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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

**Answer:**

1. BMI can be described as the value derived from the mass (weight) and height of a person. BMI= weight in kg

Height in meters^2

Obesity is a medical condition in which excess body fat has accumulated to an extent that it may have a negative effect on health.

Primary obesity can simply be defined as a state of excess adipose tissue in the body.

1. Secondary obesity means that you have a medical condition that has caused you to gain weight.

There are some congenital conditions that can lead to secondary obesity such as;

* **Hypothyroidism:** it is associated with decreased thermo genesis, decreased metabolic rate, and has also been shown to correlate with a higher body mass index (BMI) and a higher prevalence of obesity.
* **Polycystic ovarian syndrome (PCOS):**  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
* **Cushing disease**: it is a condition in which the pituitary gland releases too much adrenocorticotropic hormone (ACTH). The pituitary gland is an organ of the endocrine system. Cushing disease is a form of Cushing syndrome. Cushing disease can occur if you have high stress levels of the stress hormone cortical, in your blood. Cortisol increases our blood pressure and blood glucose levels and is one complication which can result from untreated Cushing's syndrome.
* Obesity is fairly significant in individuals with congenital syndrome such as heart disease. Obesity can also serve as a risk factor to hypertension. Pregnancy obesity can also serve as a risk factor to malformations on the fetus. Maternal obesity is associated with an increased risk for congenital anomalies. Obese women were more likely to have an infant with spinal bifida, omphalocele, heart defects and multiple anomalies. Overweight women were more likely to have infants with heart defects and multiple anomalies.

There are some certain kinds of medications that can induce diabetes but can be reversed when the drugs are discontinued. There are some drugs known to induce diabetes such as;

* Corticosteroid
* Thiazide diuretics
* Beta-blockers
* Antipsychotics
* Statins

**Corticosteroid:** This is a powerful drug used to treat symptoms like inflammation caused by rheumatoid arthritis and lupus.

However, particularly if corticosteroids are taken over longer periods of time, steroid treatment can sometimes lead to the development of type 2 diabetes permanently. Whilst on steroid medication, you may need to take diabetes medication which may include insulin. When you come off the steroids course of treatment, you may be able to go onto less strong diabetes medication or come off blood glucose lowering medication altogether. From my general understanding steroids can lead to type 2 diabetes.

1. 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.

**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 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 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:

* 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, additions or deletions.