**Clinical Mycology & Clinical Parasitology**

MID-TERM



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**Question NO:01**

A 45 years old man, Sikandar is presented to the local hospital having an allergic attack just like asthma. Upon investigations of chest X-ray, fungus balls were seen that changed its position when the patient is moved from an erect to a supine position. What according to you is the possible diagnosis for this condition? What is the causative agent which causes the condition?

**Answer:**

The possible diagnosis for this condition is ABPA (Allergic Broncho pulmonary Aspergillosis).

And their causative agent is Aspergillus Fungigatus.

**Question No: 02**

Discuss the following:

1. Definitive host
2. Intermediate host
3. Vector

**Answer:**

1. **Definitive host :**

The host in which sexual reproduction of parasites occur is called Definitive host.

* It is also known as the primary host
* The formation of zygotes also occur
* Parasites needs to sexually reproduce while living on or in that host
* Parasites use the host as a place to produce maturity sexually

**For Example:**

1. Taenia Solium and Teania Saginata present in human as definitive host
2. Deffinitive host of plasmodium is Female Anopheles Mosquito
3. The natural life cycle of Echinococcus Granulosus within dogs are the definitive host
4. **Intermediate host :**

 The host in which the larval development of parasites occur.

* It is also known as Secondary host
* Asexual reproduction of the parasites occur here
* Sexual differentiation of parasites also occur
* Those host in which a parasite Asexual lifecycle is complete

**For Example:**

1. Taenia Solium and Teania Saginata present in Pig as intermediate host
2. Echinococcus Granulosus present in sheep as intermediate host because there is larval development occur
3. The Intermediate host of plasmodium is human.

1. **Vector:**

A living carrier that transport a Pathogenic organism from an infected to a non-infected host

* Generally vector are those substance which can carry a disease but cannot cause a disease
* Vector are of two types i.e.
* **Biological Vector:**

Biological Vectors are those which carry the infectious pathogens within the body and transmit their pathogens by biting another host.

* **Mechanical Vector :**

Mechanical Vectors are those vectors which carry the infectious pathogens outside of their bodies and transmit their pathogens through physical contact with the host.

**For Example:**

1. Plasmodium is carried by Female Anopheles Mosquito (which is vector)
2. Leishmenia Donovani is carried by sand-fly (which is vector)
3. Trpanasomo is carried by Tsetse-fly (which is vector)

**Question No:**

Explain the transmission and life cycle of plasmodium in your own words.

**Answer:**

**Transmission:**

* Malaria is transmitted primarily by Mosquito Bites
* Malaria also can be transmitted through the Placenta
* It can also transmitted through Blood Transfusion
* It can be transmitted through IV Injections

**Lifecycle of Plasmodium**:

 Female Anopheles Mosquito is vector and definitive host

* There are two phases in the Lifecycle of Plasmodium i.e.
1. Sexual phase:

 In Sexual cycle there is the formation of Sporozoits Occur. And this is also called Sporogony

1. Asexual phase:

 In the Asexual cycle there there is the formation of Schizonts occur. And this is also called Schizogony.

The lifecycle of Plasmodium starts by entering of Sporozoits into the human blood. These Sporzoits releases from the Saliva of Female Anopheles Mosquito. These Sporozoits reach the liver in 30 minutes and the sporozoit in liver is called Hepatocytes which on further differentiation and multiplication converts into the Merozoites.

These Merozoits when releases from the liver cells and outside the liver infect the RBC.

During the Erythrocytic stage the Merozoites Further differentiates into the ring shaped structures called Trophozoites .These Tropozoites develops into the Schizonts these ring shaped Schizonts is filled with Merozoites After the discharge of Merozoites they infect other RBC’s.

When these Merozoites releases from Schizonts there will occur the symptoms of Chills, Fever, sweats and Headache can be seen in the Malaria Patient.

The cycle starts in the human RBC Some Merozoits will develop into Male and Female Gametocytes by biting other Mosquito these Gametes is transferred to the people.

These Gametes in mosquito is fertilized within her Gut and produce the Female Microgametocytes (Eggs) and the Male Microgametocytes (Sperm) after the fertilization of these gametocytes there will form a Zygote (Motile Ookinet) store is mosquito and develop as oocytes.

 In this oocytes many Haploid Sporozoites are produced there sporozoits are discharge and Migrate to the Salivary gland and these salivary glands consist of Sporozoites and lastly by biting the other human these sporozoites will transfer to the liver through blood.