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Assignment

1. WHAT DO YOU UNDERSTAND BY PRIMARY OBESITY
2. HOW DOES DRUG THERAPY AND CONGENITAL SYNDROME AFFECT SECONDARY OBESITY
3. DISCUSS THE AETIOLOGY OF CANCER AND ITS MOLECULAR BASIS

Answers

1. 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. Obesity is most commonly caused by a combination of excessive food intake, lack of physical activity, and genetic susceptibility.
2. What is secondary obesity? 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.

Drug therapy sometimes have side effects that could trigger weight gain.

Some drugs stimulate arcuate nucleus of the hypothalamus causing a large appetite, and as a result, more food is been 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.

There are some congenital syndrome that leads to secondary obesity;

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

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

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 build up from the effects of an underactive thyroid on your kidney function.

Polycystic ovarian syndrome: It is a condition that affects a woman's hormone levels. Women with PCOS produce higher than normal amounts of male hormones. This hormone imbalance causes them to skip menstrual periods and makes it harder for them to get pregnant. Polycystic ovary syndrome is a condition that can affect a woman's ability to produce

eggs. PCOS is linked with higher levels of circulating insulin, which is characteristic in type 2 diabetes

3. Cancer is a disease caused by genetic changes leading to uncontrolled cell growth and tumor formation. The basic cause of sporadic (non-familial) cancers is DNA damage and genomic instability. A minority of cancers are due to inherited genetic mutations. Etiologies of cancer can be defined as the causes or cofactors of cancer.

Aetiology of Cancer:

Cancer is caused by proliferation of cell. Such changes may be due to chance or to exposure to a 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.

Tobacco

Alcohol

UV radiation in sunlight

Some kind of food can also be a factor that causes cancer. For example; nitrites and poly aromatic hydrocarbons generated by barbecuing food).

Cancer causing factors related to work and living environments. For example; asbestos fibres

tar and pitch

polynuclear hydrocarbons (e.g. benzopyrene)

Some metal compounds

Some plastic chemicals (e.g. Vinyl chloride)

Bacteria and viruses can cause cancer:

Helicobacter pylori: causes gastritis

HBV, HCV : hepatitis viruses that cause hepatitis

HPV : causes changes eg. Cervical cells

EBV (Epstein-Barr virus) : the herpes virus that causes inflammation of the throat lymphoid

Radiation can cause cancer:

ionising radiation (e.g. X-ray radiation, soil radon)

non-ionised radiation (the sun's ultraviolet radiation)

Some drugs may increase the risk of cancer:

Some antineoplastic agents

Some hormones

Drugs that leads to 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, additions or deletions.