

## **Medical Parasitology Lecture one**

### **Medical parasitology**

Medical parasitology deals with the parasites, which cause human infections and the diseases they produce. It is broadly divided into 2 parts: Protozoology and Helminthology.

### **Parasites**

Parasites are living organisms, which depend on a living host for their nourishment and survival. They multiply or undergo development in the host. The term 'parasite' is usually applied to Protozoa (unicellular organisms) and Helminths (multicellular organisms).

Parasites can also be classified as:

### **Ectoparasite:**

Ectoparasites inhabit only the body surface of the host without penetrating the tissue. Lice, ticks, and mites are examples of ectoparasites. The term infestation is often employed for parasitization with ectoparasites.

### **Endoparasite:**

A parasite, which lives within the body of the host and is said to cause an infection is called an endoparasite. Most of the protozoan and helminthic parasites causing human disease are endoparasites.

Free-living parasite:

It refers to non parasitic stages of active existence, which live independent of the host, e.g. cystic stage of *Naegleria floweri*.

Endoparasites can further be classified as:

### **Obligate parasite:**

The parasite, which cannot exist without a host, e.g. *Toxoplasma gondii* and *Plasmodium*.

Facultative parasite:

Organism which may either live as parasitic form or as free living form.

### **Accidental parasites:**

Parasites, which infect an unusual host, are known as accidental parasites.

Echinococcus granulosus infects man accidentally, giving rise to hydatid cysts.

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### **Aberrant parasites:**

Parasites, which infect a host where they cannot develop further, are known as aberrant or wandering parasites, e.g. Toxocara canis (dog roundworm) infecting humans.

### **Types of parasitic host**

#### **Host**

Host is defined as an organism, which harbors the parasite and provides nourishment and shelter to latter and is relatively larger than the parasite.

The host may be of the following types:

#### **Definitive host:**

The host, in which the adult parasite lives and undergoes sexual reproduction is called the definitive host, e.g. mosquito acts as definitive host in malaria.

\*The definitive host may be a human or any other living being. However, in majority of human parasitic infections, man is the definitive host (e.g. filarial, roundworm, hookworm).

#### **Intermediate host:**

The host, in which the larval stage of the parasite lives or asexual multiplication takes place, is called the intermediate host. In some parasites, 2 different intermediate hosts may be required to complete different larval stages. These are known as first and second intermediate hosts, respectively.

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#### **Paratenic host:**

A host, in which larval stage of the parasite remains viable without further development is referred as a paratenic host. Such host transmits the infection to another host.

**Reservoir host:**

In an endemic area, a parasitic infection is continuously kept up by the presence of a host, which harbors the parasite and acts as an important source of infection to other susceptible hosts, e.g. dog is the reservoir host of hydatid disease.

**Accidental host:**

The host, in which the parasite is not usually found, e.g. man is an accidental host for cystic echinococcosis.