Lecture 4

Classifications of Parasites and Protozoa

- Additional Notes
- Important
- Explanation
- Examples

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OBJECTIVES:

- Define common terms describing host-parasite relationship.
- Outline the broad classification of parasites.
- Describe the life-cycle of Giadia lamblia as an example of intestinal protozoa.
- Describe the life-cycle of Plasmodium as an example of blood and tissue protozoa.

DEFINITIONS:

- ✓ Infection: The entry and development and multiplication of an infectious agent in the body of humans or animals. The result may be:
  a. inapparent (asymptomatic) infection.
  b. manifest (symptomatic) infection.
- ✓ Host: A person or other living animal which harbours an infectious agent under natural conditions.
- ✓ Definitive host: (primary host) a host in which the parasite passes its sexual stage.
- ✓ Intermediate host: (secondary host) a host in which the parasite passes its larval or asexual stages.
- ✓ Carrier: A person or animal that harbours a specific infectious agent in the absence of discernible clinical disease and serves as a potential source of infection.
- ✓ Pathogenesis: Production and development of disease.
- ✓ Pathogenicity: Capability of an infectious agent to cause disease in a susceptible host.

DEFINITIONS:

- ✓ Parasitism: a relationship in which an organism (the parasite) benefits from the association with another organism (the host) whereas the host is harmed in some way.
- ✓ Commensalism: Kind of relationship in which one organism the commensal, is benefited whereas the other organism ,the host , is neither harmed or helped by the association.
- ✓ Ectoparasite: parasite that lives on the outer surface of its host.
- ✓ Endoparasite: parasite that lives inside its host.
- ✓ Zoonosis: Disease of animals that is transmissible to humans.

P.S: Scientific names of parasites follow Zoological Classification ending in Genus and Species.

CLASSIFICATION OF PARASITE:

Protozoa

- Unicellular
- Single cell for all functions
- Types of protozoa:(1)
  1. Amoebae: move by pseudopodia
  2. Flagellates: move by flagella
  3. Ciliates: move by cilia
  4. Apicomplexa (Sporozoa) tissue parasites

Helminths

- Multicellular
- Specialized cell
- Types of helminths:(2)
  1. Round worms (Nematodes): elongated, cylindrical & unsegmented.
  2. Flat worms:
     - Trematodes: Leaf like & unsegmented.
     - Cestodes: Tape like & segmented.

(1)Division of protozoa is according to the movement.

(2)Division of helminths is according to the shape.

Parasitic Protozoa:

- Intestinal protozoa:

Giadria lamblia, causes giardiasis.

Entamoeba histolytica, causes amoebiasis.

- Blood and tissue protozoa:

Plasmodium falciparum, causes malaria.

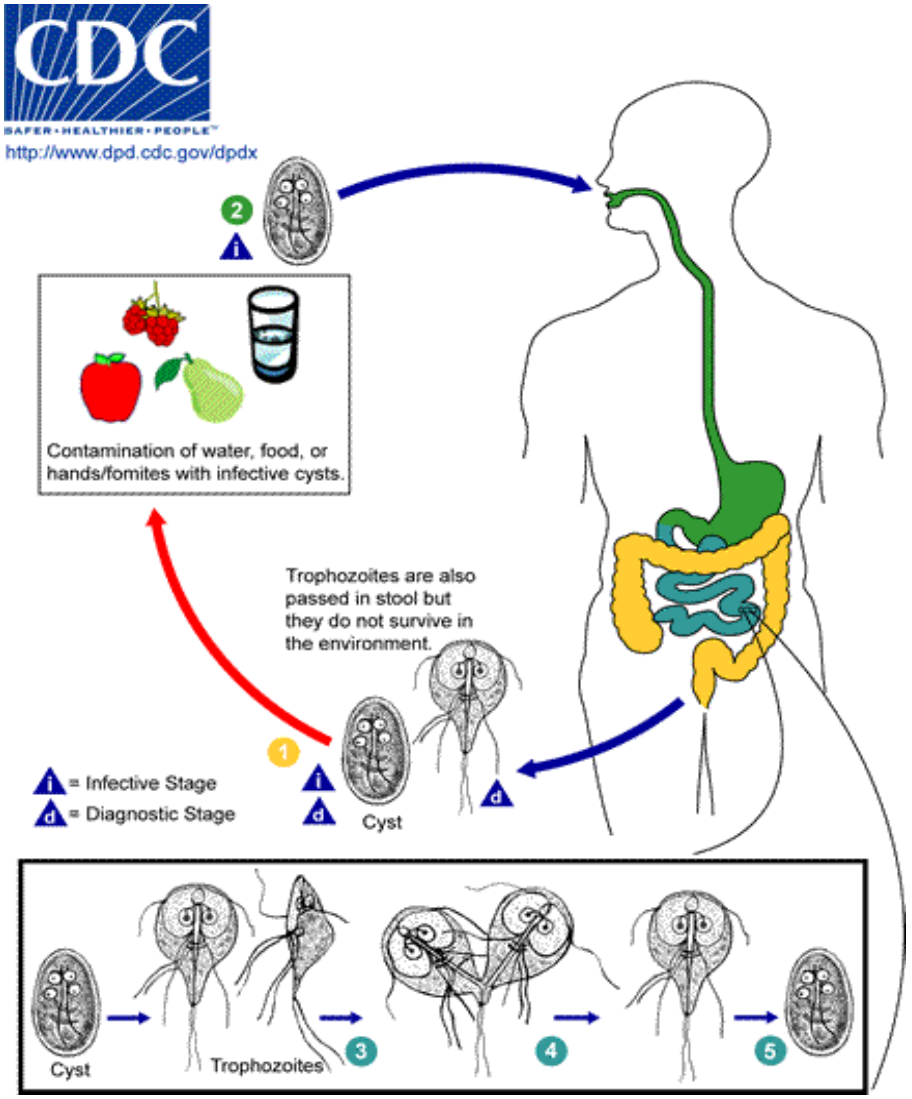
Leishmania major, causes Cutaneous leishmaniasis

- Malaria has the genus of plasmodium and it is divided into four species:
  - Plasmodium falciparum: causes malignant tertian malaria
  - Plasmodium vivax: causes benign tertian malaria
  - Plasmodium ovale: causes benign tertian malaria
  - Plasmodium malariae: causes quartan malaria

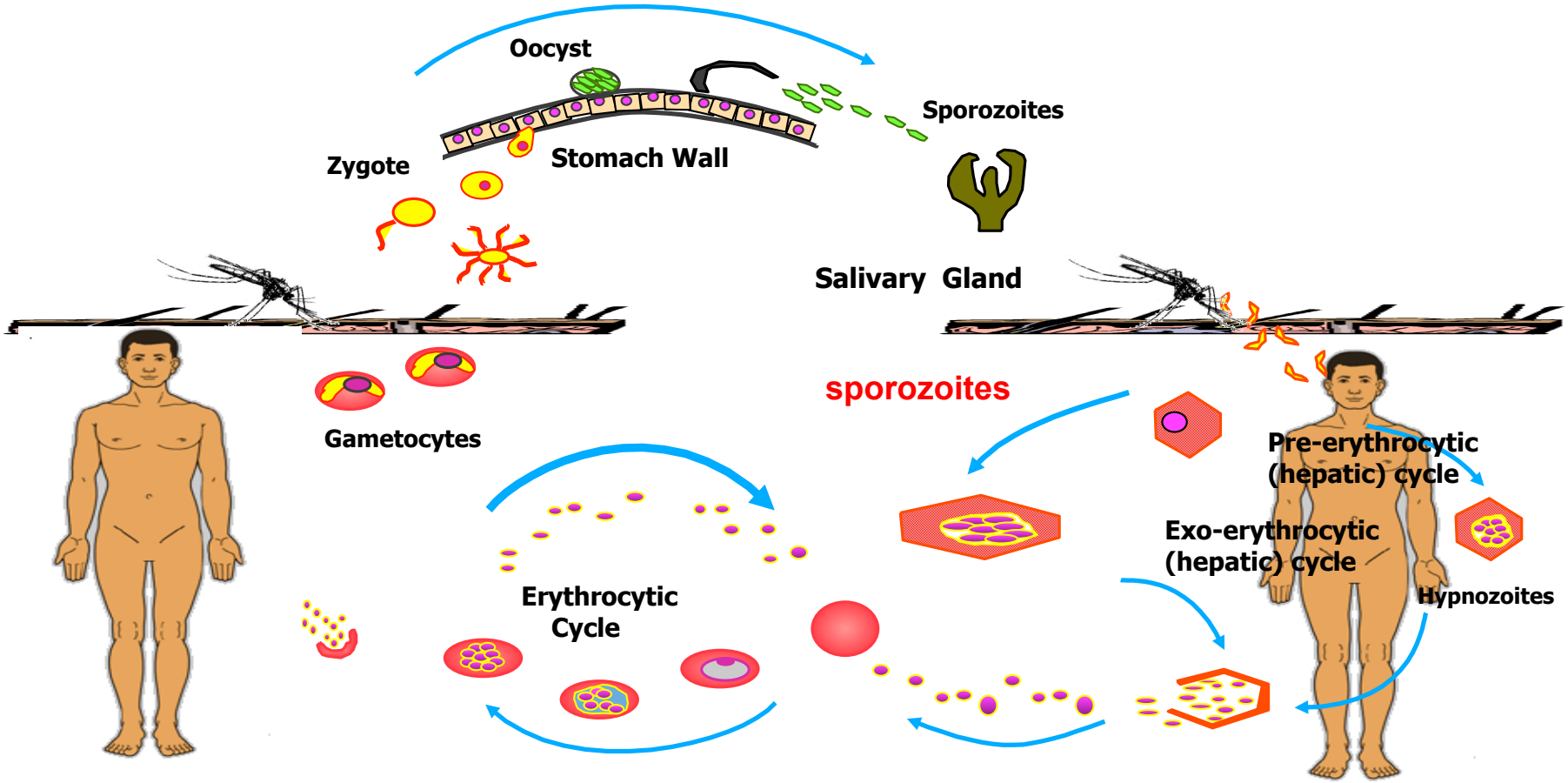
LIFE CYCLE OF GIRADIA LAMBLIA:

- Giradia Lamblia will enter the cycle as a cyst, then it will be transmitted to the stomach. After it passes the stomach region[1] it will transform to Trophozoa. Finally it will exit the cycle as a cyst again.

[1]If it enters as a trophozoa it will destroy in the stomach because of the acidity.



LIFE CYCLE OF MALARIA:



YouTube http://www.youtube.com/watch?v=A2-XTlHBf_4&noredirect=1

Quiz

1.Protozoa is divided according to the shape:
a) T b) F

2.Plasmodium genus is divided into four species:
a) T b) F

3.Secondary host is:
a) Carrier b) Definitive host c) Intermediate host

4…… is the production and development of disease.
a) Pathogenicity b) Pathogenesis c) Pathogens

5.Which protozoa causes giradiasis disease?
a) Giradia Lamblia b) Plasmodium falciparum c) Entamoeba histolytica

ANSWERS: 1.B 2.A 3.C 4.B 5.A