CANCER

Causes of cancer:-

Transformation of normal cells into cancerous neoplastic cells may be induced by physical, chemical or biological agents. These agents are called carcinogens. Ionising radiations like X-rays and gamma rays and non-ionizing radiations like UV cause DNA damage leading to neoplastic transformation. The chemical carcinogens present in tobacco smoke have been identified as a major cause of lung cancer. Cancer causing viruses called oncogenic viruses have genes called viral oncogenes. Furthermore,

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several genes called cellular oncogens (c-onc) or proto oncogenes have been identified in normal cells which, when activated under certain conditions, could lead to oncogenic transformation of the cells.

CANCER DETECTION AND DIAGNOSIS:

Early detection of cancers is essential as it the disease to be treated successfully in many cases. cancer detection is based on biopsy and histopathological studies of the tissue and blood and bone marrow tests for increased cell counts in the case of leukemias. In biopsy, a piece of the suspected tissue cut into thin sections is stained and examined under microscope (histopathological studies) by a pathologist. Techniques like radiotherapy (use of X-rays), CT (computed tomography) and MRI (magnetic resonance imaging) are very useful to detect cancers of the internal organs. Computed tomography uses X-rays to generate a three dimensional image of the internals of an object. MRI use strong magnetic fields and non-ionising radiations to accurately detect pathological and physiological changes in living ~~cells~~ tissues.

Antibodies against cancer specific antigens are also used for detection of certain cancers. Techniques of molecular biology can be applied to

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detect genes in individuals with inherited susceptibility certain cancer. Identification of such genes which predispose an individuals to certain cancers, may be very helpful in prevention of cancers. Such individuals may be advised to avoid exposure to particular carcinogens to which they are susceptible (e.g. tobacco smoke in case of lung cancer).