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**1. What do you understand by primary or simple obesity?**

This is the pathological state resulting from the consumption of excessive quantity of food over an extended period of time. Obesity is defined as an accumulation of excess fat in the body. The problem of obesity arises due to an **imbalance** **of energy intake in relation to energy expenditure.**The degree of obesity is commonly assessed by means of the **body mass index (BMI).** Where BMI is measured by **body weight(kg)** divided by **height(m2)**

**2. How does congenital syndrome and drug therapy affect Obesity?**

 **Congenital syndrome and Obesity**

Severe obesity is a characteristic feature of many congenital and genetic disorders. Congenital syndromes like Prader-Willi syndrome, Cohen syndrome, Down syndrome, Bardet-Biedl syndrome and Turner syndrome are associated with obesity in children.

 Children with Down syndrome are more likely to have higher levels of hormones associated with obesity; hormones such as leptin. The normal role of leptin is to suppress appetite and regulate body weight. Obese people do not respond to leptin properly because they have some leptin resistance. Down syndrome may have a genetic predisposition to more severe leptin resistance.

Prader-Willi syndrome (PWS) is a complex neurodevelopmental disorder due to errors in genomic imprinting with loss f imprinted genes that are paternally expressed from the chromosome region. PWS is considered most common known genetic cause of morbid obesity in children. The subject are frequently unable to sense when they are full after eating and this leads to weight gain Unless food intake is strictly controlled, subject with PWS will be severely obese. PWS result to constant and inexorable hunger that drives patients to engage in problematic hunger behaviors with affected individuals who do not fill satisfied after completing a meal. Most patients have reduced GH secretion and hypogonadotropic hypogonadism, suggesting hypothalamic–pituitary dysfunction. Nevertheless, encouraging results have been observed with the early administration of GH, resulting in accelerated growth and decreased body fat; sex hormone replacement may also be beneficial.

**Drug therapy and obesity**

A number of drugs are capable causing obesity; drugs such as birth control pills, steroids and antidepressants. This is because these drugs posses varying abilities to increase and appetite stimulate carbohydrate craving and cause weight gain over prolonged periods of administration. Psychotropic drugs with more pronounced amitripyline induce weight gain. Selective serotonin reuptake inhibitors decrease transiently bodyweight during the first few weeks of treatment and may then increase body weight; weight gain tends to be most prominent some mood stabilizers. Atypical antipsychotic tend to cause more weight gain than the convenient ones. Some of the medications might interfere with central nervous functions regulating energy balance which are neurotransmitters, neuromodulators, cytokines and hormone interacting with the hypothalamus.

**3. Outline the aetiology of cancer and its molecular basis**.

Cancer is caused by specific DNA damage. Several common mechanisms that cause DNA damage result in specific malignant disorders: First, proto-oncogenes can be activated by translocations. For example, translocation of the c-myc proto-oncogene from chromosome 8 to one of the immunoglobulin loci on chromosomes 2, 14, or 22 results in Burkitt's lymphomas. Translocation of the c-abl proto-oncogene from chromosome 9 to the BCR gene located on chromosome 22 produces a hybrid BCR/ABL protein resulting in chronic myelogenous leukemia. Second, proto-oncogenes can be activated by point mutations. For example, point mutations of genes coding for guanosine triphosphate-binding proteins, such as H-, K-, or N-ras or G proteins, can be oncogenic as noted in a large variety of malignant neoplasms. Proteins from these mutated genes are constitutively active rather than being faithful second messengers of periodic extracellular signals. Third, mutations that inactivate a gene can result in tumors if the product of the gene normally constrains cellular proliferation. Functional loss of these "tumor suppressor genes" is found in many tumors such as colon and lung cancers. The diagnosis, classification, and treatment of cancers will be greatly enhanced by understanding their abnormalities at the molecular level. Agents that cause cancer include:

### ****Chemical carcinogens****

### Several chemicals and environmental toxins are responsible for changes in normal cellular DNA. Substances that cause DNA mutations are known as mutagens, and mutagens that cause cancers are known as carcinogens.

Particular substances have been linked to specific types of cancer. Tobacco smoking is associated with many forms of cancer, and causes 90% of lung cancer. Similarly, prolonged exposure to asbestos fibers is associated with mesothelioma.

Tobacco is also related to other cancers such as lung, larynx, head, neck, stomach, bladder, kidney, oesophagus and pancreas as it contains other known carcinogens, including nitrosamines and polycyclic aromatic hydrocarbons.

### ****Ionizing radiation****

Radiation caused by radon gas and prolonged exposure to ultraviolet radiation from the sun can lead to melanoma and other skin malignancies. Radiation therapy given for one type of cancer may also cause another type of cancer. For example, those who receive chest radiation therapy for lymphomas may later develop breast cancer.

### ****Viral and bacterial infection****

Some cancers can be caused by infections with pathogens. Notable among these include liver cancers due to Hepatitic B and C infections; cervical cancer due to infections with Human Papilloma virus (HPV); Epstein Barr virus causing Burkitt’s lymphoma and gastric or stomach cancer due to Helicobacter pylori infection.

### ****Genetic or inherited cancers****

Common examples are inherited breast cancer and ovarian cancer genes including BRCA1 and 2. Li-Fraumeni syndrome includes defects in the p53 gene that leads to bone cancers, breast cancers, soft tissue sarcomas, brain cancers etc. Those with Down’s syndrome are known to develop malignancies such as leukemia and testicular cancer.

### ****Hormonal changes****

There are many hormones in the body, but one of the most notable among these are changes in levels of the female hormone estrogen, which has been linked to uterine cancer.