بسم الله

Opportunistic parasitic infections

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معاونت بهداشت

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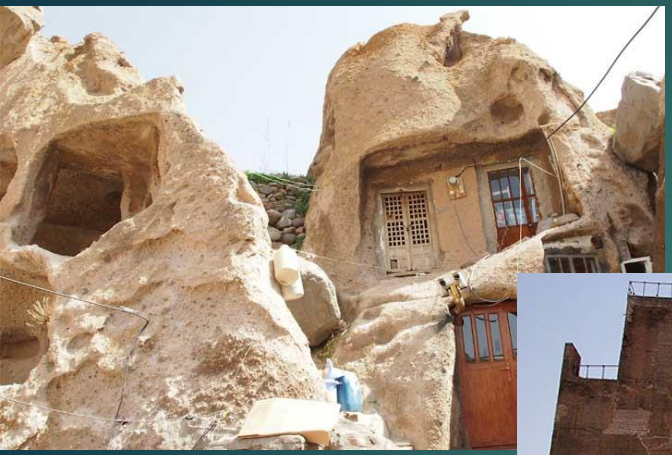
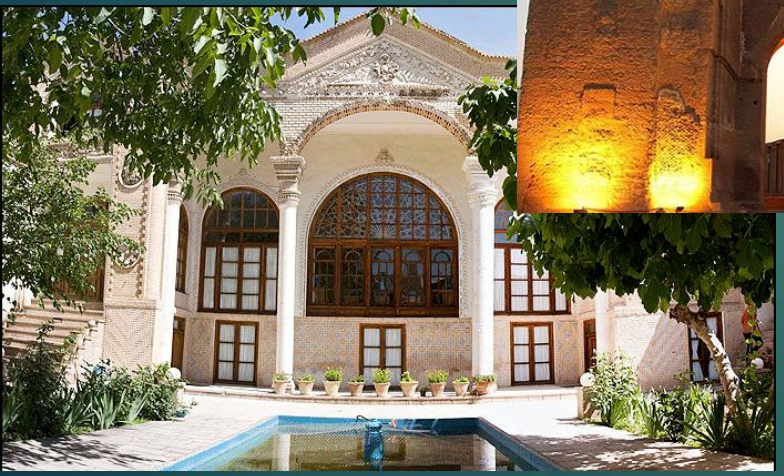
و خدمات بهداشتی درمانی تبریز





Cryptosporidiosis/Microsporidiosis: Epidemiology

- Protozoal parasites that cause enteric illness in humans and animals
- Human infection primarily caused by C hominis,
  C parvum, C meleagridis
- Microsporida include E bieneusi and E intestinalis
- Infection results from ingestion of oocysts excreted in feces of humans or animals
- Invade intestinal tract mucosa causing watery, nonbloody diarrhea, dehydration, malnutrition

Cryptosporidiosis/Microsporidiosis: Epidemiology

- Person-to-person transmission in child care centers
- Oocysts can contaminate water supplies
- Outbreaks associated with contaminated drinking water and swimming pools
- Incidence declined since advent of ART

Cryptosporidiosis/Microsporidiosis: Epidemiology

- Frequent watery, nonbloody diarrhea
- Abdominal cramps, fatigue, vomiting, anorexia, weight loss, poor weight gain
- Fever and vomiting more common in children
- Liver involvement causes abdominal pain and elevated alkaline phosphatase
- Less common: myositis, cholangitis, sinusitis, hepatitis, CNS disease
- Different species may cause different clinical syndromes (eg, Encephalitozoon hellem associated with keratoconjunctivitis, sinusitis, prostatic abscess)

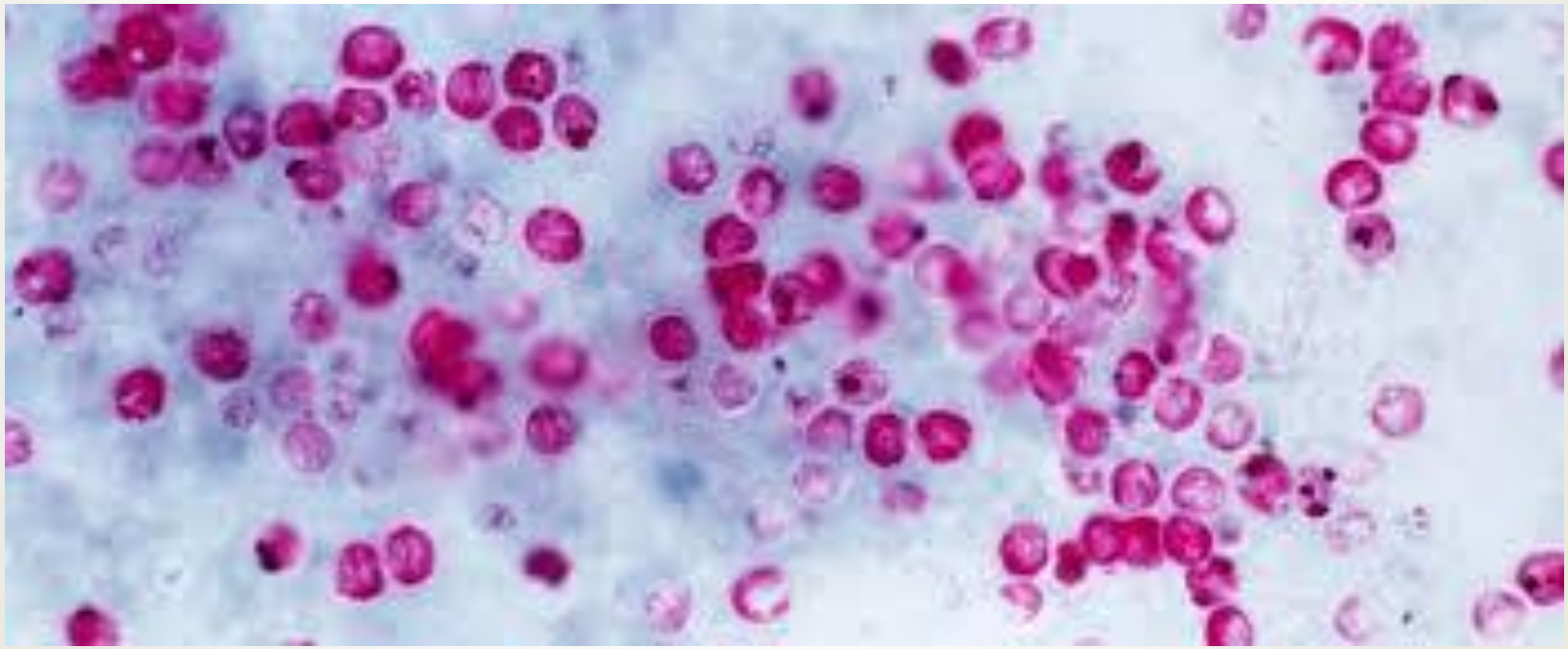
Cryptosporidiosis/Microsporidiosis: Epidemiology

- Cryptosporidiosis
- Concentrated stool samples demonstrating oocysts
- Evaluate at least 3 separate stool samples
- Monoclonal antibody fluorescein stain and EIA for antigen have enhanced specificity and sensitivity

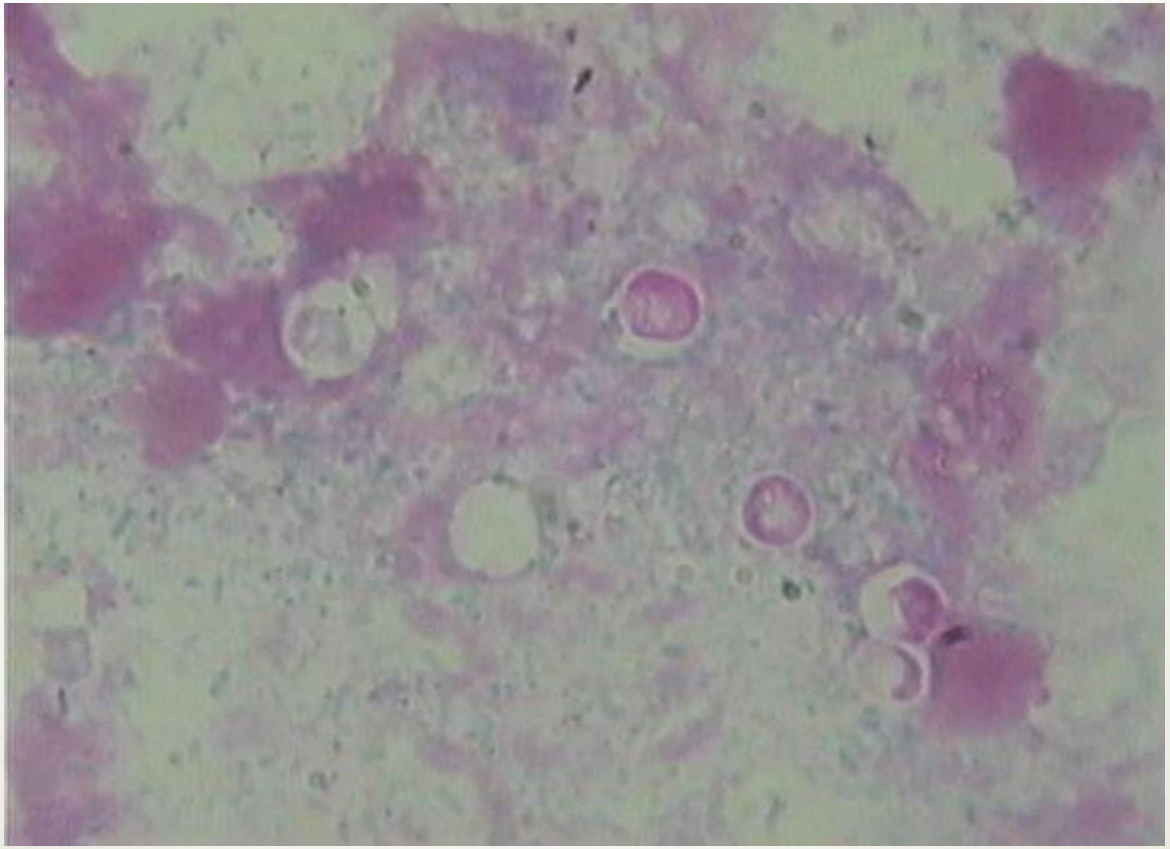
Cryptosporidiosis/Microsporidiosis: Epidemiology

- Use thin smears of unconcentrated stool-formalin suspension or duodenal aspirates stained with trichrome or chemofluorescent agents
- Consider endoscopy in all patients with diarrhea >2 months duration
- PCR techniques still in research

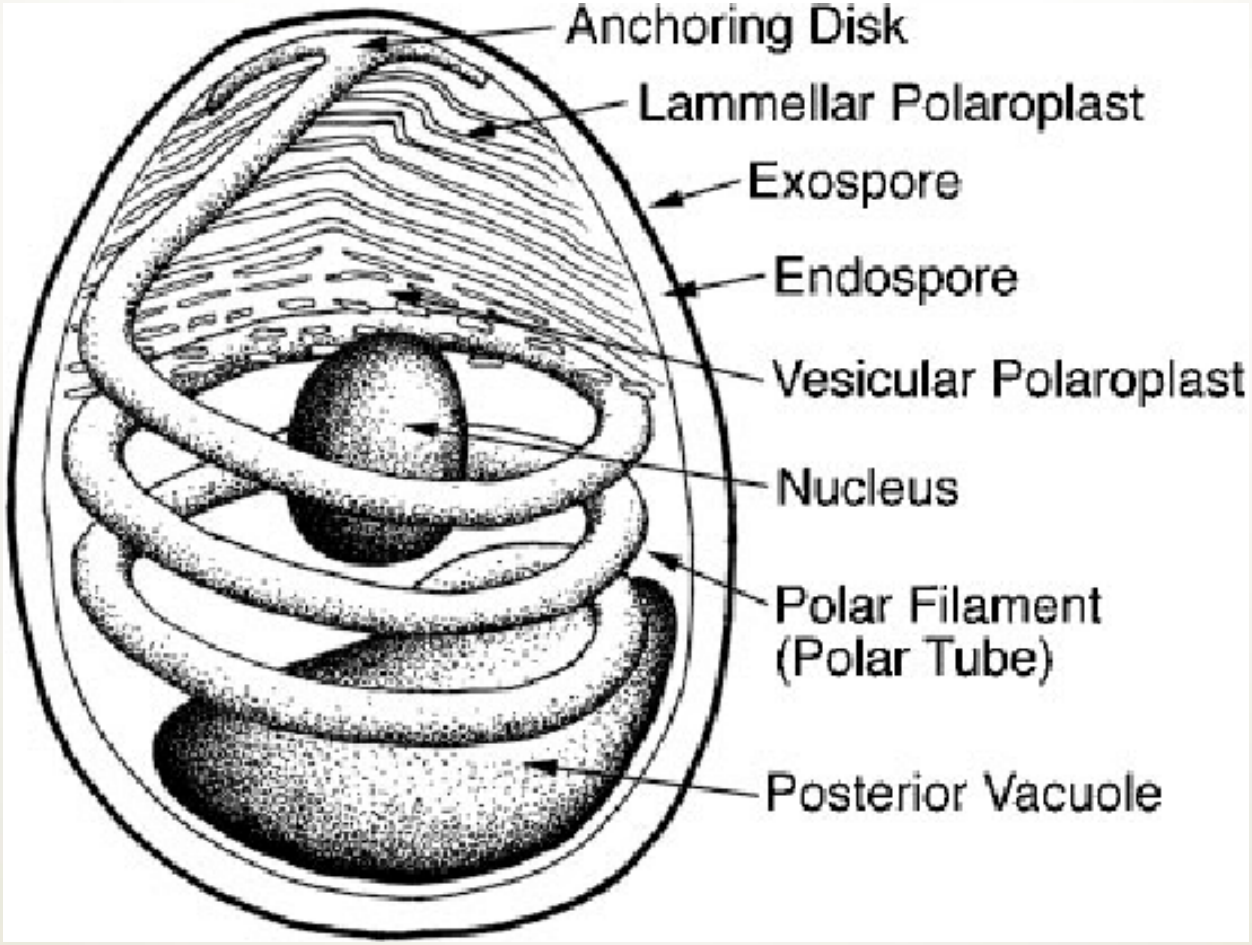
Cryptosporidiosis



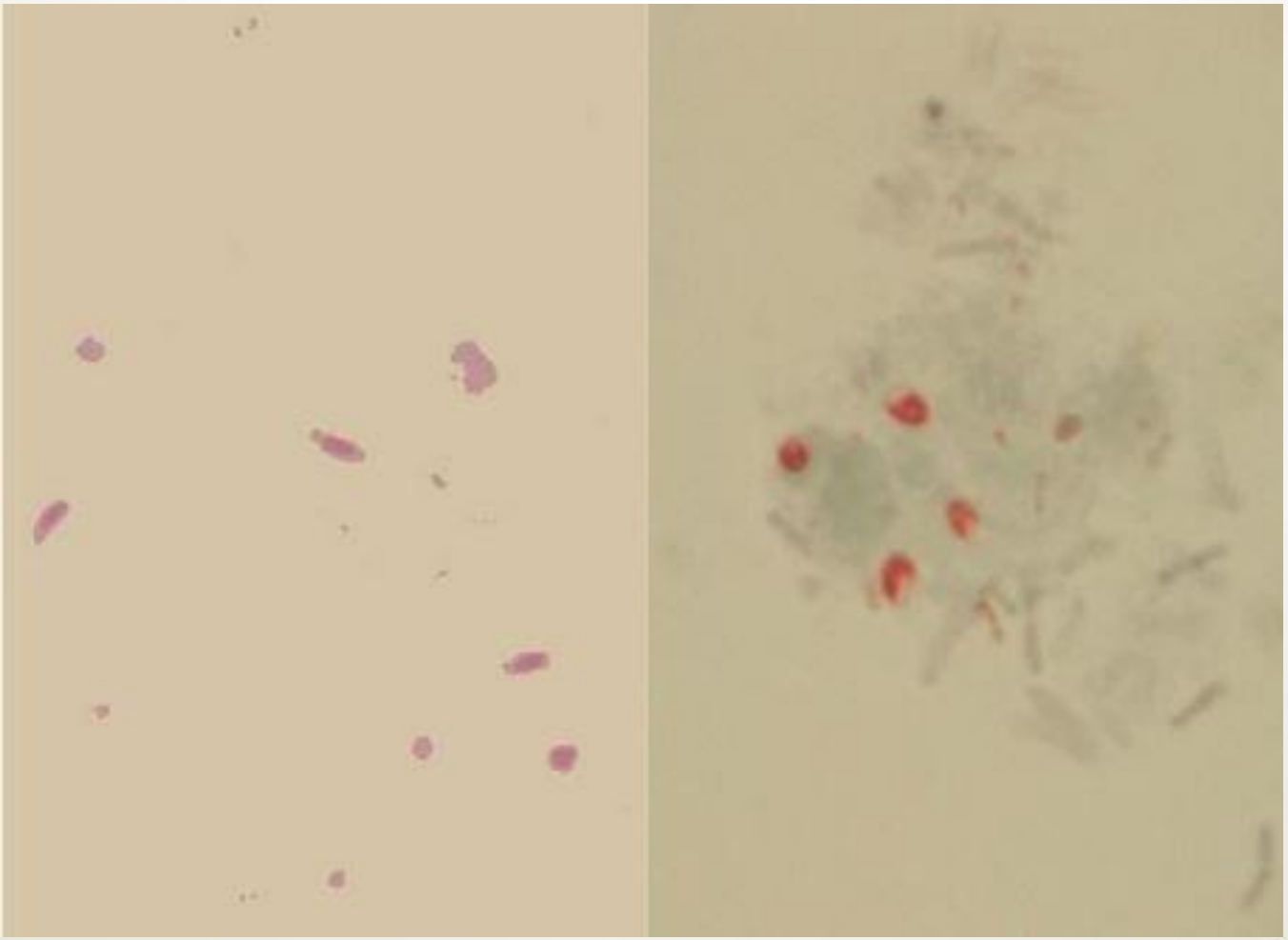
Cryptosporidiosis



Microsporidiosis



Microsporidiosis



Cryptosporidiosis/Microsporidiosis: Prevention

- Avoid direct contact with fecal material from adults, diaper-age children, and infected animals
- Carefully investigate sources of drinking water and recreational activities involving water
- HIV-infected children should not be allowed to drink water directly from lakes or rivers

Cryptosporidiosis/Microsporidiosis: Prevention

- Outbreaks of cryptosporidiosis occasionally have been linked to municipal water contamination
- Some experts recommend that severely immunocompromised HIV-infected patients should not share a room with patients who have cryptosporidiosis

Cryptosporidiosis/Microsporidiosis: Treatment

- Immune restoration following antiretroviral treatment frequently results in clearing
- Supportive care, hydration, electrolyte replenishment, nutritional supplements
- Available treatment inconsistently effective

Cryptosporidiosis: Treatment

- No agents have been consistently effective
- Nitazoxanide: effective for Cryptosporidium and Giardia lamblia (for children and for HIV-infected children)
- Nitazoxanide dosage: 100 mg orally BID for children 1-3 years; 200 mg BID for children 4-11 years
- Limited data: paromomycin, azithromycin

Microsporidiosis: Treatment

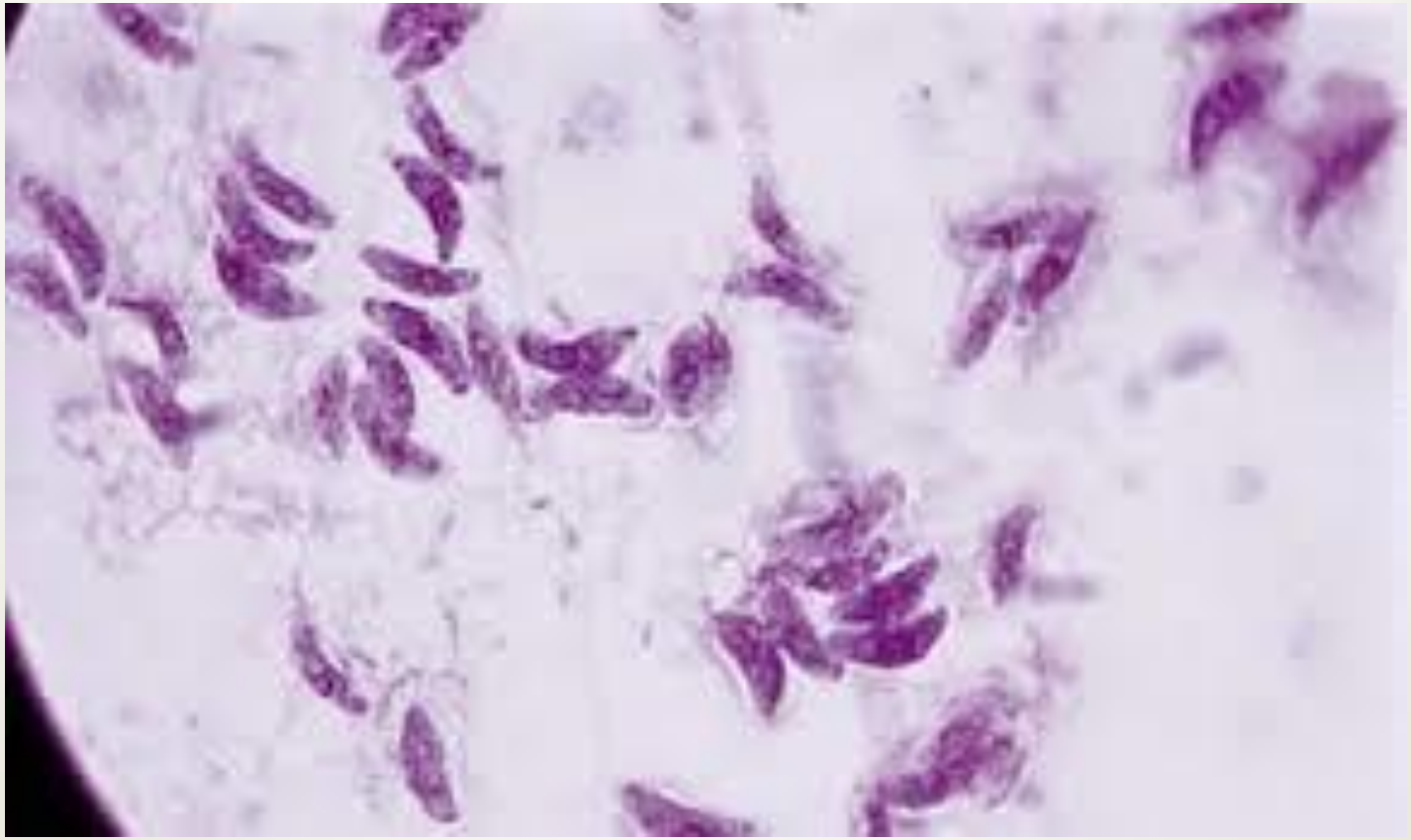
- Albendazole: 7.5 mg/kg orally BID; maximum dosage 400 mg orally BID (A II)
- Fumagillin: limited data for adults, no data for HIV-infected children

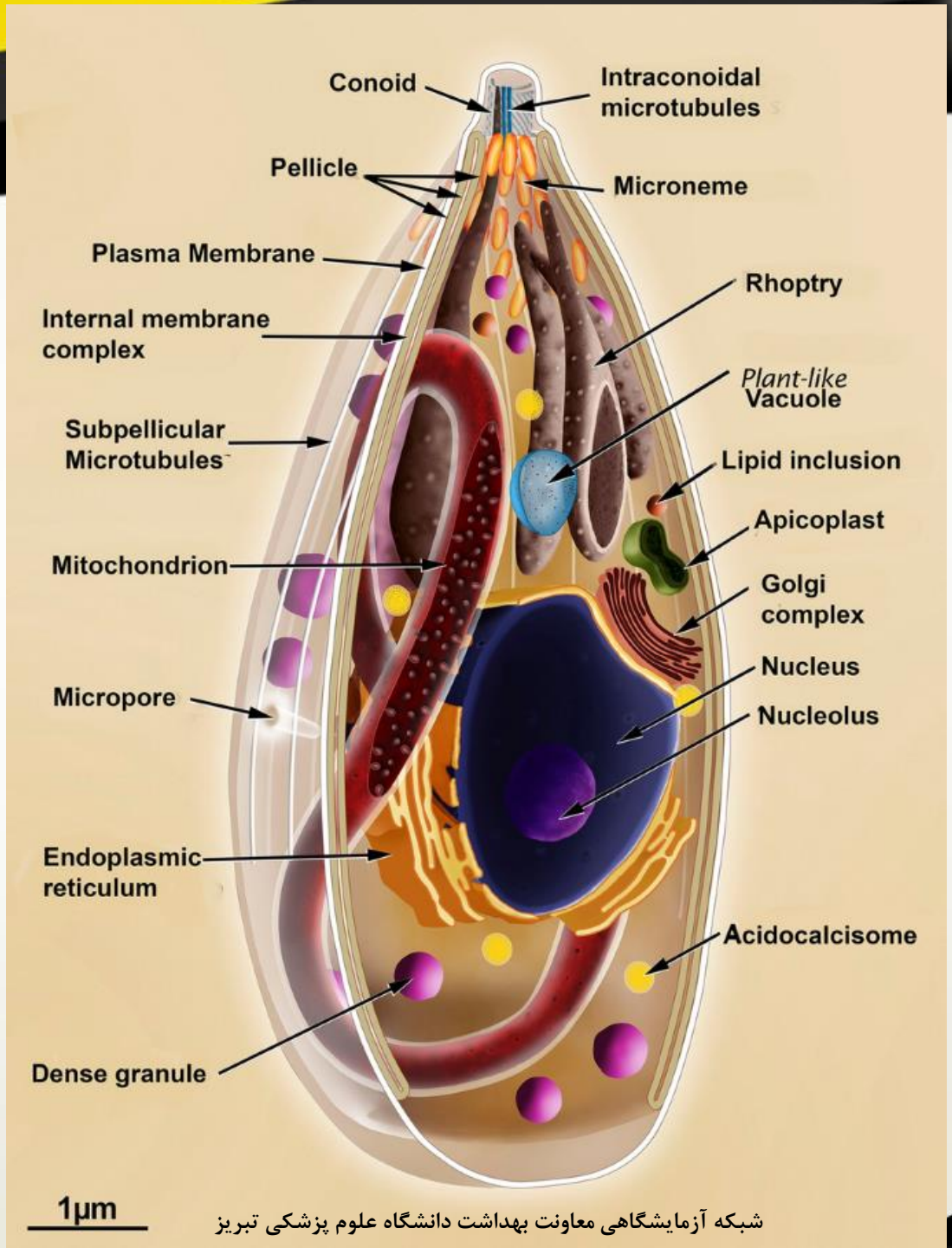
Toxoplasmosis: Epidemiology

- Primarily perinatal transmission from primary infection of mothers during pregnancy
- Older children acquire toxoplasmosis from poorly cooked food and from ingestion of sporulated oocysts in soil, water, or food

Toxoplasmosis

Toxoplasmosis




Conoid
Intraconoidal microtubules
Pellicle
Microneme
Plasma Membrane
Rhoptry
Internal membrane complex
Plant-like Vacuole
Subpellicular Microtubules
Lipid inclusion
Apicoplast
Mitochondrion
Golgi complex
Nucleus
Micropore
Nucleolus
Endoplasmic reticulum
Acidocalcisome
Dense granule
1µm

Toxoplasmosis: Clinical Manifestations

- Non-immunocompromised infants are usually asymptomatic at birth but majority develop late manifestations: retinitis, neurologic impairment
- Newborn symptoms can include:
- Rash, lymphadenopathy, jaundice, hematologic abnormalities, seizures, microcephaly, chorioretinitis, hydrocephalus

Toxoplasmosis: Clinical Manifestations

- Toxoplasmosis acquired after birth is initially asymptomatic, followed by infectious mononucleosis-like syndrome
- Chronic toxoplasmosis can reactivate in HIV-infected children
- Isolated ocular toxoplasmosis is rare is usually associate with CNS disease
- Less frequently observed presentations include pneumonitis, hepatitis, myocarditis

Toxoplasmosis: Diagnosis

- Test all HIV-infected pregnant women for toxoplasmosis
- If positive, evaluate infant for congenital toxoplasmosis
- Use antibody assay to detect IgM-, IgA-, or IgE-specific antibody in first 6 months or persistence of IgG antibody after 12 months

Toxoplasmosis: Diagnosis

- Additional methods include isolation of toxoplasmosis from body fluids or blood
- Negative antibody does not exclude toxoplasmosis – may require CT, MRI, or brain biopsy in case of encephalitis
- In the United States, routine screening for Toxoplasma is not recommended in HIV-infected children when the mother does not have Toxoplasma infection

Toxoplasmosis: Prevention

- Council all HIV-infected children and their caregivers regarding sources of Toxoplasma gondii infection
- Advise not to eat raw or undercooked meat
- Hands should be washed after contact with raw meat or when gardening or in contact with soil
- Vegetables should be washed well and never eaten raw

Toxoplasmosis: Prevention

- Stray cats should not be handled or adopted
- Toxoplasma-seropositive adolescents and adult patients with CD4 counts of <100 cells/μL and Toxoplasma-seropositive children with CD4 percentage <15% should be administered prophylaxis with TMP-SMX

Toxoplasmosis: Treatment

- If HIV-infected mother has symptomatic toxoplasmosis during pregnancy, infant should be treated
- Preferred treatment – congenital toxoplasmosis:
- Pyrimethamine loading dose of 2 mg/kg orally once daily for 2 days; then 1 mg/kg orally once daily for 2-6 months; then 1 mg/kg orally 3 times/week with sulfadiazine 50 gm/kg/dose BID and with leucovorin (folinic acid) 10 mg orally with each dose of sulfadiazine
- Optimal duration of treatment: 12 months

Treatment of HIV-infected children with acquired CNS, ocular, or systemic toxoplasmosis

- Pyrimethamine: 2 mg/kg/day (maximum 50 mg/kg) orally for 3 days; then 1 mg/kg/day orally and leucovorin 10-25 mg/day plus sulfadiazine 25-50 mg/kg/dose orally, given 4 times daily
- Continue acute therapy for 6 weeks
- Lifelong therapy should be provided
- Alternative to pyrimethamine and leucovorin in sulfa- sensitive individuals is clindamycin


Thanks for your Attention

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