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Subject medical microbiology

Submitted to Mam pashmina.

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Q No 1: What is the importance of medical microbiology. ?

=> Microbiology is one of the most important branches of biological science. it is the study of microbes and how they influence life.

=> The importance of microbiology is a lot of talk but I'll just give a few summaries.

-> It give knowlegde about their effects on food which includes spoilage. fermentation, decay, food poisoning and infoamation of toxins.

-> It studies the development of diseases and how microbes can be used to make our health better with vaccination chemotherapy, immunotherapy use of probiotics it also includes the study of diseases control which embodies infection control treatment and quarantine.

-> Microbiology also deals with the effects and control of situation like bio wars.

humanity would not be where it is today without microbiology it is one of the most vital.

scientific fields. It allows use to see into the microscopic world around within us. Micro impacts modern Medicine, food services industry and many more fields that we take ~~it~~ too granted. Micro was used to discover cures and treatment for many diseases, it is also the field of science that will enable us to cure cancer and other genetic illnesses. A knowledge of microbes and how to they function us to. decreases deaths related to food and drugs that are no longer fresh. That best before that on everything marks the time when microbes will begin to grow in or on the item. thus reducing the safety consumption this allow all consume food and get rid of items that are likely to make us sick or even kill us. I will not seafood past its best by date. I will however use painciller. for up to 6 months after best by date, as I know that the drug is still viable just not as potent.

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while the expired seafood could give me food poisoning and at best I would have diarrhoea and vomiting. at worst could etc.

→ This is a very simplified answer and I have not even touched on 1% of what we use micro for but I feel is a decent response and by treatment.

→ A knowledge of microbes and how they function has allow us to decrease deaths related

→ This is very simplified answer, and I haven't even on 1% ~~touched~~ of what we use micro for but I feel the above is a decent response and by it self shows the importance of micro without going into any clinical / scientific detail which might confuse someone unfamiliar with the term

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Q. No:

Microscopic identification:

Viruses can be detected and indentified by direct microscope examination and clinical specimens such as biopsy material or skin lession. The different procedures can be used

1) Light microscopy can reveal characteristic inclusion bodies or multinucleated gain cell. The Tzanck smear which shows herpes-virus induced multinucleated gaints cells in vesicular skin lessions is a good example.

2) UV microscopy is used for fluorescent microscopy detects ~~Virus~~ of the virus in infected cell.

3) Electron microscopy detect virus particle which can be characterized by their size and morphology.

Serologic procedures:

A rise in the of titer' antibody to the virus can be used diagose current infection.

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Seroconversion is the term used to describe the finding of antibody to a virus. in patient serum with patient previously had to antibody.
stated another way the patient serum is converted from antibody - positive
A serum sample is an obtain as a viral ethogy is suspected (acute-phase) and a second is obtained to 10 to 14 days (convalescent phase of the antibody titer in the convalscent-phase serum sample is at least fourfold highter than the titer in the acute-phase serum sample is 1/4 and the titer in the phase serum example.
the patient is considered to be infected. ~~for example~~
and the titer in the convalescment phase serum sample is 1/16 or greater than the patient had has a significant rise is antibody titer and has been recently infected. of however the titer in the convalescent-phase serum sample is 1/8

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This is not a significant rise and should be interpreted as a sign of recent infection.

It is important to realize that an antibody titer on a singel sample does not distinguish btw a previous infection and a current one.

In certain viral diseases the presence of IgM antibody is used to digonse current. For example the presence IgM antibody to core antigen infection by hepatitis virus.

→ other nonspecific serologic ~~for example~~ Example the heterophil antibody test (monospot) can be used to dignose infections mononucleosis. In the heterophil test human serum is reacted with horse or sheep red blood cell if the heterophil antibody is present. i.e if the patient has been infected with Epstin-bar, virus then agglutination of red blood cell occurs.

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Detection of viral Antigens

viral
antigen can be detected in the patient blood or body fluid viros tests, but most often by an ELISA. Test for the pey antigen of human immunedeficiency virus (HIV) and the surface antigen of hepatities Be virus are are common escample of the approach.

Detection of viral nucleic Acids

Viral nuclei acids (i.e either the viral genome or viral MRNA) can be detected in the patient blood or tissues with escample mentaoy DNA or RNA (cDNA or cRNA, as a probe. If only small amounts of viral nuclei acids are present in the petien the ploymesse chain reaction (PCR) can be used to amplify the viral nuclei acid. Assay, e. for the RNA and HIV and hepatitis c virus and

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the DNA of hepatities B virus in the patient blood viral load are commonly used to evaluate the the patient prognosis.

In serious respiratory virus infection the laboratory diagnosis can be done by using PCR-based assays on respiratory tract secretions. A panel of PCR caused by viruses such as influenza virus, parainfluenze virus, respiratory syncytial virus, rhinovirus human metapneumavirus and adenovirus

Serologic methods:

These method are described in more detail, in however, it is of interest here to present information on how serologic reaction aid the microbeliologic diagnoses there are the two besic approach

1. Using known antibody to identify the microorganism.
2. Using known antigen to detect antibodies in the patient's serum.

Identification of an organism with known Antiserum slide Agglutination test:-

Antisera can be used to identify salmonell and shigella by causing agglutination clumping of the unknown organisms.
Antisera direct against the cell wall o antigens of salmonella and shigella are commonly used in hospital laboratories
Antisera against the salmonella H antigens and the capular Vi antigen of salomenall are used in public health laboratories for epidemiologic purpose.

Latex Agglution Test:-

Latex test coated by specific antibody are agglutinated in the presence of the homologous bacteria or antigen. This test is used to determine the presence of the capular antigen of the yeast c.

Enzyme Linked immunosorbent Assay:)

On this test a specific antibody to which an easily assayed enzyme has been linked is used to detect the presence of the homologous anitgen.
Because several techniques has been devised to implement this principle the specific tests is useful in detecting a wide variety of bacterial, viral, and fungal infection.

Indentification of serum Antibodies with known Antigens

slide or Tube Agglutination test:)

A variety bacteria can be identified by exposure to known antibody labeled with fluorescent dye, which is detected visually in the ultraviolet microscope. various method can be used such as the ~~direct~~ direct and indirect techniques