

①

إلى بهمين تعرفوه

Myco bacterium

- 1- Myco bacteria → obligate intracellular, obligate aerobe
- 2- Myco bacteria → Fast acid stain.
- 3- Myco bacteria → non-motile, non spore forming
- 4- Myco bacteria → we used 3 types of culture :-

1] Broth (middle brook, 7H9, 7H12)

2] semi synthetic Agar media (7H10, 7H11)

3] inspissated egg media → Löwestein-Jensen

5- ~~Trehalose~~ dimycolates (TDM) → cord factor → important virulence factor

6- TB → 2 clinical entities → Active, latent

7- BCG → live attenuated vaccine

1- Fungi → Eukaryotic [has ER, Nucleus, Mitochondria] mycology ↓

2- Fungi → lack of chloroplast. (as eukaryotic) ليس خلية

3- Fungi → lack of peptidoglycan (as prokaryotic) ليس خلية

4- plasma mem. of Fungi → contain ergosterol

5- Fungi → obligate aerobes + some facultative aerobes → but No obligate anaerobes

6- 3 Groups Fungi ← (أقسام)

→ + important to know Examples about them

* Give me an Ex. of Yeast, mold, dimorphic?

7- in Filamentous fungi → 1] tubular filaments called hyphae

2] Branched [highly Branched] called

mycelium.

8- Dermatophytes (Ring-worm) → Tinea disease → most common

9- Dimorphic Fungi → can live as a mold → (hyphae) → at Environment

Mycology

10- Dimorphic Fungi cause → 1] endemic infections. 2] systemic inf.

11- IGE → with allergies + parasite

12- Fungal allergies → Ex:- Aspergillus Fumigatus

13- Fungal toxins (Mycotoxicosis) → Ex:- Aflatoxicosis

contaminated food

14- Fungal infection → mycoses ← s. ↓

15- tinea → cutaneous

16- Example of subcutaneous → sporothrix schenckii

cause Fungal disease → sporotrichosis

(~~Rose~~) (Rose Gardener disease)

17- opportunistic Mycoses → candida species (mostly candida

Albicans)

18- Anti Fungal therapy → narrow therapeutic window

19- polyenes → the only fungicidal (kill Fungi) → By binding to mem. ergosterol → Ex:- ① Amphoteracin B (IV)

20- All Antifungal → ② Nystatin (topical)

↳ Fungistatic except polyenes

فطريات الجلد ← Mycology 2

1- in Pityriasis versicolor:-

1] pathologically → production of carboxylic acid → ↓ pigmentation

2] Diagnosis - under UV → Pale Green

- in lab → spaghetti shape → Yeast

Part of Normal Flora

2- Endothrix + ectothrix → For hair shaft

parasite 2

1

Asexual ← $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8 \rightarrow 9 \rightarrow 10$ ← $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8 \rightarrow 9 \rightarrow 10$

sexual + Asexual ← $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8 \rightarrow 9 \rightarrow 10$

[Intestinal Amoebiasis]

1- *Entamoeba histolytica* → move by pseudo bodies, Multiply by Binary fission, habitat → large intestine, bloody diarrhea
↳ the only pathogenic in human → $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8 \rightarrow 9 \rightarrow 10$ [Amoebiasis]
↳ very common

2- *Entamoeba histolytica* → ingested RBCs → microscope $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8 \rightarrow 9 \rightarrow 10$
↳ + cause ulcer $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8 \rightarrow 9 \rightarrow 10$

3- Cyst stage → $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8 \rightarrow 9 \rightarrow 10$ spores $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8 \rightarrow 9 \rightarrow 10$

4- most common Route → Direct Extension then systemic circulation

5- in skin → called Amoebiasis cutis ↳ treat by Metronidazole

↳ steatorrhea diarrhea (greasy)

1- *Giardia lamblia* → No Bloody diarrhea → invasion $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8 \rightarrow 9 \rightarrow 10$

2- treat by metronidazole (Flagell) → $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8 \rightarrow 9 \rightarrow 10$ → *E. histolytica*.

1- *Cryptosporidium* (intestinal sporozoa)

↳ obligate intracellular, have sexual multiplication

The infectious stage ← cycle $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8 \rightarrow 9 \rightarrow 10$

↳ The Diagnostic stage

↳ used Acid-fast

2- *Cyclospora* (intestinal sporozoa)

↳ Acid fast

1- *Balantidium coli* (intestinal ciliated protozoa)

↳ cause balantidiasis

↳ treat by Metronidazole

Sexual transmitted protozoan infection.

① *Trichomonas* → $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8 \rightarrow 9 \rightarrow 10$ Flagellated protozoa.

↳ only has Trophozoite ↳ No. of Flagella 5

↳ infection in Females → symptoms → yellow discharge

↳ in Males → Asymptomatic

treat by Metronidazole

L Haem Flagellate (B) (Blood protozoan infection)

(A) L trypanosoma L Leishmania

→ Trypanosomat → Cause Trypanosomiasis → African + American

→ African Trypanosomiasis → Everything happens Extracellularly

→ American Trypanosomiasis → May Extracellular + Intracellular
called Amastigote

→ African Trypanosomiasis → Vector → tsetse fly
↳ target CNS
↳ has another Name → Glossina

→ American Trypanosomiasis → Cause Trypanosoma Cruzi
and the other Name → Chagas disease (+ Tritoma)
↳ target heart + Muscles ↳ vector → (red-uricid bug)

Both in African + American → Trypomastigote → Extracellular
but only in American → Amastigote → intracellular
↳ cardiac Ms

(B) Leishmania

obligate intracellular - vector → sand fly

its target Macrophages + PMN

Types of Leishmania →

(1) Cutaneous leishmania → by L. Tropica + leishmania major
↳ most common

(2) Mucocutaneous → Nasopharyngeal leishmaniasis
↳ by L. braziliensis

(3) Visceral Leishmaniasis → by L. donovani → Fluid in
↳

3

Parasite 2

- Plasmodium (Blood sporozoa) → sexual + Asexual
- 5 species → Plasmodium ovale + Plasmodium vivax
(Malaria) ← Most common ←
- P. Malariae → Classical species → 42° ←
- P. Falciparum → Most dangerous → Malignant
← الحرارة تتجاوز 42° ←
- P. knowlesi → From Monkeys ← اكتشفه من
- ↳ Vector → Female Mosquito
- ↳ in human body → Asexual (inside RBCs)
- ↳ Formed Blood film
- ↳ treat → Quinolines

Toxoplasma gondii → Tissue sporezoa
↳ cats

Parasitic helminths / 3 Dr. Nader



Intro: *أسماك* ← *الأسماك* ← *الأسماك* ← *الأسماك*

1. **Ascaris** → caused by *Ascaris lumbricoides*
- ↳ Female → (20-35) cm (length), Male → (15-30) cm
 - ↳ the disease caused by ingestion of eggs (infection) + larvae
 - ↳ Diagnosis → finding eggs in stool
 - ↳ Pathogenesis (pathology) → Abdominal pain/discomfort
 - ↳ ~~life cycle~~
 - ↳ Löffler's syndrome → due to presence of larvae in lungs
 - ↳ Feco-oral route
 - ↳ life cycle → IS → embryonated egg
DS → Fertilized or unfertilized egg
Ascaris go through the lung
 - ↳ Soil-transmitted helminths → *الأسماك* / *الأسماك* / *الأسماك*
 - ↳ No multiplication → one egg one larva one adult.
 - ↳ One exception → *Echinococcus granulosus*

2. **Enterobius vermicularis** (pin worm - intestinal nematode)

- ↳ Mostly infect children
- ↳ Female *الأنثى* Male + Male has curved posterior end.
- ↳ main symptoms → perianal pruritus
- ↳ Remember that it's called pin worm
- ↳ life cycle → Diagnostic + infection (important)

3. **Trichuris trichiura** → intestinal nematode

- ↳ called (whip-worm)
- ↳ Soil transmitted → Not immediately infective
- ↳ Bipolar eggs

4- *Ancylostoma duodenale* And *Necator Americanus*

↳ called hook worm → *القمل*

↳ Not cause disease by ingestion, but by penetrating

↳ Go through lungs like *Ascaris* (Transpulmonary)

↳ Pathology مفرد

5- *Strongyloides stercoralis*

الديدان الخيطية

↳ called Human thread worm

↳ Auto infection → No need to grow the body

↳ larvae ingested (Not eggs) → diagnostic stage

6- *Trichinella spiralis*

↳ The only intercellular helminthic infection

↳ encystation

الديدان الخيطية

helminthic

3



* Tissue Nematodes

Family members

↳ bancrofti + malayi [Mosquito] → cause elephantiasis

↳ loa loa + volvulus → eye worm disease

↳ Female lay larvae Not eggs

platy helminthis (flat)

سليمان - قوس

① Fasciolidae

← Blood flukes → the most important Ex → Schistosoma
 ↳ Liver → sinensis (Chinese) + Hepatica (sheep liver)
 ↳ lung → westermani

← الخيط
 ← اليرقان
 ← الكبد
 ← الرئة

مرد 13 قوس في الكبد

* ↳ Pathology of schistosoma (اليرقان)

↳ associated with the schistosoma eggs Not adult worm

② Cestoda (Tapeworms)

↳ have segments

~~↳ have~~

3 Groups → ① Taenia ② Echinococcus ③ latum ↳ from fish

1- taenia → under cooked beef

2- Echinococcus → primarily in the liver → lung → spleen

3- latum → Broad fish tape worm

23 Dno Anas

[Respiratory pathogens]

1. Pseudomonas

→ ~~Pseudomonas~~ or ~~Pseudomonas~~

↳ Disease → Cystic Fibrosis, ذكر كل ال disease

↳ Green pigment + Fruity smell

↳ Oxidase + (positive)

↳ Multi drug Resistance

↳ burn wound

↳ immunocompromised host (high risk to be infected by it)

(opportunistic pathogen)

2. Moraxella

↳ diplococci G^{-ve} ↳ coccobacilli ↳ btw cocci + bacilli

↳ opportunistic

↳ G^{-ve} diplococci another ex → Neisseria

↳ G⁺ve diplococci → Ex: Strep. pneumonia

↳ Nosocomial infection → acquired from hospitals

↳ like Klebsiella من مائة كالبها في sorry من مائة كالبها في

↳ also called pleomorphic → * الدكتور في مائة كالبها في مائة كالبها في

↳ ~~COPD~~ ↳ COPD

3. Legionella

↳ associated with contaminated aerosols

↳ can survive in moist environment → بالبيئة الرطبة بالماء والبرودة

↳ for long time يتحول لرداء ماء سهل التنفس

↳ Facultative intracellular

↳ Alveolar Macrophage

↳ cause severe pneumonia → Legionnaires disease

4 - Bordetella

↳ Bordetella pertussis → the Name of Bacteria

↳ pertussis → caused by B. pertussis

↳ Pathogenesis → $\text{SipL} > \text{SipD} > \text{SipA}$

+ ↑ mucus + ↑ CAMP + the toxin that produce paralysis the cilli → so mucus accumulate

↳ Vaccine → contain inactivated pertussis toxin (Toxoid) OR pertactin OR hemagglutinin vaccine given 3x

5 - Haemophilus → H-inf

↳ Grow in Blood Agar (chocolate)

↳ cause meningitis → specially in Immuno compromised patient.

Note → E. coli + Group streptococci → cause Neonate meningitis

Note → Bacteria cause meningitis in skull fracture → Staph Aureus

↳ non-encapsulated → until now there is no vaccine for (H-inf)

↳ mainly type b (non-typeable)

↳ the major virulence factor → Antiphagocytic capsule

↳ Mostly happened in children → who are Not immune

• $\text{SipL} > \text{SipD} > \text{SipA}$ ←

H. influenzae ← $\text{SipL} > \text{SipD} > \text{SipA}$

• SipL

1. Campylobacter

↳ Most common cause of GI infection (Gastroenteritis)

Note → salmonella + Shigella + E. coli + Campylobacter → cause Gastroenteritis
↳ Shiga toxin

↳ sever diarrhea can turn to Bloody diarrhea.

Salmonella Typhae + paratypha → person to person → انتقال بين الأشخاص
Salmonella by ~~water~~ ~~food~~ ~~contact~~ ~~person~~ ~~to~~ ~~person~~ ~~→~~ ~~cause~~ ~~of~~ ~~GI~~ ~~infection~~
سالمونلا عن طريق الماء، الطعام، الاتصال بين الأشخاص → سبب التهاب المعدة والأمعاء

2. Helicobacter

↳ G-ve Rods

↳ microaerophilic

↳ Detection by → Urea Breat Test → the most common test

↳ OR by take sample from stomach → أخذ عينة من المعدة

Urease → Redness → ~~cause~~ ~~of~~ ~~GI~~ ~~infection~~
يحول اليوريا الي أمونيا، حموضة، احمرار
لونه

↳ ~~Fastidious~~ Fastidious ~~culture~~ ~~medium~~ ~~is~~ ~~required~~ ~~for~~ ~~growth~~
ثقافة سريعة النمو

↳ Focus in pathogenesis (??)

3. vibrio

↳ pandemic of cholera

↳ Contaminated water [poor sanitation]

↳ Cholera Toxin → ↑cAMP → very sever watery diarrhea

↳ Rice water stool

↳ treat by rehydration

(علاج سريع بالماء)

* ~~secondary~~ ~~immunodeficiency~~ ~~is~~ ~~caused~~ ~~by~~ ~~the~~ ~~infection~~
ضعف مناعي ثانوي

4. Mycoplasma

↳ pleomorphic in shape

* ~~secondary~~ ~~immunodeficiency~~ ~~is~~ ~~caused~~ ~~by~~ ~~the~~ ~~infection~~
ضعف مناعي ثانوي

secondary immunodeficiency

* ~~caused~~ ~~by~~ ~~the~~ ~~infection~~ ~~of~~ ~~the~~ ~~organism~~ ~~itself~~
سبب المرض نفسه

* + 2 immunopharmacology

11 ~~immunopharmacology~~ ~~is~~ ~~used~~ ~~to~~ ~~treat~~ ~~the~~ ~~infection~~ ~~itself~~ 11
علاج المرض نفسه