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BCH Assignment

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Question 1.

What do you understand by primary or simple obesity?

Obesity is defined as the intake of the metabolic fuel is constantly greater than the energy expenditure there will be excess triacylglycerol production which leads to excess number of adipocyte.

Obesity is classified into two;

1. Primary Obesity
2. Secondary Obesity

Primary Obesity

Primary obesity is not associated with clinical situation, it does not occur as a result of an underlying disease. Primary obesity is caused by fatty food, junk food, food addiction, overfeeding and gluttony with less physical activities. Many people overeat than the calories requirement either because they are too fond of their food which is a pleasure or quite often because they are unhappy, food gives them solace.

Question 2

How does the congenital syndrome and drug therapy affects obesity?

Effect of congenital syndrome on obesity

Congenital diseases also known as birth defect are conditions present at birth regardless of their cause.

Some congenital disease and the reason they are affect obesity are:

- Prader Willi syndrome: people with this disorder become obese as a result of a mental disorder that will result to overeating which together with their slow metabolic rate will lead to obesity
- Cohen syndrome: people with this syndrome become obese as a result of increased response of adipocytes to insulin
- Lawrence-Moon-Bardet syndrome: people with this disorders become obese as a result of leptin resistance in fat cells. Because the adipocyte do not respond to leptin, they continue to increase in number and leads to obesity
- Turner syndrome: People with this disorder become obese as a result of insulin resistance. Excess insulin, due to insulin resistance can lead to weight gain and eventually obesity
- Pseudohypoparathyroidism People with this disorder become obese as a result of leptin deficiency
- Down's syndrome: people with this disorders become obese as a result of leptin resistance in fat cells. Because the adipocyte do not respond to leptin, they continue to increase in number and leads to obesity

Effect of drug therapy on obesity.

Medications such as antidepressants, antipsychotic, diabetic medication and

generally drugs in class known as Thiazolidines (TZDs) can lead to weight gain and increase in fat. This eventually results in obesity. Thiazolidines are oral anti-diabetic that acts as insulin sensitizers. TZDs improve glycemic control and insulin sensitivity in patients with type 2 diabetes, despite their potential to cause weight gain. Data indicate that the TZD treatment, there is a favourable shift in fat distribution from visceral to subcutaneous adipose depots that is associated with improvement in hepatic and peripheral tissues sensitivity to insulin. Although weight gain may occur with TZD therapy, it is not inevitable. Experts do not fully understand why antidepressants leads to weight gain in some people. One theory is that both metabolism and hunger levels may be affected.

Antidepressants interference with serotonin, the neurotransmitter that regulates anxiety and mood while also controlling appetite, this craving may increase appetite for carbohydrate rich food such as bread. Also depression itself may cause weight gain in some people and weight loss in some people, this may make them hungrier while others lose their appetite it may occur when cases that when antidepressants takes effect a person's usual appetite returns and this has an impact on their weight.

Question 3

Highlight the aetiology of cancer including its molecular basis

Aetiology of cancer

Aetiology of cancer is multifactorial, physical, chemical, hormonal, metabolic, genetic and environmental. They all cause mutation of genes during replication.

Etiology of cancer is caused by the following:

(a) Predisposing Factors

1. Age: Cancer can develop in any age, though it is most common in those over 55 years of age. Certain cancers are particularly common in children below 15 years of age, viz.

- Retinoblastomas
- Neuroblastomas
- Wilms' tumours
- Certain tumours of haemopoietic tissues as lymphomas and leukaemias.
- Sarcomas of bones and skeletal muscles.

2. Heredity: Heredity plays an important role in carcinogenesis. Certain precancerous conditions are inherited. Examples are:

- Susceptibility to childhood retinoblastomas is inherited as an autosomal dominant trait and approximately 40 per cent of retinoblastomas are familial.
- Susceptibility to multiple colonic polyposis is inherited as autosomal dominant trait and almost all cases develop into adenocarcinomas in later life.
- Chromosomal DNA instability may be inherited as an autosomal recessive trait. Conditions are characterised by some defect in DNA repair.
- In xeroderma pigmentosa, a skin condition, the affected individuals develop carcinomas of skin in areas exposed to UV rays of sunlight.

3. Environmental factors: Statistically it has been shown that 80 per cent of human cancers are caused by environmental factors, principally chemicals,

viz.

- Lifestyle: Cigarette smoking, tobacco chewing.
- Dietary: Groundnuts and other foodstuffs infected with fungus like *Aspergillus* produce aflatoxin B1 which is carcinogenic.
- Occupational: Asbestos, benzene, naphthylamines, beryllium etc.
- Iatrogenic: Certain therapeutic drugs may be carcinogenic.

4. Acquired precancerous disorders: Certain clinical conditions are associated with increased risk of developing cancers.

Examples are:

- Leukoplakia of oral mucosa and genital mucosa developing into squamous cell carcinomas.
- Cirrhosis of liver: A few cases can develop hepatoma (hepatocellular carcinoma).
- Ulcerative colitis: Can produce adenocarcinoma of colon.
- Carcinoma in situ of cervix: Can produce squamous cell carcinoma of cervix.

(b) Carcinogenic Agents (Agents Causing Cancer):

Carcinogens that cause cancer can be divided into three main broad groups:

1. Physical: Radiant energy
2. Chemicals: Variety of chemical compounds can cause cancer. Some of these can act directly and others can act as procarcinogens

3. Biological: Oncogenic viruses.

Molecular basis of cancer

Normally, cell replicate and are removed from a natural process. Apoptosis at an old age. The molecular basis of the cell is seen in shortening of the telomeres of the cell at their chromosomes

Cancer cells escape apoptosis of the normal cell cycle. They accomplish this by lengthen of the telomeres through the enzyme, telomere polymerase. In this way cancer cell life is prolonged through prevention of apoptosis and thus cancer cells are immortalized. All cancer cells receive signal for apoptosis, chemicals that cause cancer destroy the signals hence cell continue to multiply uncontrollably