Causes of Cancer; And New Techniques In Chemotherapy

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Abstract- *Cancer is defined as the genomic and epigenomic levels, the cells that converts into neoplasy cells , and function for the invasion of other tissues. Nowadays cancer is the 2nddeathable disease with a 20 million deaths all over the world. Cancer is arrises as a main problem in 21st century, till now we are fighting against cancer , there is no equal medical access to everyone because it leads to economical. And it major in with a low human development index. According to 2024 reports of the world health organization 2024 report, diagnosed the 2.3 million with breast cancer. Breast cancer is one of fifth major cause of death in china. To identify the type of molecular subtypes in cancer new discovey were proposed, a Adaptive Deep Shared Latent Representation (ADSLR). The cancer is eliminated in many ways like one of its in animal is calorie restrifction leads to changes in gene expression related protein p62 in mice. In humans skin autofluorescence (SAF) causes the type 2 diabetes (T2D), Heart disease, birth diseases. For treating the various types of cancer present used are stem cell therapy, targeted therapy, ablation therapy, nanoparticles, antioxidants, radionics, chemodynamic therapy, sonodynamic therapy ,and ferroptosis-based therapy. Chimeric antigen receptor (CAR) T cell therapy is the major solution for cancer therapy.*

Keywords- Genomic, Epigenomic, autofluorescence, sonodynamic, ferroptosis

I. INTRODUCTION

Behind the technological and conceptual progress in various sections like a omic-science, high resolution microscopy, molecular immunology, flow cytometry, new cell culture techniques, and the development of animal models. The evolution and characteristifcs of neoplasms are different they are tumor biology, genomic and epigenomic alterations that lead to cell transformation and to determine tumor aggressiveness. A TP53, a tumor -suppressor gene, are known as precancerous lesions. Here the epigenetics studies causes the hereditable changes in gene expression that reason for cancer. That are methylation of DNA and RNA, histone modification (acetylation, methylation ,and phosphorylation) and the expression of non-coding RNA. These leads to activate oncogenesis, when occur the coding and decoding sequences in genes, cause the metastasis of cancer cells. There is also withdrawal ofcancer medications alsoeffects. Some of the breast cancer effects are depression, anxiety, pain, and quality of life (QOL).

Treatments in Cancer:

Natural anti-cancerous agents: Vincristine and Vinblastine are recognised as anti-tumor agents. Nowadays biomarkers are used to detect the cancer including human epididymis protein 4(HE4) , carcinoembryonic antigen(CEA) , legumain, mesothelin, osteopontin, and vitamin E- binding plasma protein. The mechanism involve the some homeostatasis processes like apoptosis, DNA damage, DNA replication. These are the selectivity mechanism for the specific drugs.

Newer diagnosis of cancer in various types:

The diagnostic methods will be classified into following: 1) Surgical Pathology 2) Flow cytometry 3) Cytogenetics 4) Molecular diagnostics 5) Imaging studies.

Surgical Pathology :

Immunohistochemistry:

Histopathology is the standard for the diagnosis of neoplasia. This is working by increases the diagnostic power of the HP by detecting specific antigens in the tumor tissue by using nonfluorescent chromogens that can be seen by conventional microscopy. This technique basically uses various highly specific monoclonal antibodies against the antigen to be evaluated in the tumor tissue. B. Frozen section and sentinel lymph node biopsy

Frozen section is a great aid to surgeon , if the sampling of the sentinel lymph node is positive then dissection be carried out.

Flow Cytometry:

This method involves the study of cellular antigens in a cell suspension. The technique flow cytometry has made the standard for the diagnosis and classification of acute leukemias, chronic leukemias and certain Non hodgkins lymphomas. Also used for diagnosis of minimal residual disease.

Cytogenetics:

The main mechanism of the cytogenetics is to detect the abnormalities in the chromosomes. Some of the newer methods are fluorescence in-situ hybridisation (FISH), multicolor (M)-FISH, spectral karyotyping (SKY), or comparative genomic hybridization (CGH), SKY and CGH.

Molecular diagnostics

A. Polymerase Chain reaction:
B. DNA microarrays

Imaging Studies

A. Magnetic resonance spectroscopy (MRS)
B. Newer computed tomographic(CT) imaging applications
C. Newer applications of Magnetic resonance imaging in breast cancer
D. PET Scan and integrated PET-CT
    i. Lymphoma
    ii. Lung Cancer
    iii. Colorectal Cancer
    iv. Oesophageal Carcinoma
    v. Head and Neck Cancer
    vi. Breast Cancer
    vii. Melanoma

Reason for occurring cancer :

1) Tobacco
2) Infections
3) Diet, Overweight and Obesity, and Physical Inactivity
4) Alcohol Use
5) Occupational Exposures
6) Pollution
7) Food Contaminants
8) Medical Drugs
9) Hormonal and Reproductive Factors
10) Ionizing Radiation from Natural, Industrial and Medical Sources
11) Ultra violet (UV) Radiation
12) Immunosupression
13) Genetic Susceptibility

Measures taken to prevent cancer:

National Cancer Control Planning and Programs
Cancer Prevention and early detection
Cancer Management therapy
Early checking of cancer staging

II. CONCLUSION

Nowadays cancer raises a most dangerous disease around the world. And it also causes more deaths. Cancer is considered as 2nddeathable disease. It is a more common in low development index areas. Almost 5 million people are suffering from various types of cancers like 2.3 with breast cancer, lung cancer, colorectal cancer, oesophagal cancer, Head and neck cancer, `Melanoma, Lymphoma. Inpresent newer methods `for quick evaluation of cancer and it helps for faster recovery. Some of the methods include like surgical pathology, Flow cytometry, cytogenetics, Molecular diagnosis, Imaging studies. Cancer causes due to our some wrong habits are tobacco , infections, diet , overweight and obesity, and physical inactivity, food contaminantsetc. Various precautions and preventive steps are taken , by following some rules and ethics are early rechecking of stage, cancer management , national cancer control programms. Cancer be early cured by diagnosis early stages, and by proper cancer management through drugs and excercises and diet.

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