AL-MA'MOON UNIVERSITY COLLEGE

DEPARTMENT OF MEDICAL LABORATORY TECHNOLOGY

MEDICAL PARASITOLOGY

(((LECTURE 4)))

FOR SECOND YEAR

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Lecture Four

Pathogenic Flagellates

INTRODUCTION

Flagellates are unicellular microorganisms. Their locomotion is by lashing a tail-like appendage called a flagellum or flagella and reproduction is by simple binary fission.

There are three groups of flagellates:

Luminal flagellates: ***Giardia lamblia, Dientmoeab fragilis***

Genital flagellates ***Trichomonas vaginalis***

Hemoflagellates **Trypanosoma species**, **Leishmania species**.

- **Luminal flagellates**

Giardia lamblia

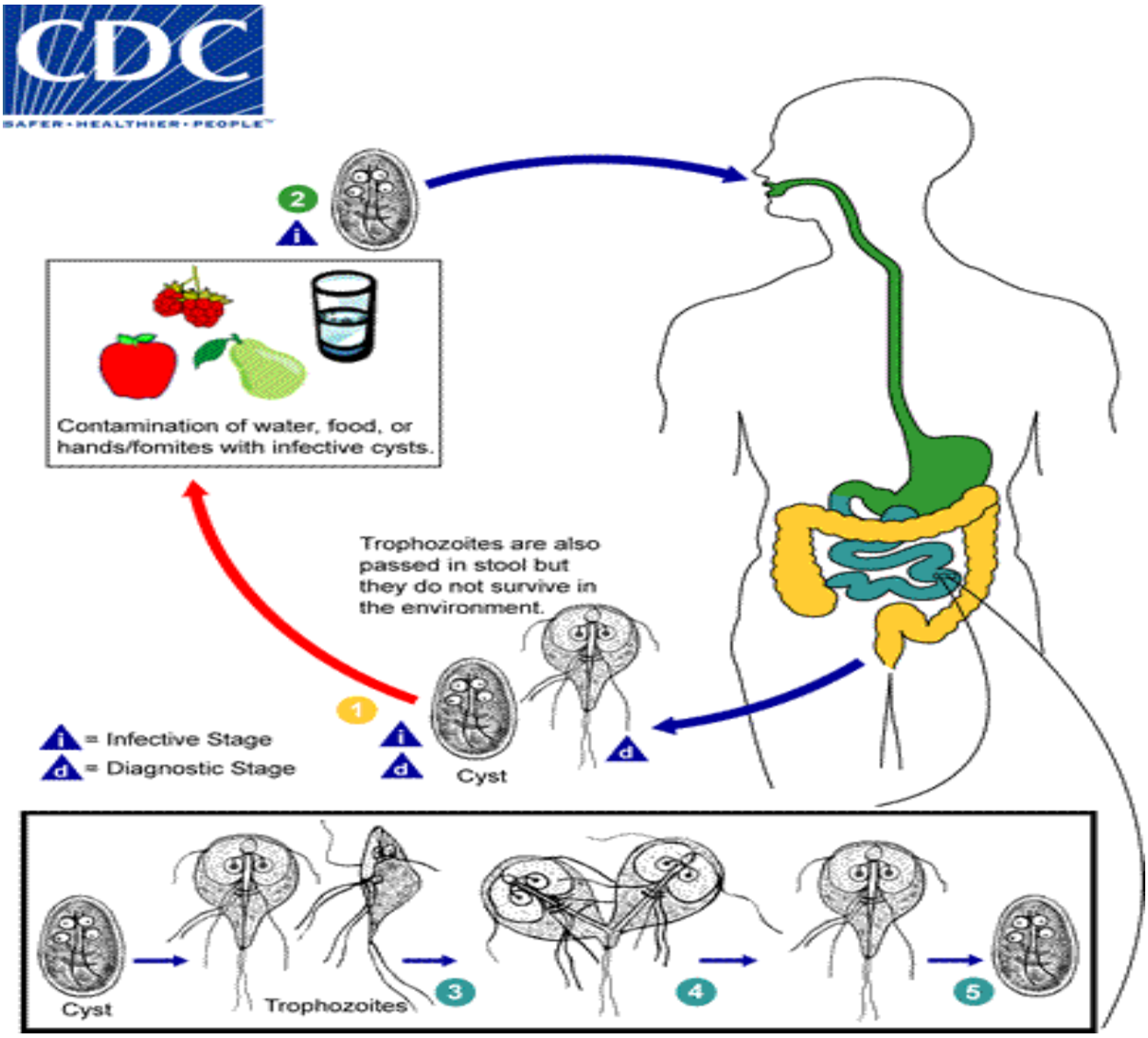
Important features - the life cycle consists of two stages, the trophozoite and cyst. The trophozoite is 9-12 µm long and 5-15µm wide anteriorly. It is bilaterally symmetrical, pear-shaped with two nuclei (large central karyosome), four pairs of flagella, two axonemes, and a suction disc with which it attaches to the intestinal wall. The oval cyst is 8-12µm long and7-10µm wide, thick-walled with four nucleus and several internal fibera? Each cyst gives rise to two trophozoites during excystation in the intestinal tract.

Transmission is by ingestion of the infective cyst.

Pathogenesis

Infection with G.lamblia is initiated by ingestion of cysts. Gastric acid) stimulates excystation, with the release of trophozoites in duodenum and jejunum. The trophozoites can attach to the intestinal villi by the ventral sucking discs without penetration of the mucosa lining, but they only feed on the mucous secretions. In symptomatic patients, however, mucosa-lining Irritation may cause increased

mucous secretion and dehydration. Metastatic spread of disease beyond the GIT is very rare.



Life cycle *G.lamblia*

Clinical features

Clinical disease: Giardiasis

Symptomatic giardiasis ranges from mild diarrhea to severe malabsorption syndrome. Usually, the onset of the disease is sudden and consists of foul smelling, watery diarrhea, abdominal cramps, flatulence, and streatorrhoea. Blood & pus are rarely present in stool specimens, a feature consistent with the absence of tissue destruction.

Laboratory diagnosis

Examination of diarrheal stool trophozoite or cyst, or both may be recovered in wet. If microscopic examination of the stool is negative in a patient in whom giardiasis is highly suspected duodenal aspiration, string test (entero-test), or biopsy of the upper small intestine can be examined. In addition to conventional microscopy, several immunologic tests can be implemented for the detection of parasitic antigens. **Treatment** avoided For asymptomatic carriers and diseased patients the drug of choice is quinacrine hydrochloride or metronidazole.

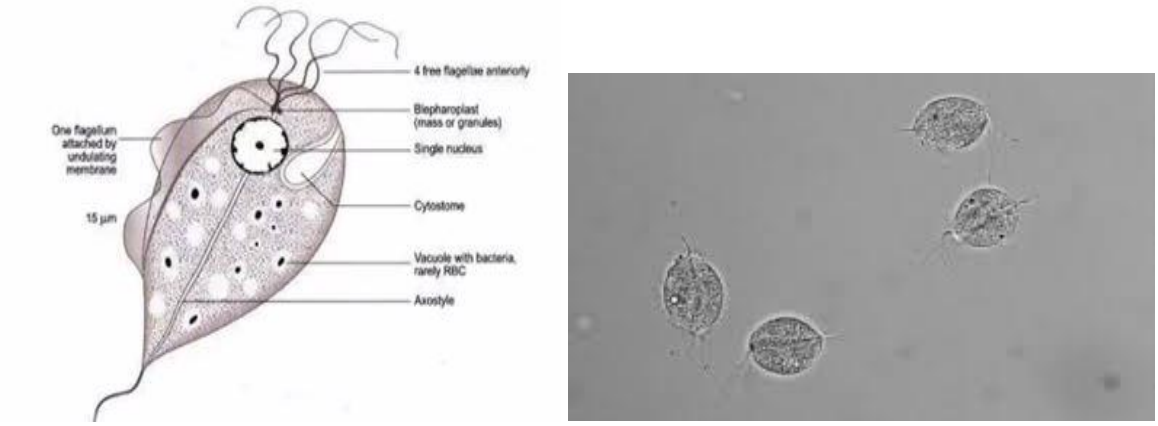
Prevention asymptomatic reservoirs of infection should be identified & treated. Avoidance of contaminated food and water.

- **Genital flagellates**

Trichomonas vaginalis

Important features- it is a pear-shaped organism with a central nucleus and four anterior flagella; and undulating membrane extends about two-thirds of its length. It exists only as a trophozoite form, and measured 7-23µm long & 5-15µm wide.

Transmission is by sexual intercourse.



Trichomonas vaginalis

Pathogenesis

The trophozoite is found in the urethra & vagina of women and the urethra & prostate gland of men. After introduction by sexual intercourse, proliferation begins which results in inflammation & large numbers of trophozoites in the tissues and the secretions. The onset of symptoms such as vaginal or vulval pruritus and discharge is often sudden and occurs during or after menstruation as a result of the increased vaginal acidity. The vaginal secretions are liquors, greenish on yellowish, sometimes frothy, and foul smelling. Infection in the male may be

latent, with no symptoms, or may be present as self-limited, persistent, or recurring urethritis.

Clinical features

Clinical disease - trichomoniasis.

Most infected women at the acute stage are asymptomatic or have a scanty, watery vaginal discharge. In symptomatic cases vaginitis occurs with more extensive inflammation, along with erosion of epithelial lining, and painful urination, and results in symptomatic vaginal discharge, vulvitis and dysuria.

Laboratory diagnosis

In females, *T.vaginalis* may be found in urine sediment, wet preparations of vaginal secretions or vaginal scrapings. In males it may be found in urine, wet preparations of prostatic secretions or following massage of the prostate gland. Contamination of the specimen with faeces may confuse *T.vaginalis* with *T.hominis.*

Other flagellates inhabiting the alimentary canal

Trichomonas hominis - The trophozoites live in the caecal area of the large intestine and feed on bacteria. It is considered to be non-pathogenic, although it is often recovered from diarrheic stools. Since there is no known cyst stage, transmission probably occurs in the trophic form. There is no indication of treatment.

Trichomanas tenax - was first recovered from the mouth, specifically in tartar from the teeth. There is no known cyst stage. The trophozoite has a pyriform shape and is smaller and more slender than that of *T.hominis*. Diagnosis is based on the recovery of the organism from the teeth, gums, or tonsillar crypts, and no therapy is indicated