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17/MHS01/279

MEDICINE AND SURGERY

BCH 313

ASSIGNMENT TITLE: DIABETES, OBESITY AND CANCER

1.) WHAT DO YOU UNDERSTAND BY PRIMARY OR SIMPLE OBESITY

Obesity is a [medical condition](https://en.wikipedia.org/wiki/Disease) in which excess [body fat](https://en.wikipedia.org/wiki/Adipose_tissue) has accumulated to the extent that it may have an adverse effect on health.[[20]](https://en.wikipedia.org/wiki/Obesity#cite_note-WHO_2000_p.6-20) It is defined by [body mass index (BMI)](https://en.wikipedia.org/wiki/Body_mass_index) and further evaluated in terms of fat distribution via the [waist–hip ratio](https://en.wikipedia.org/wiki/Waist%E2%80%93hip_ratio) and total cardiovascular risk factors. Simple obesity is characterized by a normal or increased growth rate with an acceleration of bone age maturation. Despite normal growth, simple obesity is characterized by a reduced GH secretion evaluated by standard provocative tests.  The range 25–30 [kg](https://en.wikipedia.org/wiki/Kilogram)/[m2](https://en.wikipedia.org/wiki/Square_metre) is defined as [overweight](https://en.wikipedia.org/wiki/Overweight).[[1]](https://en.wikipedia.org/wiki/Obesity#cite_note-WHO2015-1) Some [East Asian](https://en.wikipedia.org/wiki/East_Asia) countries use lower values

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| **BMI (kg/m2)** | | **Classification**[[19]](https://en.wikipedia.org/wiki/Obesity#cite_note-19) |
| **from** | **up to** |
|  | 18.5 | underweight |
| 18.5 | 25.0 | normal weight |
| 25.0 | 30.0 | Overweight |
| 30.0 | 35.0 | class I obesity |
| 35.0 | 40.0 | class II obesity |
| 40.0 |  | class III obesity |

Class I obesity is simple obesity.

2.) HOW DOES CONGENITAL SYNDROME AND DRUG THERAPY AFFECT OBESITY

* Obesity is common in children with congenital and acquired heart disease. Healthy-lifestyle counseling and routine exercise in children with heart disease may be underemphasized. Children who have u Obesity during childhood can have a harmful effect on the body in a variety of ways. Children who have obesity are more likely to have unhealthy lifestyles are predisposed to develop hypertension, dyslipidemia and other complications
  + High blood pressure and high cholesterol, which are risk factors for cardiovascular disease (CVD).
  + Increased risk of impaired glucose tolerance, insulin resistance, and type 2 diabetes.
  + Breathing problems, such as asthma and sleep apnea.
  + Joint problems and musculoskeletal discomfort.
  + Fatty liver disease, gallstones, and gastro-esophageal reflux (i.e., heartburn).

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.

Patients may have to be prescribed higher doses of antibiotics because of rising rates of obesity,” BBC News has reported. In the obese, modifications in body constitution (higher percentage of fat and lower percentage of lean tissue and water) can affect drug distribution in the tissues. For slightly liposoluble molecules (e.g., digoxin, antipyrine), the equilibrium distribution volume (V), total and per kilogram weight, is significantly less than that of control subjects. With lipophilic drugs (e.g., barbiturates, benzodiazepines), this parameter is significantly increased, explaining the prolongation of the plasma elimination half-life. The other main factors involved in drug diffusion in the tissues are binding to plasma and tissue proteins, and regional blood flow.

3.)AETIOLOGY OF CANCEFR AND ITS MOLECULAR BIOLOGY

Cancer arises from factors within the cells and external factors within the environment. E.g Inherited mutations and mutations due to the environment. It is multifactorial: physical, chemical, hormonal, metabolic, genetics and environmental factors, these factors cause mutation on genes during replication.

Carcinogens causes DNA damage that leads to mutations. Carcinogens and hereditary mutations affects repaired genes and cancer occurs. About 50% of human cancer is due to deletion or mutation of repaired gene called antioncogene. example : colorectal canal

* Carcinogens :physical and chemical carcinogens

Physical Carcinogens: X-rays, UV light etc.

Chemical Carcinogens: Tobacco, asbestos, Food additives, Additives.

* Hormones: hormones like the steroid hormones are carcinogenic.
* Oncogenic Viruses: these viruses get integrated into the hosts DNA leading to multiplications of viral gene overtaking that of host and causing uncontrolled multiplication of cells

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| **Virus (Group)** | * **Associated Human Cancer** |
| * **DNA VIRUSES** | |
| * **Papilloma virus family** Human papilloma virus (HPV) (various subtypes) | * Genital tumours, squamous cell carcinoma |
| * **Herpes virus family** Human herpes virus 8 (HHV8) Epstein-Barr virus (EBV) | * Kaposi sarcoma Burkitt's lymphoma, Hodgkin's disease, Nasopharyngeal carcinoma |
| * **Hepadnavirus family** Hepatitis B virus | * Hepatocellular carcinoma |
| * **RNA VIRUSES** | |
| * **Retrovirus family** Human T-cell leukaemia virus Human immunodeficiency virus | * Adult T-cell leukaemia AIDS-related malignancies |
| * **Flavivirus family** Hepatitis C virus | * Hepatocellular carcinoma |

**Inherited diseases caused by DNA repair defects**

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| **Disease** | **Protein Affected** | **Affected Function** | **Manifestation** |
| Bloom syndrome | 13 different proteins | Recombination repair? | Immunodeficiency, cancer susceptibility, chromosome breaks |
| Breast cancer susceptibility | BRCA1, BRCA2; proteins of DNA repair complexes | Homology-directed DNA repair | Breast and ovarian cancer |
| Cockayne syndrome | Nucleotide excision repair protein | Transcription-coupled nucleotide excision repair | Poor growth, early senility, neurological degeneration |
| Fanconi anemia | 8 different proteins | Repair of DNA cross-links? | Anaemia, leukaemia, chromosome breakage |
| Hereditary nonpolyposis colon cancer (HNPCC) | Proteins of mismatch repair | Post-replication mismatch repair | Cancer susceptibility |
| Nijmegen breakage syndrome | Activator of nuclear protein kinases | Signalling for DNA double-strand break repair | Growth retardation, immunodeficiency, cancers |
| Werner syndrome | DNA helicase and exonuclease | Unknown | Premature aging, short telomeres |
| Xeroderma pigmentosum | Nucleotide excision repair proteins | Genome-wide nucleotide excision repair | Cutaneous photosensitivity |