مايكولوجي (فطريات)

Lec(1) MYCOLOGY 6/5/2019

Fungi:- Eukaryotic cells, that do not contain chlorophyll, but have cell walls, filamentous structures, and produce spores...each fungal cell has at least one nucleus and nuclear membrane, endoplasmic reticulum, mitochondria, and secretory apparatus. Most fungi are obligate or facultative aerobes.

Reproduction:-

1-Sexual reproduction:- fusion male and female gamete to given mono or multi nuclei structures these produce spores by meiotic division.

2-Asexual reproduction:-accurse by sporulation, budding and hyphae fragmentation. this reproduction most common in pathogenic fungi

Classification of fungi:-

The fungi divided into four major types depended on sexual stage includes:-

1-**Deuteromycetes**.

2-**Ascomycetes**

3-**Basidiomycetes**.

4-Zygomycetes.

Fungi growth:- The fungi can be divided into **mould and yeasts**.

1-**molds:-** are filamentous with branching filaments or hyphae, and usually form large fluffy colonies on laboratory media, and produce aerial fruiting hyphae that bear asexual spores.

2-**Yeasts:-** are oval, spherical or elongated cells, form moist colonies larger than bacterial colonies but unlike them

Growth requirement and culture media:-

1-Optimal temperature require for growth is 25c.

2-Incubation time 2-3 days .but some of the dermatophytes fungi may be as long as 3-5 week.

3-Optimum PH is between 5-6.

4-Humidity.

Culture media

1-Sabourauds dextrose agar:- is the medium most commonly used, it has aPH of 5.6 and is therefore inhibitory to bacteria while supporting the growth of fungi that are acid tolerant. (Add Chloramphenicol 0.05mg/dl + Cyclohexamide 0.5mg/dl

2-Brain-heart infusion agar: In addition to chloramphenicol and cyclohexamide which is enriched medium for fastidious fungi growth.

3-Corn Meal agar:- used for production of chlamydospores by candida albicans which is differentiated media.

Detection methods of fungi

1- **Lactophenol cotton blue**:-putting a drop of Lactophenol cotton blue stain on clean slide and transferred part from fungal growth by mycology needle .a cover slide is applied and pressure directly over the colony to spread out the hyphae to fungal and stained by LPCB dye.

2- **Adhesive tape technique**: - bearing small part from Adhesive tape by sterile forceps and touch the adhesive side center of the colony to be examined. Then is adhesion on the slide containing Lacto phenol cotton blue stain .then examined under the light microscope.

3- **Blok –slide culture technique**: - this method is not suitable for making rapid diagnosis,but it's excellent for demonstrating the hyphae and spore but it's slowly.

a- A glass rod is placed in a glass Petri dish with a circular piece of filter paper at the bottom. Then a slide and cover slide are also placed in the Petridish and autoclaved.

b-Small block of agar is cut from an agar with a sterile scalpel.

c-Spores or small portion of the fungal colony to be studied are inoculated in to four points in the slide of the agar block.

d-The circular filter paper at the bottom of the dish is moistened.

e-The cover slip is removed from the agar block and placed fungal slide down.

f-If the fungus has grown down the cover slide , the cover slide removed by sterile forceps from the agar block . and putting above slide contains on the LPCB and examined under the light microscope.

Laboratory Diagnosis:-

A-Direct examination:-

1- Wet preparations by using KOH.
2- Lacto phenol cotton blue stain.
3- Gram stain:-it will be gram positive.
4- Histopathological sections by using gram stain, Giemsa stain or heamatoxilin-eosin stain.
5- Flouorescencent microscope.
6- Indian ink or Nigrosin in case of cryptococcus neformans.

B-Cultural characteristics:-

Put the sample on agar media with gentle pressure by sterile forceps, then incubated about 2-3 days or weeks at 25c.