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1. What do you understand by primary obesity?

Primary obesity is a medical condition in which excess body fat has accumulated to an extent that it may have a negative effect on health. People are generally considered obese when their body mass index (BMI), a measurement obtained by dividing a person's weight by the square of the person's height, is over 30 kg/m²; the range 25–30 kg/m² is defined as overweight.

2. How does drug therapy and congenital syndrome affect secondary obesity?

Firstly, Secondary obesity means that you have a medical condition that has caused you to gain weight. These diseases include endocrine disorders, hypothalamic disorders and some congenital conditions. Before a patient undergoes drug therapy, there must have been an underlying health condition

- **How Drug Therapy affects Secondary Obesity:**

Sometimes it is not the drug itself causing weight gain; however, it is the side-effects from the drug. Some drugs stimulate the arcuate nucleus of the hypothalamus causing a large appetite, and as a result, more food is consumed. Others may affect how your body absorbs and stores glucose, which can lead to fat deposits in the midsection of your body.

Drug-induced weight gain is a serious side effect of many commonly used drugs leading to noncompliance with therapy and to exacerbation of comorbid conditions related to obesity. Improved glycemic control achieved by insulin, insulin secretagogues or thiazolidinedione therapy is generally accompanied by weight gain. It is a problematic side effect of therapy due to the known deleterious effect of weight gain on glucose control, increased blood pressure and worsening lipid profile.

The atypical antipsychotic drugs (clozapine, olanzapine, risperidone and quetiapine) are known to cause marked weight gain. Antidepressants such as amitriptyline, mirtazapine and some serotonin reuptake inhibitors (SSRIs) also may promote appreciable weight gain that cannot be explained solely by improvement in depressive symptoms. The same phenomenon is observed with mood stabilizers such as lithium, valproic acid and carbamazepine.

- **How congenital syndrome affects Secondary Obesity:**

Some of the most common endocrine disorders that can contribute to secondary disorder include:

- ▪ A deficiency in thyroid hormone (hypothyroidism) and
- ▪ Polycystic ovarian syndrome (PCOS).

There are also some rare causes of secondary obesity like Cushing's disease (hypercortisolism), hypothalamic injury or disorders, and genetic mutations.

- **Hyperthyroidism:**

When your thyroid makes less of its hormones - as it does in hypothyroidism - your metabolism slows down. The more severe your hypothyroidism is, the more weight you'll gain. Some of the weight gain is fat, which may lead to obesity along the line but much of it is fluid buildup from the effects of an underactive thyroid on your kidney function.

- **Polycystic ovarian syndrome:**

PCOS can cause missed or irregular menstrual periods, excess hair growth, acne, infertility, and weight gain. Women with PCOS may be at higher risk for type 2 diabetes, high blood pressure, heart problems, and endometrial cancer.

3. . Aetiology of Cancer and its Molecular Basis

Aetiology of Cancer:

Cancer is caused by proliferation of cells. Such changes may be due to chance or to exposure to carcinogens or mutagens. A carcinogen may be a chemical substance, such as certain molecules in tobacco smoke. The cause of cancer may be environmental agents, viral or genetic factors. Cancer risk factor can be roughly into the following groups:

- Biological or internal factors, such as age, gender, inherited genetic defects and skin type
- Environmental exposure, for instance to radon and UV radiation, and fine particulate matter
- Occupational risk factors, including carcinogens such as many chemicals, radioactive materials and asbestos
- Lifestyle-related factors.

Lifestyle-related factors that cause cancer include:

- Tobacco
- Alcohol
- UV radiation in sunlight
- Some food-related factors, such as nitrites and poly aromatic hydrocarbons generated by barbecuing food).

Cancer causing factors related to work and living environments include:

- asbestos fibres
- tar and pitch
- polynuclear hydrocarbons (e.g. benzopyrene)
- Some metal compounds
- Some plastic chemicals (e.g. Vinyl chloride)

Bacteria and viruses that can cause cancer:

- Helicobacter pylori (H. pylori, which causes gastritis)
- HBV, HCV (hepatitis viruses that cause hepatitis)
- HPV (human papilloma virus, papilloma virus, which causes changes eg. Cervical cells)
- EBV (Epstein-Barr virus, the herpes virus that causes inflammation of the throat lymphoid)

Radiation that can cause cancer:

- ionising radiation (e.g. X-ray radiation, soil radon)
- non-ionised radiation (the sun's ultraviolet radiation)

Some drugs that may increase the risk of cancer:

- certain antineoplastic agents
- certain hormones

- medicines that cause immune deficiency

- **Molecular Basis of Cancer:**

Cancer is a group of diseases characterized by an autonomous proliferation of neoplastic cells which have a number of alterations, including mutations and genetic instability. Cellular functions are controlled by proteins, and because these proteins are encoded by DNA organized into genes, molecular studies have shown that cancer is a paradigm of acquired genetic disease. The process of protein production involves a cascade of several different steps, each with its attendant enzymes, which are also encoded by DNA and regulated by other proteins. Most steps in the process can be affected, eventually leading to an alteration in the amount or structure of proteins, which in turn affects cellular function. However, whereas cellular function may be altered by disturbance of one gene, malignant transformation is thought to require two or more abnormalities occurring in the same cell. Although there are mechanisms responsible for DNA maintenance and repair, the basic structure of DNA and the order of the nucleotide bases can be mutated. These mutations can be inherited or can occur sporadically, and can be present in all cells or only in the tumor cells. At the nucleotide level, these mutations can be substitutions, or additions.