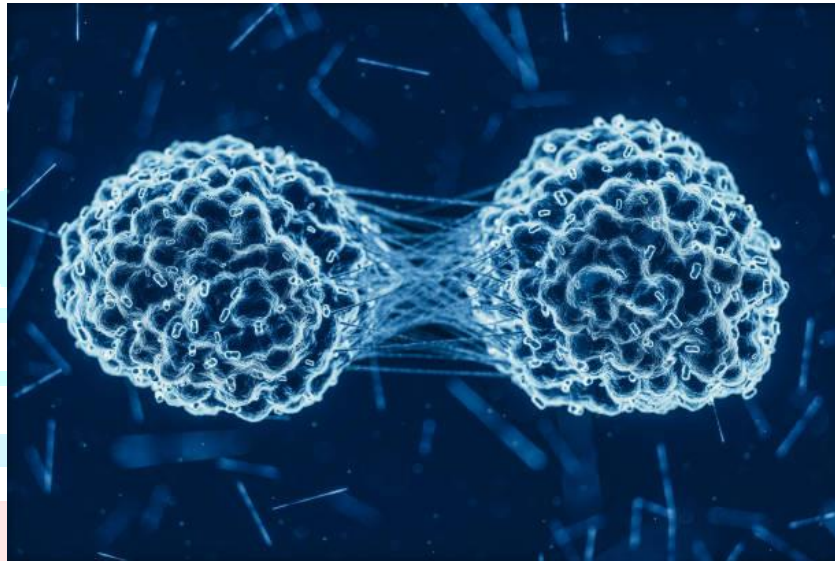
### Introduction:-

Cancer is a group of diseases characterized by the uncontrolled growth and spread of abnormal cells. If the spread of cancer cells, this stage known as metastasis, is not controlled, it can lead to death. Cancer is caused by many external factors (tobacco, chemicals, radiation, and infectious organisms) as well as some internal factors (inherited mutations, hormones, immune conditions, and random mutations). (1) Cancer has a wide variety of complex, poorly understood causes. A number of factors such as dietary elements, specific diseases, lack of physical exercise, obesity and environmental pollution are known to increase the risk of cancer [1]. These elements can interact to initiate or promote carcinogenesis in humans, making cancer a leading cause of death. This condition has aberrant cell proliferation that could spread to other parts of the body and is caused by genetic or epigenetic changes in somatic cells.

Cancers known as adenomas can develop in the thyroid, pituitary, adrenal glands, and other glandular organs. Cancer has a wide variety of complex, poorly understood causes. A number of factors, including dietary elements, certain diseases, lack of exercise, obesity and environmental pollutants, are known to increase the risk of cancer.

Cancer has become the leading cause of death in India. It is estimated that approximately 2 to 2.5 million people have cancer at any given time. There are more than 700,000 new cases and more than 300,000 cases of cancer each year. Approximately 1.5 million patients require facilities for diagnosis, treatment and follow-up appointments (1)

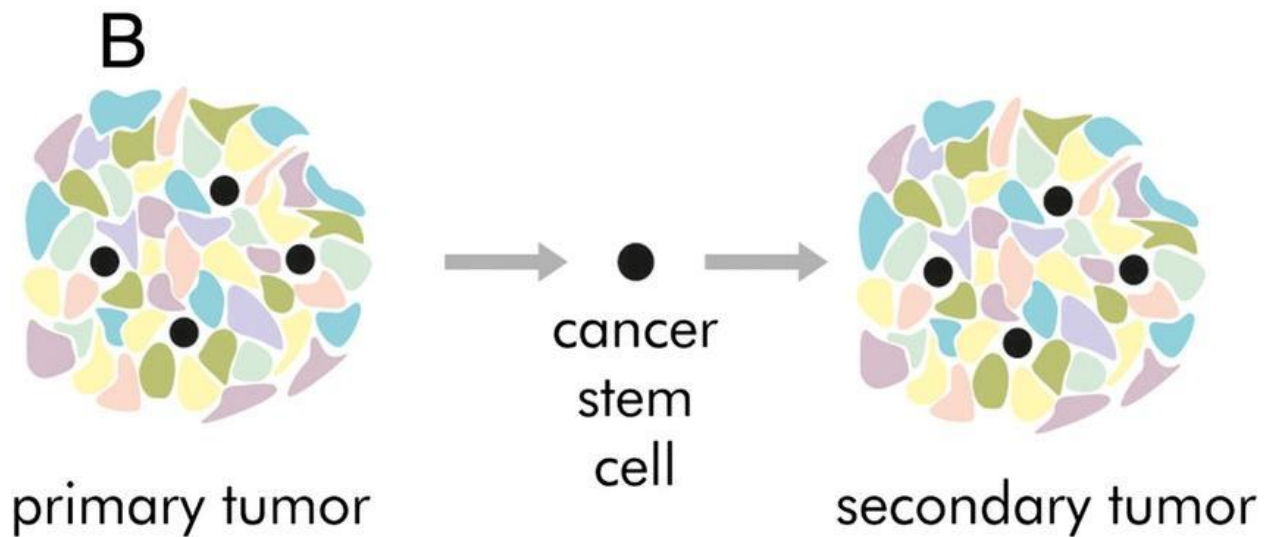
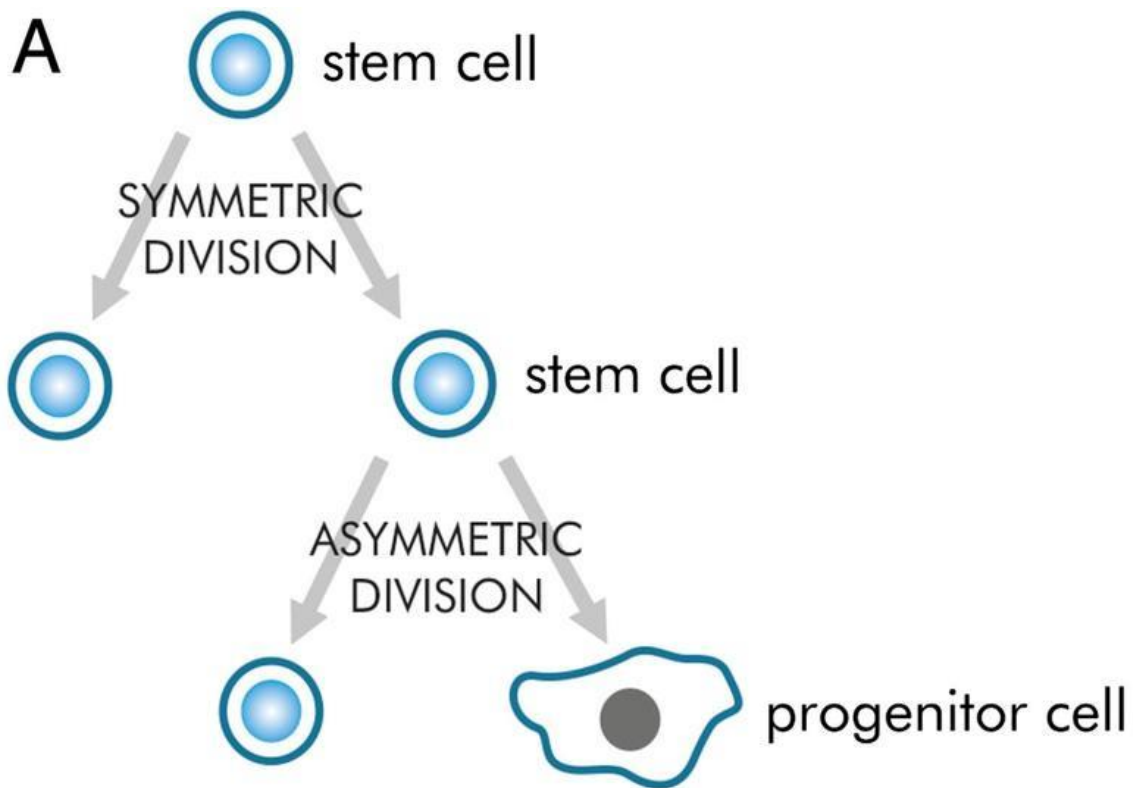
Liver cancer, the most common cause of cancer worldwide and the fifth most common cancer in the United States, is only one of five cancers that is increasing in incidence each year. The prevalence of hepatitis is higher in developed countries. Risk factors include hepatitis B, hepatitis C, fatty liver disease, alcohol consumption, smoking, obesity, diabetes, iron overload, and various nutritional factors ( 7 ).



Liver cancer is an aggressive disease with a poor outcome. Several hepatic stem/progenitor markers are useful for isolating a subset of liver cells with stem cell features, known as cancer stem cells (CSCs). These cells are responsible for tumor relapse, metastasis, and chemo resistance.

Cancer behaves differently in different patients, and tumors within a patient may appear differently based on variation in the locality of the cancer cells themselves (Parsons, 2018) and/or the microenvironment. Some tumors may also occur Others may alter and/or integrate immunity as part of growth and metastasis after a chronic disease state. The interaction between the developing organization of the human immune system and the resulting tumors

can lead to many outcomes: successful prevention of cancer, a prolonged battle between the two, or cancer vulnerable to the growth of the disease. CIT aims to change these outcomes to eliminate cancer



## Types of Cancer: Based on the tissues involved:

- Carcinomas are characterized by cells that cover the inside and outside of the body, such as lung, breast, and colon cancer.
- Sarcomas are characterized by cells found in bone, cartilage, fat, connective tissue, muscle, and other supporting tissues.
- Cancers called lymphomas start in the immune system and lymph nodes.
- Cancers known as adenomas can develop in the thyroid gland, pituitary gland, adrenal glands, and other glandular organs.

## On the Basis of Organ Effected:

- Colorectal cancer.
- Lung Cancer
- Liver Cancer
- Stomach Cancer
- Cervical Cancer
- Bladder Cancer
- Esophageal Cancer
- Non-Hodgkin Lymphoma
- Cancers of the Lip and Oral Cavity
- Nasopharyngeal Cancer
- Kaposi sarcoma

## Symptoms:

The type and location of the cancer will determine the symptoms. For instance, lung cancer can result in coughing, breathlessness, or chest pain. Diarrhea is a frequent symptom of colon cancer.

## The below symptoms can occur with most Cancers :-

- Chills
- Fatigue
- Fever
- Loss of appetite
- Malaise
- Night sweats
- Weight loss
- Thickening or lump in the body
- Persistent cough
- Hoarseness
- Obvious change in a mole or wart
- Changes in bowel or bladder habits
- Unexplained bleeding or discharge
- Any sore that does not heal

- Unusual stomach discomfort, or difficulty
- Swallowing.

**Causes:** In the body, cancer develops from healthy cells. Normal cells divide when the body requires them and expire when it doesn't. It appears that cancer develops when the body's cells grow out of control and divide too quickly.

### **3 main subtypes of breast cancer: hormone receptor positive/ERBB2 negative (HR+/ERBB2-). ERBB2 positive (ERBB2+) and triple negative**

#### **Methods**

We searched PubMed for English-language articles on breast cancer treatment, with particular emphasis on large randomized clinical trials, meta-analyses, and recommendations from important professional associations.

#### **Clinical manifestations**

Currently, mammographic screening is widely used. Screening mammography detects more than half of breast cancers in the US, with about one-third detected as a palpable lump in the breast.

#### **Principles of therapy**

The primary goals of non-metastatic breast cancer therapy are to remove the tumor from the breast and local lymph nodes and to prevent metastatic recurrence. Surgical resection, axillary lymph node sampling, or removal are the main components of local therapy for non-metastatic breast cancer, with postoperative radiotherapy as an option. Systemic therapy is typically given either before surgery (neoadjuvant) or after surgery (adjuvant), but not necessarily both.

#### **Systemic treatment of non-metastatic breast cancer**

##### **HR+/ERBB2-Subtype**

The main systemic therapy for HR/ERBB2-breast cancer is endocrine therapy, which inhibits the growth of tumors that are stimulated by estrogen. Options vary by menopausal status and include an oral antiestrogen taken every day for five years as standard endocrine therapy.

##### **Triple-Negative Subtype**

Chemotherapy is typically given to all patients with triple-negative breast cancers larger than 5 mm, even with negative axillary nodes, given the generally poor prognosis. The Food and Drug Administration (FDA) has approved only chemotherapy drugs for the treatment of non-metastatic triple-negative disease.

##### **ERBB2+ subtype**

One of the most significant advances in the treatment of breast cancer has been the introduction of ERBB2-targeted therapy. Clinical trials of trastuzumab, a monoclonal antibody that targets the extracellular domain of ERBB2, were initially conducted in the 1990s.

#### **Nutrition and Cancer:**

##### **Excessive energy expenditure (calories)**

Eating too much food is one of the main risk factors for cancer. This can be shown in two ways: both (1) the preventive impact of eating less food and (2) the increased risk of obesity-related malignancies.

## Glucose metabolism

Refined sugar is a junk food that is high in energy but low in nutrients. Because it is so concentrated, unrefined sugar (honey, evaporated cane juice, etc.) is likely to cause similar problems as refined sugar.

## Low fiber

Plant foods that have not been processed are often high in fiber. There's one thing dairy, eggs, and meat all have in common: none of them contain fiber. In addition, most of the dietary fiber is excluded from refined grain products. The normal American diet, which is heavy in animal products and processed grains, is therefore low in fiber. Low fiber intake has not been associated with an increased risk of breast cancer in prospective health studies.

## Fruits and vegetables

A diet high in fruits and vegetables protects against cancer, one of the most important topics in current nutritional science.

## Cruciferous vegetables

Contains sulforaphane, which has anti-cancer properties.

## Selenium

The mineral with anti-cancer effects is selenium. Numerous researches conducted in recent years have demonstrated the preventive power of selenium against certain types of cancer.

## Definition

In most primary liver cancers, the main source of epithelial cells is hepatocytes or intrahepatic bile duct cells.

Cancer stem cells in the development of liver cancer

## Cancer stem cell concept

Tumor cells are thought to be of monoclonal origin, although they are heterogeneous in shape and function. Historically, this heterogeneity has been associated with the formation of tumor cells into clones as a result of the accumulation of various genetic or epigenetic changes over time.

## Future challenges

The liver CSC concept has been recognized as an explanation for the molecular diversity of malignant phenotypes in liver cancer.

## Excess risk of primary liver cancer in patients with diabetes mellitus

Chronic hepatitis B virus infection, alcohol consumption, and liver cirrhosis are recognized risk factors for primary liver cancer.

## Conclusion

This overview study included detailed illustrations of cancer and its therapies, including signs or symptoms, diagnostic tests, and the causes and spread of the disease. Surgery. Immunotherapy, chemotherapy, target therapy, hormonal therapy, radiotherapy. Stem cell transplantation and precision medicine are some of the treatments for cancer. These therapies include various drugs such as antibiotics, which are primarily used in chemotherapies, as well as other targeted systems such as nanotechnology, microbeads, etc., to directly treat cancer. In radiation therapies that target cancer cells directly, different types of radiation are used to treat cancer. Different hormones



are used in hormone therapy to treat cancer, especially breast and prostate cancer, which are diseases caused by hormones. In immunotherapy, various drugs are used to boost the immune system's ability to fight cancer cells.

- Low in fat but containing essential fatty acids.
- No red meat
- Balanced ratio of omega 3 and omega 6 fats including DHA

## Reference:

1. Garima Mathur, Sumitra Nam and Pramod Kumar Sharma Cancer: An Overview Academic Journal of Cancer Research 8 (1) 01-09. 2015ISSN 1995-8943© IDOSI Publications, 2015DOI: 10.5829/idosi.ajer.2015.8.1.9336
1. Anand P. A.B. Kunnumakkara, C. Sundaram K.B. Harikumar, S.T. Thatakan, O.S. Lai, B. Sung and B.B. Aggarwal, September 2008. Cancer is a preventable disease that requires major lifestyle changes. Pharm. Res., 25(9):2097-116.
2. Agarwal, S.P., YN. Rao and S. Gupta, 2002. Fifty years of cancer control in India, Ministry of health and family welfare Government of INDIA November
3. Anupam SainiSEE PROFILEManish Kumar Maharishi Markandeshwar University, Mullana Manish Kumar School of pharmaceutical sciences, CT University Vipin Sami Maharishi Markandeshwar (Deemed to be University). Mullana, Shailendra Bhatt Maharishi Markandeshwar University. Mullana, CANCER CAUSES AND TREATMENTS INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES AND RESEARCH UPSR (2020), Volume 11, Issue 7. Page no.(1-5)
4. Morris H: The Bradshaw Lecture on cancer and its origin: Delivered at the Royal College of Surgeons on December 9<sup>th</sup>. Br Med J 1903; 2: 1505-11
5. Sitki Copur M: State of cancer Research around the globe. Oncology Journal 2019; 33(5): 1815.
6. Michael S Donaldson". Nutrition and cancer: A review of the evidence for an anti- cancer diet nutrition journal page no.(2-7)
7. WCRF/AICR: Food, nutrition and the prevention of cancer: a global perspective. World Cancer Research Fund/American Institute For Cancer Research 1997.

8. Nastag B: Obesity Is Now on Everyone's Plate. *Jama* 2004 291:1186-1188.
9. Adrienne G. Waks, MD; Eric P. Winer, MD Breast Cancer Treatment. *JAMA* January 22, 2019 Volume 321, Number 3 page no (2-7)
10. Morrow M. Physical examination of the breast. In: Harris JR. Lippman ME. Morrow M. Osborne CK. Eds. *Diseases of the Breast Philadelphia, PA: Wolters Kluwer Health: 2014 chap3.*
11. Dillon D. Guidi AJ. Schnitt SJ. Pathology of invasive breast cancer. In Harris JR. Lippman ME. Morrow M. Osborne CK, eds. *Diseases of the Breast. 5<sup>th</sup> ed. Philadelphia, PA: Wolters Kluwer Health: 2014.*
12. Taro Yamashita, Xin Wei Wang *J Clin Invest.* 2013;123(5):1911-1918. Cancer stem cells in the development of liver cancer *The Journal of Clinical Investigation* page No (2-6)
13. Rudolf Pichlmayr, MD Arved Weimann, MD Karl J. Oldhafer. MD. Hans J. Schlitt, MD Jurgen Klempnauer, MD. Albrecht Borscheuer. MD. Ajay Chavan MD.. Ekkehard Schmoll, MD Hauke Lang, MD. Günter Tusch MS. Burckhardt Ringe MD Role of Liver Transplantation in the Treatment of Unresectable Liver Cancer *WORLD Journal of SURGERY* 1995 by the Soci Inational de Chirurgie Page no (1-3)
14. Hermanck P. Sobin LH TNM classification of malignant tumors, 4<sup>th</sup> ed., 2<sup>nd</sup> rev Berlin, Springer-Verlag 1992 2. Farmer, D.G. Rosove MH. Shaked A. Busuttill.RW Current treatment modalities for hepatocellular carcinoma *Ann Surg* 219 236, 1994
15. Kawarada. Y. Ito, F., Sakurai, H. Tanigawa, K., Iwata, M., Imai, T. Yokoi. H Noguchi T Mizumoto, R. Surgical treatment of hepato-cellular carcinoma. *Cancer Chemotherapy.* 33(Suppl):S12.1994
16. Hans-Olov Adami, Wong-Ho Chow, Olof Nyrén, Christian Berne Martha S. Linet. Anders Ekblom. Alicia Wolk, Joseph K McLaughlin, Joseph F. Fraumeni Jr. "Excess Risk of Primary Liver Cancer in Patients With Diabetes Mellitus, *Journal Of the National Cancer Institute*, Vol. 88, No. 20, October 16, 1996 page no (1-2)