

A review of anticancer agent

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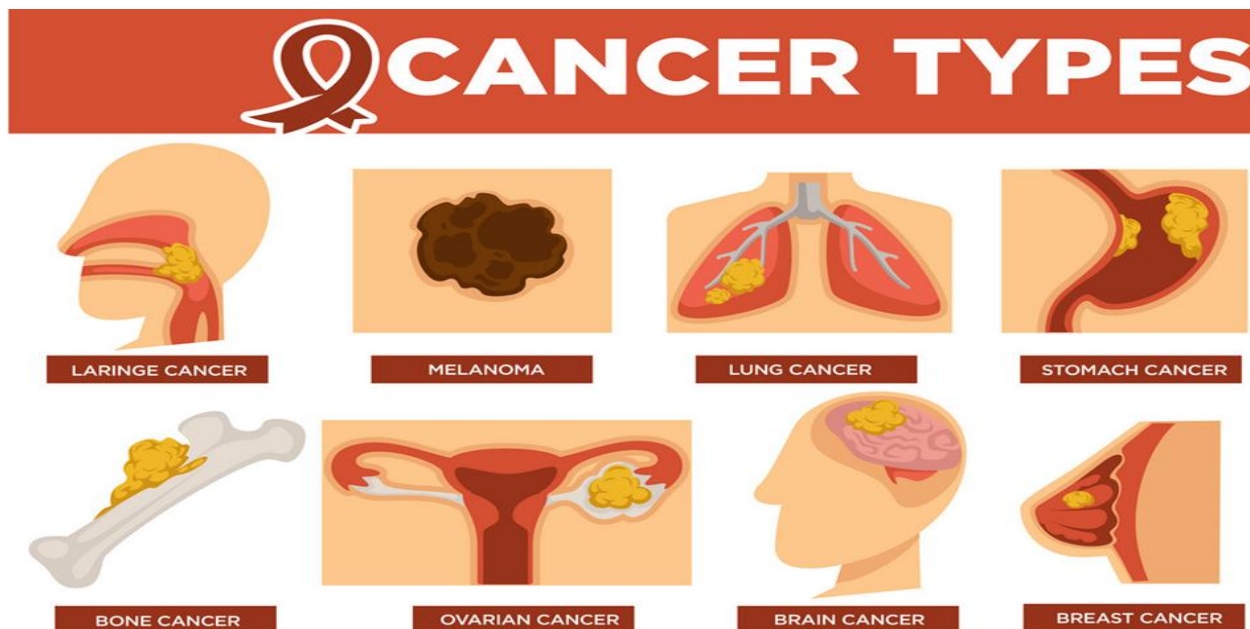
Abstract- At present, cancer ranks first as the cause of death in the world, necessitating the need to develop new anticancer agents.. Cancers are grouped according to their organ or tissue of origin, but increasingly also based on molecular characteristics of the respective cancer cells. Cancer is characterized by proliferation of cells that have managed to evade central endogenous control mechanisms. In this review discuss with life cycle cancer cell. Also study in structure of cancer and mechanism of action and treatment of cancer.

Index terms- Types of cancer, structure, cell cycle of cancer, DEATH RATE IN WORLD 2019 and 2020

Cancer is a class of diseases in which a group of cells present. The character of uncontrolled growth, attack and sometimes metastasis. These three malignant properties of cancer differentiate them from kindly tumors, which are self-limited. Cancer may affect all age people. People about 13% of all deaths 7.6 million people died from cancer in the world during 2007.[1] In count to the chemically synthesize anticancer agents, several anticancer compounds with special modes of action have been extract from plant sources, such as Taxus brevifolia, Catharanthus roseus, Betula alba, Cephalotaxus species, Erythroxyllum previllei, Curcuma longa, and many other[2]

INTRODUCTION

TYPES OF CANCER



Carcinoma.-Carcinomas are the most common type of cancer.

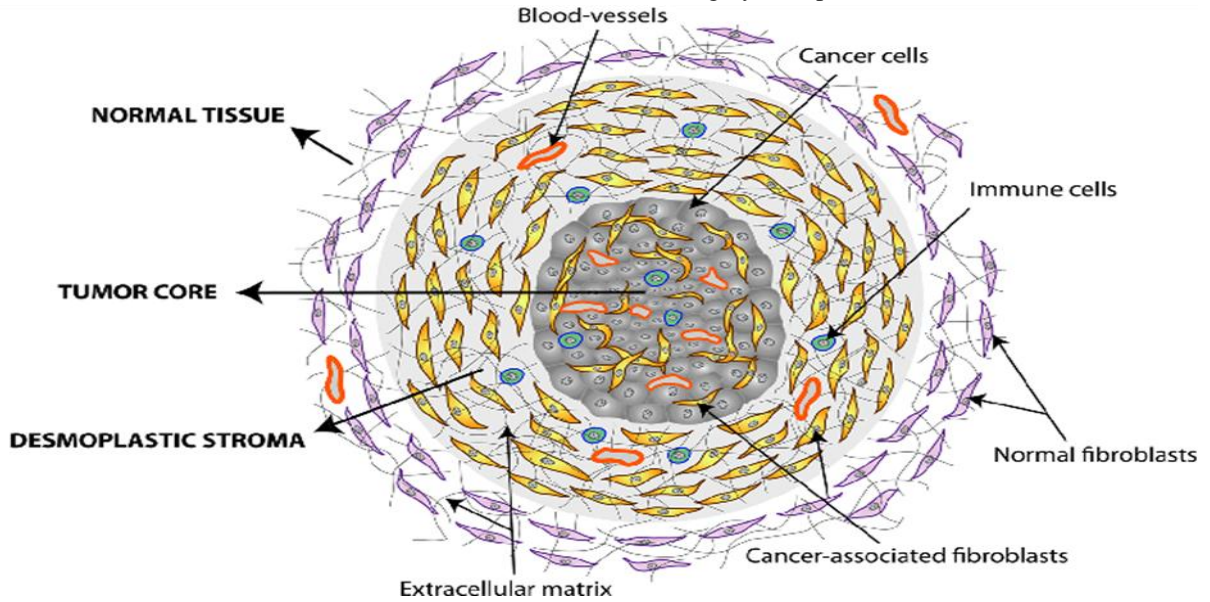
- Sarcoma. Enlarge
- Leukemia. Cancers that begin in the blood-forming tissue of the bone marrow are called leukemias

- Lymphoma
- Multiple Myeloma
- Melanoma
- Brain and Spinal Cord Tumors

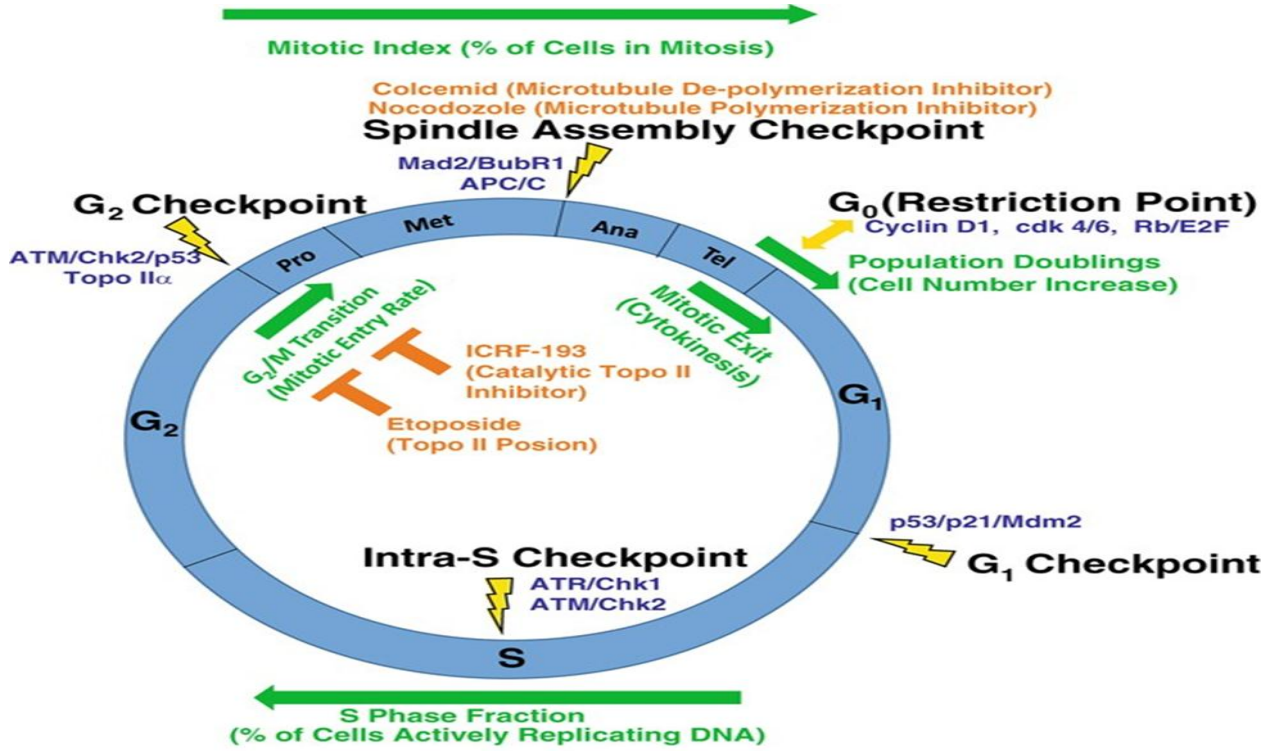
STRUTURE OF CANCER

Tumor mass is composed of tumor cells and stroma cells including cancer associated fibroblasts, immune cells and endothelial cells. Tumor tissue can be

further divided into two zones; tumor core (dark gray) dominated by cancer cells and desmoplastic stroma (gray) composed of activated fibroblasts



CELL CYCLE OF CANCER



LEGEND

- Major Checkpoint Regulators
- Measures of Cell Proliferation
- Drugs Inhibiting Cell Cycle Progression

The normal cell proliferates through a definite cell cycle. They consist of 5 phases

1. G₀ phase-
 - It is also known as no proliferative phase
2. G₁ phase-
 - During which cell determines its readiness to commit to DNA synthesis.
 - This phase also called as presynthetic phase.
3. S phase-
 - It consist of involving DNA synthesis
 - It is also known as synthetic phase
4. G₂ phase-
 - During which the accuracy of DNA replication is determined ,and errors are collected
 - This is a postsynthetic phase.
5. M phase-
 - This phase consist of replicated chromosomes are separated into two nuclei for two daughter G1 cells.
 - These cells may reenter the cycle or pass into resting G0 phase.
 - This phase is also known as mitotic phase.[6]

PREVENTION-

1. Don't use tobacco
2. Eat a healthy diet-
 - a. Eat plenty of fruits and vegetables.
 - b. Avoid obesity, Limit processed meats
3. Maintain a healthy weight and be physically active.
4. Protect yourself from the sun
 - Avoid midday sun. Stay out of the sun between 10 a.m. and 4 p.m., when the sun's rays are strongest.
 - Stay in the shade-. When you're outdoors, stay in the shade as much as possible.
 - Cover exposed areas. Wear tightly woven, loose fitting clothing that covers as much of your skin as possible. Opt for bright or dark colors, which reflect more ultraviolet radiation than do pastels or bleached cotton.
 - Don't skimp on sunscreen. Use a broad-spectrum sunscreen with an SPF of at least 30, even on cloudy days. Apply sunscreen generously, and reapply every two hours — or more often if you're swimming or perspiring[9]

CLASSIFICATION OF ANTICANCER DEUGS-

Classification of anticancer agents

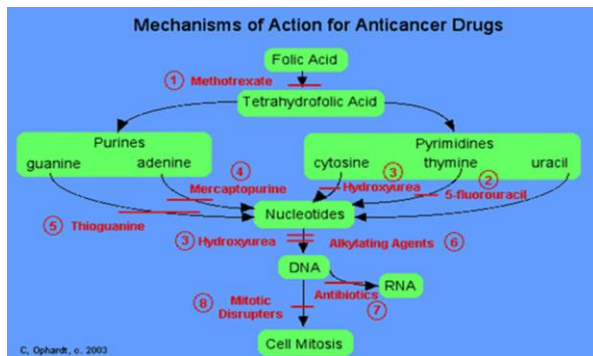
Cytotoxic drugs

1. Alkylating agents
2. Platinum coordination: Cisplatin, Carboplatin, Oxaliplatin
3. Antimetabolites
4. Microtubule damaging agents: Vincristine, Vinblastine, Vinorelbine, Paclitaxel, Docetaxel
5. Topoisomerase-2 inhibitor: Etoposide
6. Topoisomerase-1 inhibitor: Topotecan, Irinotecan
7. Antibiotics: Actinomycin D, Doxorubicin, Daunorubicin, Epirubicin, Bleomycins, Mitomycin C.
8. Miscellaneous: Hydroxyurea, L-Asparaginase, Tretinoin, Arsenic trioxide

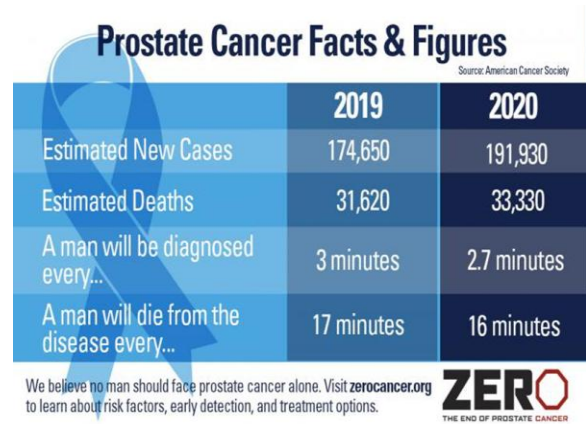
TREATMENT-

- 1- surgery
- 2- chemotherapy
- 3- radiation therapy
- 4- immunotherapy
- 5- targeted therapy
- 6- hormone therapy.

MECHANISM OF ACTION ANTICANCER DRUG-



DEATH RATE IN WORLD 2019 and 2020-



CONCLUSION

A plan for the diagnosis and treatment of cancer is a key component of any overall cancer control plan. Its main goal is to cure cancer patients or prolong their life considerably, ensuring a good quality of life. It enables cases to be detected at an earlier stage, when treatment is more effective and there are greater chances of cure.

REFERENCES

- [1] Nahata A; Anticancer Agents: A Review of Relevant Information on Important Herbal Drugs; International Journal of Clinical Pharmacology & Toxicology; March 2017
- [2] Tomeh Mhd Anas; Hadianamrei Roja; A Review of Curcumin and Its Derivatives as Anticancer Agents; International Journal Of Molecular Science; Published online 2019 Feb 27
- [3] <https://www.vectorstock.com/royalty-free-vector/cancer-types-poster-with-kinds-of-disease-vector-22263598>.
- [4] <https://www.cancer.gov/about-cancer/understanding/what-is-cancer>
- [5] https://www.researchgate.net/figure/Depiction-of-the-tumor-structure-Tumor-mass-is-composed-of-tumor-cells-and-stroma-cells_fig1_264393315.
- [6] <https://www.nature.com/articles/s41523-017-0009-7>
- [7] <https://www.slideshare.net/ReginaldFinleySrMED/the-cell-cycle-and-cancer-59130233>
- [8] <https://www.slideshare.net/ParasuramanParasuraman/7-anticancer-drugs-1-introduction-and-classification>.
- [9] <https://anticancerdrugdesign.weebly.com/mechanism-of-action-of-drugs.html>
- [10] <https://www.mayoclinic.org/healthy-lifestyle/adult-health/in-depth/cancer-prevention/art-20044816>
- [11] <https://www.cancer.gov/about-cancer/treatment>.
- [12] <https://www.eurekalert.org/multimedia/pub/221119.php>.