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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 affects obesity?

Drug Therapy

Obesity is a chronic disease, and it requires chronic therapy. Hypertension, dyslipidemia, diabetes and cardiovascular diseases are leading causes of mortality in the modern world. All of them are strongly linked to obesity. While treating obesity, those conditions are also managed. Obese patients should always be treated through lifestyle interventions, though the results of such interventions are modest. Pharmacotherapy is a second step in the treatment of obesity, approved only when weight loss targets were not reached through lifestyle intervention. During the history of antiobesity drugs, many of them were withdrawn because of their side effects. Various guidelines recommend prescribing drug therapy for obesity through consideration of the potential benefits and limitations. Orlistat deactivates intestinal lipase and inhibits intestinal fat lipolysis. It is actually the only drug on the European market approved for the treatment of obesity. Orlistat therapy reduces weight to a modest extent, but it reduces the incidence of diabetes beyond the result achieved with lifestyle changes. Recently, some effective antiobesity drugs like sibutramine and rimonabant have been removed from the market due to their side effects. The new combination of topimarate and fentermine is approved in the US but not in Europe.

Congenital Syndrome

Constitutional obesity and mental retardation co-occur in several multiple congenital anomaly syndromes, including Prader-Willi syndrome, Bardet-Biedl syndrome, Cohen syndrome, Albright hereditary osteodystrophy, and Borjeson-Forssman-Lehmann syndrome as well as some rarer disorders. Although hypothalamic-pituitary axis abnormalities are thought to be a possible causative mechanism in some of these disorders, current knowledge is insufficient to explain the pathophysiologic mechanism of obesity in most multiple congenital anomaly/mental retardation syndromes. The chromosomal location of many of these syndromes is known, and studies are ongoing to identify the causative genes. Further delineation of the functions of the underlying genes will likely be instructive regarding mechanisms of appetite, satiety, and obesity in the general population. This review details current knowledge of the clinical and molecular genetic findings of multiple congenital anomaly/mental retardation syndromes associated with intrinsic obesity in an effort to delineate causative mechanisms and genetic abnormalities contributing to obesity.

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.