Infection of wound and other tissues

The important of these infections

1-Nosocomial wound infections

The important bacteria causes is: *Staph aureus, Strep pyogenes, Pseudomonus aeuginosa , Coliform, Bacteroids fragilis*

2- Soft tissue Infection

The cause many number from bacteria aerobic and non-aerobic like alone or grouping.

3- Burns Infections

The probable bacteria causes for contamination burns is: *Staph aureus, Pseudomonus aeuginosa*

4- Bone Infections (Osteomyelitis)

The important bacteria causes are: *Staph aureus, Strep* group B.

The specimens

1-Pus, 2- Small piece from tissue purulent or damaged.

3- Sample of blood for purpose of cultured in case of a high fever, shock accompanied with infections, as is expected for case of blood poisoning (septicemia).

- Lab examination

1- Macroscopic examination

And notes specification sample (pus or damaged &purulent tissue) from colour, consistency and odour.

For example, Pus caused by bacteria Staph

Staphylococcal lesion like Creamy and Thick pus

But when found *Sterpococcus pyogenes* bacteria causes inflammation the pus so colorful, watery and Lysis, pus cells observed in microscopic examination.

If inflammation of injury caused as bacteria *Proteus* so pus-like smell of fish.

The pus caused by infection bacteria *Ps.aeruginosa* so is the smell likes sweat-musty and colour blue-green.

The infections caused by anaerobic bacteria so is the smell pus (Putrid smell) and colour black

Fungal infections: observed abscess with granules black or brown colour of the pus.

2- Microscopic examination and includes three:
1- Prepare a slide of sample and staining by gram stain, as seen abscess pus cell, and *Staphylococcus*, *Steptococcus* G+ ve cocci in chains or clusters in shape. Negative bacteria as well as staining such as gram bacteria *E.coli*, *Proteus*, *Pseudomonas*.

Also see larger positive bacilli of the bacteria *Clostridium perfringens* causing gas gangrene as well as oval yeast cells such as *Candida*.
2- Prepare slide by using stain Ziehl-Neelson to watch *Mycobacterium* and *Nocardia*.
3- Culturing sample by following these steps:
1- Mannitol salt agar to identify staph
2- Blood agar incubated aerobic and anaerobic co_2 (5-10)%/37 c
3- Thioglycolate agar
4- MacConkey agar to identify G-ve rods
5- Sabouraud dextrose agar to identify yeast
Then gram stain and biochemical test and serogical test and API system.

- **Cerebrospinal fluid cultures**

In case of suspicion infecting central nervous system infections can be obtained by means of cerebrospinal fluid (CSF) examined a Lumbar puncture it is necessary to expedite it, especially when a suspected injury microbial such injuries including cases meningitis can be fatal if not treated quickly and controlled.

Can perform a few tests of chemical tests to determine cause of injury and being caused by bacteria or viruses as result most of injuries bacterial cerebrospinal fluid lack level but in injuries of viruses the level of glucose not change, and can identify these differences by measuring concentrations of glucose and lactic acid in cerebrospinal fluid, can also

be investigation for bacteia infection in cerebrospinal fluid by preparing gram stain or by culturing sample and investigation after presence of growth bacterial by using liquid enrichment medium and quickly and then note emergence of turbid in media in event of injury bacterial.

It is also possible get culturing to cerebrospinal fluid with using blood agar and chocolate agar and purpose of obtaining inoculum of cerebrospinal fluid for purpose culturing on media laboratory examine centrifuge usually for cerebrospinal fluid to concentration number of bacteria causing injury there, and then uses sediment laying to culturing, and bacteria is common cases of injuries bacterial meningitis caused by bacteria *Neisseria meningitides* , but bacteria that cause cerebrospinal fluid for injuries are:

Haemophilus influenzae, Streptococcus pneumonia, Streptococcus pyogenes, E.coli, Staph. aureus Klebsiella pneumoniae.

It is all of *Streptococcus pneumonia* and *Neisseria meningitides* are most important pathogens that cause meningitis in adults, but *Haemophilis influenza* is most important pathogens that cause meningitis in children at the same time, we find that it is rare to isolate *Haemophilis influenza* from cases of adult meningitis.

The cause of many microorganisms, which belong to other groups meningitis brain, and founding types of bacteria anaerobic in addition to fungi and protozoa, it is possible investigation of anaerobic bacteria in cerebrospinal fluid culturing sample on Thiolycolate broth or any media suitable and absence oxygen free, either fungi and protozoa also investigation using microscopic examination or diagnosed using culturing or use of serological tests.

Is need for steps diagnosed especially for purpose of isolating bacteria that cause infections to cerebrospinal fluid of tuberculosis CSF.

For purpose isolate bacteria *Mycobacterium tuberculosis* causing those injuries, but in case of investigating disease Neurosyphilis caused by bacteria *Tryponema pallidum* requires to examined serological diagnosis because not available media to cultured bacteria syphilis and there are many serological used to detect infection with syphilis, including examination of Wasserman test, examination of VDRL test and examination of Kahn test, all testes depend on founding presence of

antibodies either examination Treponema Pallidum Haemagglutination Assay (TPHA) is considered a special diagnosis of bacterial syphilis.

This is a means of cerebrospinal fluid injuries are very serious and critical and requires it to speed up diagnosis in addition to accuracy, thus providing treatment for patient and quickly.

- **Eye& Ear culture**

Is collection of fluid from tissues of eye and or ear tissuse and cultured on blood agar or chocolate agar or Macconkey agar or any other among appropriate for purpose of isolating microorganisms bacterial pathogens commonly found in these tissues, in addition to that is preparation of a slide gram stained and examined microscopically to determine fact that bacterial infection or due to other reasons and in cases of injury must be distinguished between fact that bacterial or viral infection to determine appropriate treatment of patient.

- **Skin lesions culture**

Collect a sample from skin lesions (whether wounds or boils) using different methods, including swabs or washing), and is expected to isolate different types of bacteria and requires it to use techniques of culturing bacterial anaerobic and aerobic bacteria, interest and specialty isolating microorganisms pathogenic expected presence and there of most important anaerobic bacteria *Clostridium tetani*, *Clostridium perfringenes* for causing serious disease.

Caused by infection skin fungal different diseases and it is needed for culturing media specialty to fungi for purpose isolation, and are used with a microscope to see actinomyces and fungi that cause skin disease (Dermatophytic fungi) from skin tissue and possible diagnosis using a microscope because fungi characterized by morphology specific.

Important Terms

- **Etiology**

Is that meaning of science which relates to disease pathogens and the factors that supported or assist in events injury, such as environmental, physiological and immunological factors.

• Lesion

Include changes that appear on the organism as a result of his illness may be of these changes on the level of tissue or cells or the molecular level such as (sickel-cells) are red blood cells when it changes shape to resemble a sickle and occur as a result of the injury sickle-cell anemia resulting from the presence of particles of hemoglobin is not a natural change in the protein content of amino acids. As well as for the type of pneumonia (Lobar pneumonia), as well as lung tumors.

• Cellular Adaptation

Its meaning is a set of changes in the cells during exposure to injury and transformation of normal cells in to injured cells of the most important of these changes:

1-Stimulate the endoplasmic reticulum:

Back to stimulate endoplasmic reticulum in most cases to take some of the drugs for a long time more than the period required or permitted, for example, increase the amount of EPR in the liver makes it easy to remove the cumulative effect of the poison a large number of types of drugs.

2- Atrophy:

It means lack of cell size and contraction of the loss of a lot of internal cellular compounds that occur in the small size of the organ result to the small size of the cells. Examples of such cases:

A-The low level of efficiency of an appointed member, for example muscle atrophy leads to the suspension of the effectiveness of that member or paralyzing.

B- A decline in the effectiveness of the endocrine glands and the level of stimulated as in the case of the failure in the gland functions thymus gland.

3-Hypertrophy

Its meaning increase in cell volume accompanied by increase the size of the member and here to not increase the number of cells and not of new cells generation, but originating cells become larger.

4-Hyperplasia

Its meaning increase in the number of cells in a particular organ or tissue as a result of increasing the effectiveness of cell division and not accompanied increase in the size of the cells such as in the increase in breast size during breastfeeding is a natural case either increase the size of the thyroid gland (thyroid hyperplasia) is a pathologic case.

5-Hypoplasia

It means the failure of an appointed member to reach the normal size such as atrophy as occurs in the kidney or lungs.

6-Aplasia or Agenesis

It means the failure of member completely in development and this occurs during embryonic development.

7-Metaplasia

It means the case of cell transformation from one species to another but the transformation is accepting to return to the original position and is it changing under the effect of a particular, as in the case of irritation which transformed cells of multi-layer pseudocolumnar epithelium tissue which lining of the bronchioles to squamous multiple.