

Mid term assignment

Pathology and microbiology (DPT 4th)

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Max Marks: 30

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Q1: Write down any viral or bacterial disease in detail

Q2: What is cancer? How cancer is diagnosed? What is the role of genetics in cancer? Also explain TNM diagnostic test for cancer

Q3: Explain structure of bacterial cell. How antibiotics kill bacteria? What is the mode of action of antibiotics?

QUESTION

Typhoid fever: also known simply as typhoid is a bacterial infection due to specific type salmonella that causes symptoms. Symptoms may vary from mild to severe. This is commonly accompanied by headaches and mild vomiting, ulcers, blood in stools but little diarrhea. The abdomen becomes covered with red spots. This bacteria causes diseases only in humans and is transmitted by five Fs, flies, food, fingers, feces and fomites (which transfer infection from one individual to another). Widal test is used for diagnosis. Bone marrow testing is the most accurate. The vaccine may have some effect for up to seven years. Those people are at high risk who are travelling to areas where the diseases are common. Vaccines are available for immunization. To prevent the diseases include providing clean drinking water, good sanitation and handwashing. This disease is treated with antibiotics such as azithromycin, cephalosporins and fluoroquinolones..

Question 2 Answer

Cancer

- 1) Greek word means 'crab'
- 2) Cancerous cell grow rapidly .
- 3) Anaplasia and high mitosis .
- 4) Cancer is the uncontrolled growth of abnormal cells in the body.
- 5) When the old cells don't die they become form a new , abnormal cells these extra cell may form a mass of tissue called tumor causes water

How cancer is diagnosed

Cancer can be diagnosed from different diagnostic procedures like Laboratory test , diagnostic imaging, genetic tests endoscopic exams , tumor biopsies .

Many test and examination are used to diagnosed the cancer as there are many kind of cancer.

Roll of genetics in cancer:

Cancer is a genetics diseases because cancer is caused by certain changes to genes that control the cell function.

A genetic alternation eliminate the protein function in which they could make cells divide uncontrollably because of this genetic mutation occure. And found in cancer cells.

A cancer begin when genes in a cells become mutated.

TNM diagnostic test for cancer.

- 1)Tumor node metastasis
- 2)TN refers to : no of nearby lymph nodes that cancer.
- 3) M: refer that cancer has metastasized.
- 4) This mean that cancer has spread from the primary tumor to other parte of the body .

5) It is the most widely used to diagnose cancer when your cancer is described by the TNM. There will be no numbers after each letter that give you full detail about the cancer Example TINOM

Question 3

Structure of bacteria

Cytoplasm: The cytoplasm of bacterial cell is where the functions for cell growth, metabolism and replication are carried out.

- 1) Gel like matrix consist of water, mineral, nutrients etc.
- 2) Plasma membrane.
- 3) Layer of phospholipids and protein.
- 4) Regulation of the flow of material in and out of the cell.

Flagella: singular flagellum, composed of flagellin protein and help in locomotion. pili are small hair like structure made up of pilin protein used for attachment to the object or other bacteria.

Cytoplasm: The cytoplasm of bacterial cell is where the function for cell growth metabolism and replication are carried out. gel like matrix consist of water minerals and nutrients ect.

Plasma membrane

Plasma membrane is a layer of phospholipid and protein it regulating the flow of material in and out of cell it is selectively permeable membrane means allow selected substance to pass through.

Nucleoid: Region of cytoplasm where the Chromosomal DNA is located. Most bacteria have a single, circular chromosome responsible for replication.

Ribosomes:

Microscope factors found in all cells include bacteria.

Translate the genetic code from the molecule language of N.A to that of A.A.

How antibiotics kill bacteria?

Antibiotics fight with bacterial infection by killing bacteria or slowing its growth. they do this by attacking the wall or coating surrounding bacteria.

They also interfering with bacteria reproduction.

Blocking protein production in bacteria

Inhibition DNA replication because of these characteristics antibiotic kill bacteria in order to slow its rate of growth and also decrease its rate of infections.

Mode of action of antibiotics:

Antibiotics is a type of antimicrobial substance active agent bacteria and are widely used to decrease the rate of bacterial infection in our body it may kills or inhabit the bacteria , different antibiotics have different mode of action owing to the nature of there structure .

1 Inhibition of cell wall synthesis.

Antimicrobial activity is expressed by inhibition of the peptidoglycan cell wall structure it consist of two steps.

- 1) Interference with any step in the sequence may inhibit cell synthesis.
- 2) And result inability of bacterium to survive because of absence of protective covering

Example pencillin and cephalosporin.

2 inhibition of protein synthesis

Some of the antibiotics compose inhabits bacterial cell multiplication by inhibition protein synthesis in them.

Protein synthesis is a multi step process several tyoes of an antibiotics agents target bacterial protein synthesis by binding to either the 30S or 50S subunits of intracellular ribosomes.

Example: tetracyclines and aminoglycosides.

3 Damage of cell membrane

Polypeptide antibiotics produced by bacillus which adversely effect the normal permeability characteristics of cell membrane are important barriers that regulate the intra and extracellular flow of substance .most clinical usage is therefore lomite to topical application the limited application in chemotherapy because of their toxicity.

Example polymixin B and colistin.

4 inhibition of nucleic acid synthesis

DNA and RNA help in the replication of all living forms including bacteria, some antibiotics work by binding to component involved in the process of DNA and RNA synthesis which causes interference of the normal cellular process which will ultimately compromise bacterial multiplication.

Example : polymixin B and colistin

5: inhibition of other metabolic process.

Other antibiotics act on selected cellular process essential for the survival of the bacterial pathogens.

Example : sulphonamides disrupt the folic acid pathway which is a necessary step for bacteria to produce precursor important for DNA. Sulphonamides target and binds to dihydropteroate synthase. This enzyme are essential for the production of folic acid. A vitamin synthesized by bacteria but not humans.