

# Parasitology notes 1

## **Slide 2 :**

### **point 1 :**

- Parasitology : is the science that dealing with parasites .
- parasite : organism that can't take its nutritional requirements alone , it needs the presence of another organism in order to survive .

### **point 2 :**

- for the bacteria and viruses to cause infection to the humans , it just need to enter the human body then it will cause infection , but parasite include a complex life cycle , because it needs primary host and some of them need intermediate host , as well as vector which is a disease transporter , as well as it has certain developmental stages in the host body as it has infective form and non infective form .
- intermediate host :  
host that transmitting the parasite from one primary host to other primary host .

### - chronicity :

means that it will last in the same individual , give first acute signs and symptoms and persist even after treatment . for example amoeba, enter to human body throw the gastrointestinal tract by consumption of contaminated food or water , in the GI tract the cystic form of amoeba will convert to the vegetative form that called " trophozooid " which in turn cause signs and symptoms , and even if we give the patient antiamoebic drugs , it will be able to kill the vegetative form of the organism just , but the cystic form will persist (unless we give him drug specific for the cysts) and it might be reactive a gain giving the same sign and symptoms .

### **point 3 :**

- tenia solium ( kind of warms ) need the big as intermediate host , so because big is not presence that much in Arab world in comparison with Europe and USA , so tenia solium is more common in Europe and USA . so the distribution of parasitic disease depends on the availability of the primary host and intermediate host ( or vectors like some kinds of insects ) for certain parasites .

### **slide 3**

#### **point 3 :**

- one example of nematodes is *Ascaris lumbricoides* which can live in the small intestine , cause manifestation in form of diarrhea and may lead to death due to the fact that it has to reach the bronchi in certain stage of its life cycle , and once aspiration occur it will enter the lung causing lung obstruction .

\* *ascaris lumbricoides* is the only helminth that can go out from the human body through the nose .

#### **point 4 :**

- *schistosoma* is the causative agent of schistosomiasis ( البلهارسيا ) .  
the presence of this worm usually related with dirty water , it is common in Africa specially in Egypt , it needs certain vector which is SNAIL .

#### **point 5 :**

- *wuchereria bancrofti* : it is a worm that directly penetrate the skin of lower leg or foot , reaching the lymphatic stream causing lymphatic obstruction which result in edema of the lower limb , it is the causative agent of filariae ( التقييل ) .

#### **point 6 :**

- *plasmodium falciparum* : protozoa that considered as causative agent of malaria , it infect the human through mosquito bite ( the intermediate host of malaria is the female mosquito)

so certain stage of *plasmodium* enter the blood stream , the main target of this *plasmodium* is RBCs , it will enter the RBCs and inside them it will form a ring form .

- if physicians want to diagnose malaria they look at the presence of ring form of the organism inside the RBCs .

### **slide 4 :**

- the intermediate host is not always required , some parasites can spread from primary host to other primary host directly .

- intermediate hosts can be animals , but they are mostly insects .

- some parasites need more than one intermediate host .

## **slide 5**

### **point 1 :**

- vector is mostly the same as intermediate host , it is just a helper to transfer the parasite from one primary host to another . it can be insect or Arthropods .

### **point 2 :**

- some parasite if entered the primary host body accidentally , this will lead to death of this parasite , this called "dead end host " .

### **point 4 :**

- reservoir : means the major source of the infecting organisms . it could be a water supply like schistosoma .

### **point 5 :**

- zoonosis : an animal disease that could be transmitted to human body .

## **slide 6**

### **point 3 :**

- endoparasite : parasite that live inside the human body ( inside any organ ) .

### **point 4 :**

- ectoparasite : parasite that live outside the human body ( on the surface of the body like skin) .

## **slide 7 :**

- spread directly from primary host to primary host by :

1- egg like ascaris

2- cysts like amoeba

3- parasite itself like wuchereria bancrofti which need to penetrate the skin to cause infection.

- spread through an intermediate host :

in this case we need the primary host as well as an intermediate host .

the organism spread from the primary to the intermediate host in certain stage , then developmental stage will occur inside the intermediate host to be ready to infect other primary host .

\* example : the mosquito that infect humans with malaria must take the plasmodium from the infected RBCs in certain developmental stage , then sexual life cycle will occur inside the mosquito's body , which involved fertilization between macrogametocyte and microgametocyte , then the plasmodium will be ready to infect other humans .

## **slide 8**

- protozoa is a unicellular organism , smaller than helminthes , as well as the life cycle of protozoa is simple more than helminthes .

## **slide 9**

- intracellular parasites : parasites that cant survive outside human cells , like plasmodium the causative agent of malaria that can survive only inside the RBCs forming a ring form .
- extracellular parasites : parasites that can survive outside human cells , in form of egg excreted with feces or cyst like amoeba.
- vegetative form : the form that responsible for occurrence of signs and symptoms in the host , usually refers to it as "trophozoite " .
- cyst have to transform to trophozoite in order for the sign and symptoms to occur .

## **slide 11**

- examples :

1- rhizopoda : amoeba

2- flagellates \* : trypanosoma , giardia lamblia ( causative agent of chronic diarrhea ) .

\*flagellates considered as bilateral symmetrical organisms .

3- ciliates : balantidium coli .

4- sporozoa\* : plasmodium species .

\* sporozoa also called " apicomplexa " , why ??

because it does not move through flagella nor cilia , but using tiny organelle presence on the apex of the organism help it to move .

## **slide 15**

- trophozoite form of the parasite is not able to survive outside the host body to a long time , so it can't transmit the infection , for this reason the infective form of the protozoa is the cyst.

### **\*\* important note :**

if there is an intermediate host of any type of parasites , then this type does not have any cysts , eggs , or even trophozoite form .

- remember :

slides is very important , so study them well

GOOD LUCK ☺

Done by : Sundos Al-khateeb