

Amoebiasis

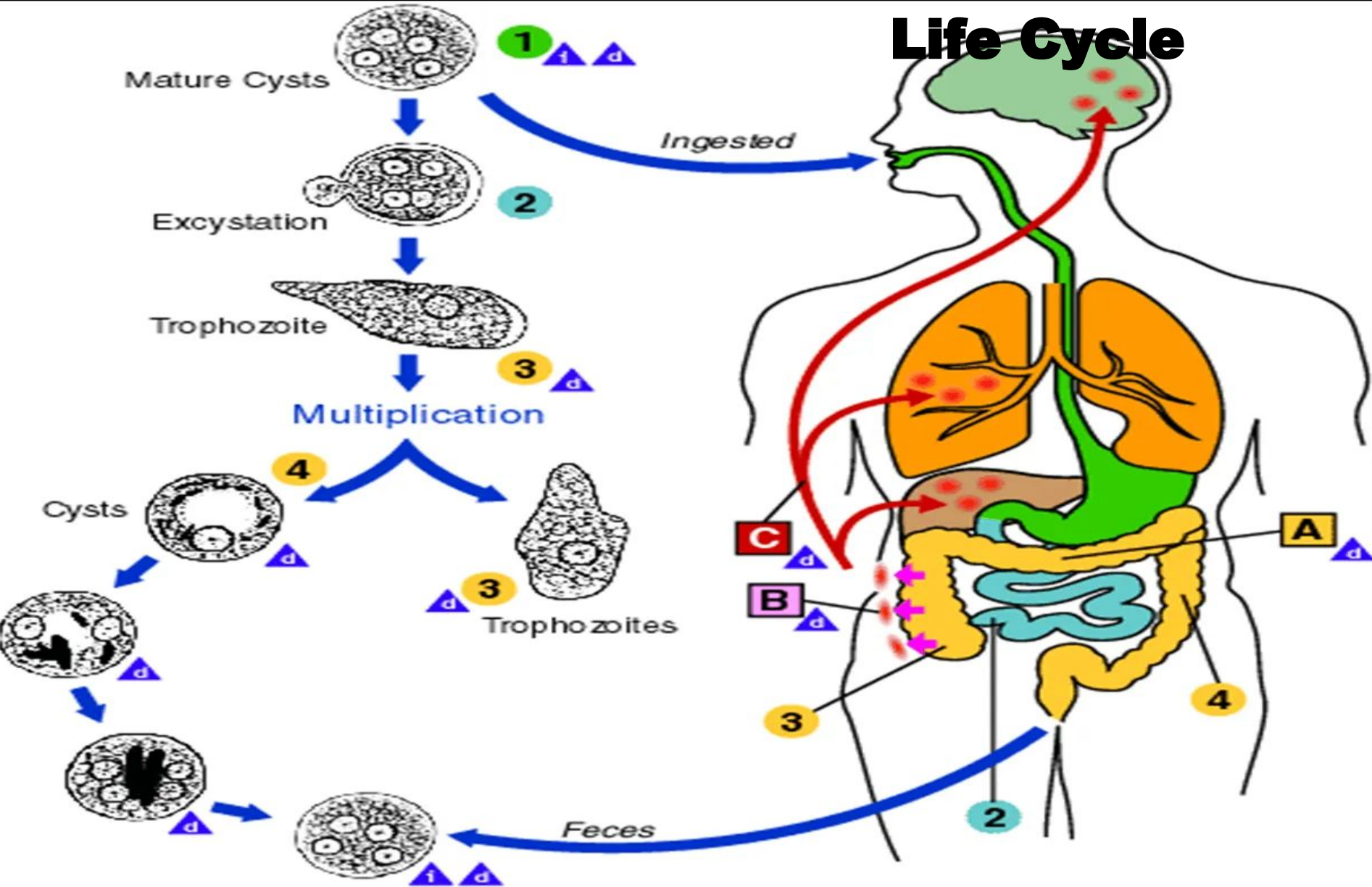
Hazem.K.Abdulkareem Alkhafaji
Prof. in internal medicine
Dept. of Medicine-College of Medicine
University of Al-Qadisiyah
Lecture 7



Introduction

- **.Amoebiasis caused by the protozoan parasite *Entamoeba histolytica***
- **.Occurs worldwide, but is more common in areas or countries with poor sanitation, particularly in the tropics**
- **.Transmission occurs via the faecal–oral route, either directly by person-to-person contact or indirectly by eating or drinking faecally contaminated food or water**
- **.Incubation period from 2 weeks up to years**
- **.The clinical spectrum ranges from asymptomatic infection(only about 4%-10% of infected individuals show symptoms and signs), diarrhoea and dysentery to fulminant colitis and peritonitis as well as extraintestinal amoebiasis**
- **.Acute amoebiasis can present as diarrhoea or dysentery with frequent, small and often bloody stools. Chronic amoebiasis can present with gastrointestinal symptoms plus fatigue, weight loss and occasional fever**
- **.Extraintestinal amoebiasis can occur if the parasite spreads to other organs, most commonly the liver where it causes amoebic liver abscess**
- **.Metronidazole (MTZ), which is the drug of choice for invasive amebiasis, and other nitroimidazoles have greatly simplified the chemotherapy of this disease. However, eradication of *E. histolytica* infection after completion of MTZ therapy requires additional treatment with luminal amebicides, such as paramomycin or diloxanide furoate**

Life Cycle



▲ i = Infective Stage
▲ d = Diagnostic Stage

A = Non Invasive Colonization
B = Intestinal Disease
C = Extra-Intestinal Disease

Entamoeba dispar

**What was once thought to be a single entity, is now ●
recognised as two morphologically identical but
genetically distinct forms; *E. histolytica* (pathogen) and
E. dispar (commensal), this has affected our
understanding of amoeba distribution**

**Many suspected cases of *E. histolytica* carrier, may ●
simply have been *E. dispar* colonisation**

**The WHO recommends that *E. histolytica* colonisation ●
should be treated, however, treatment is unnecessary for
E. dispar colonisation**

What is the name of this ?commensal Entamoeba

What was once thought to be a single entity, is now ●
recognized as two morphologically identical but genetically
distinct forms; *E. histolytica* (pathogen) and other
commensal one, this has affected our understanding of
amoeba distribution

Many suspected cases of *E. histolytica* carrier, may simply ●
have been of commensal Entamoeba colonization

Pathogenesis

Ingestion of cyst



excystation in small intestine



production of **trophozoites**



multiplication and colonization of large intestine



Intestinal lesions

Extension through muscularis mucosa and submucosa

Ulcer formation (flask shape)



Bloodstream ← Thrombosis of blood vessels

- Liver abscess
- lung abscess
- splenic abscess
- brain abscess

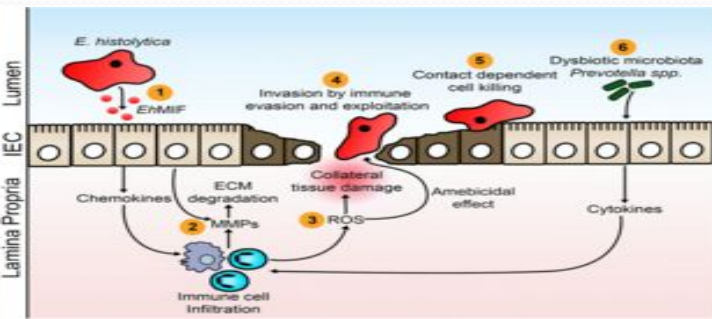
Toxic megacolon



Necrosis of bowel wall

rforation

LOCAL EXTENSION
,Peritonitis,empyema
pericarditis



Ingestion of fecally contaminated water or food containing *Entamoeba histolytica* cysts



Brain

Invasive disease
10% of cases

Pleural and pericardial effusions

Self-limiting, asymptomatic infection
90% of cases

Extraintestinal disease
<1% of cases

Mucin layer

Liver abscess

Mucin layer

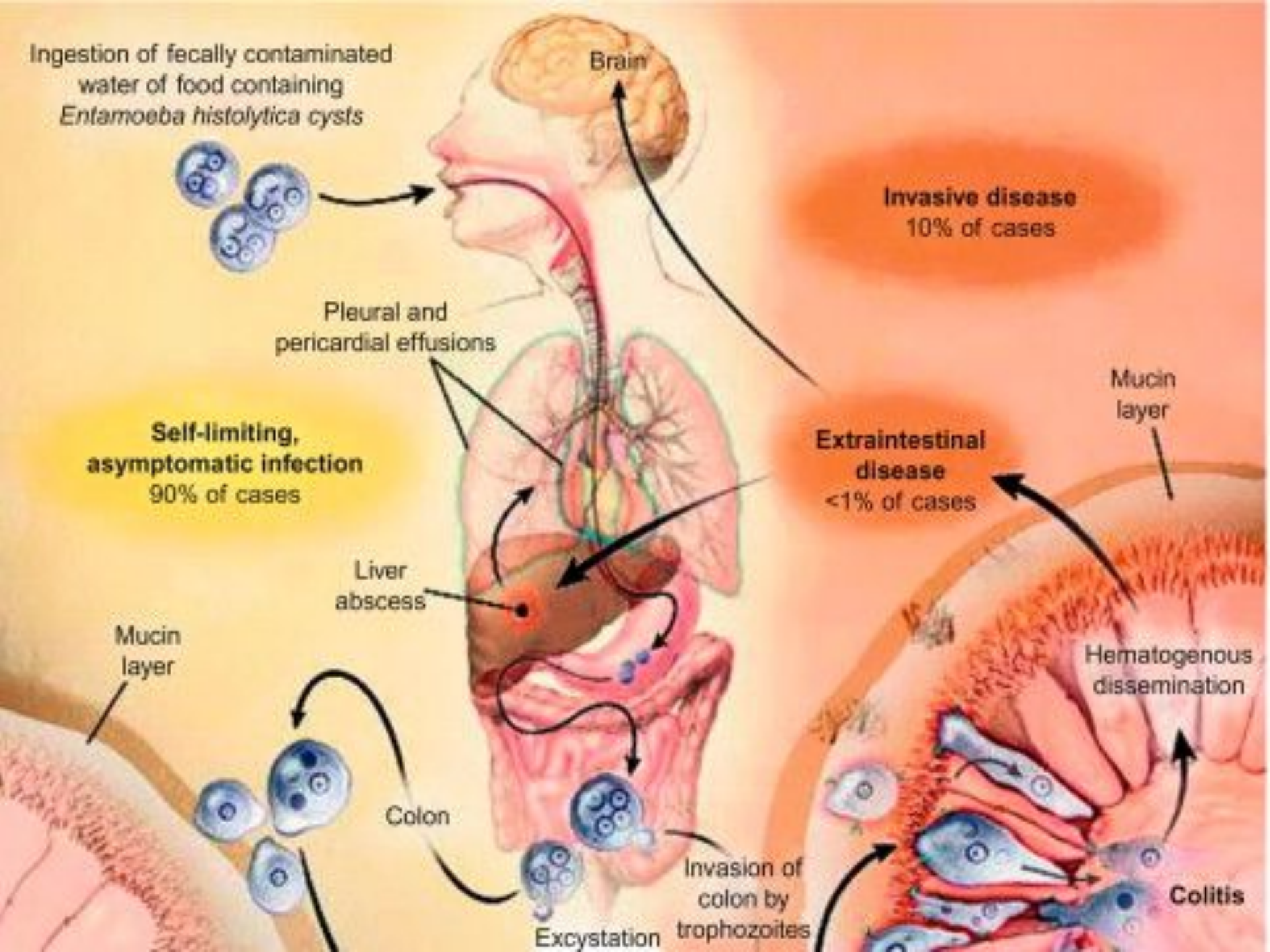
Hematogenous dissemination

Colon

Invasion of colon by trophozoites

Colitis

Excystation

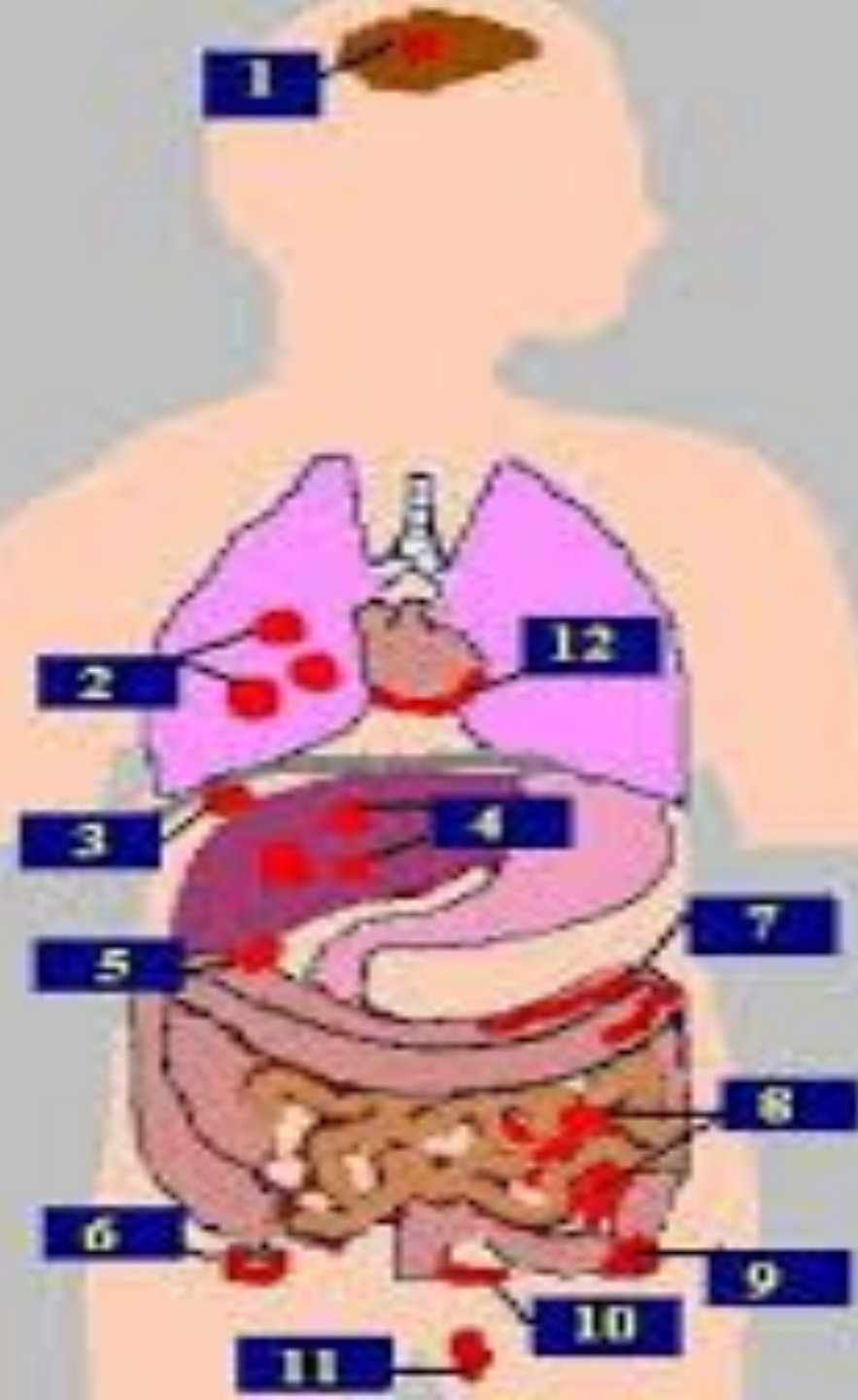


Complications of Amebiasis:

Amebic abscesses

1. Brain
2. Lung
3. Subdiaphragmatic
4. Liver
5. Subhepatic
6. Periappendiceal

7. Amebic Ulcers
8. Peritonitis
9. Ameboma
10. Anorectal fistula
11. Cutaneous amebiasis
12. Pericardial effusion, amebic pericarditis



Clinical features

Some individuals carry *E. histolytica* asymptotically. 4 -10% will go on to develop the disease within a year

Gastro-intestinal

Sudden or may be gradual onset (weeks) of bloody diarrhoea, occasionally with small volumes of mucoid & blood stool. If blood is not visible, stool is usually 'haem' positive due to the breach of the mucosa

Abdominal pain and tenderness

Leucocytes and pus may be present in stool. Fever present in <40% of patients

Weight loss and anorexia can be present

In more severe cases fulminant amoebic colitis develops. Liver involvement (amoebic hepatitis) is more common in these cases, along with paralytic ileus, toxic megacolon and mucosal sloughing. Over 75% of patients with fulminant colitis develop intestinal perforation

Local inflammatory masses, amoebomas, may cause obstructive symptoms & mimicking adenocarcinoma of the colon

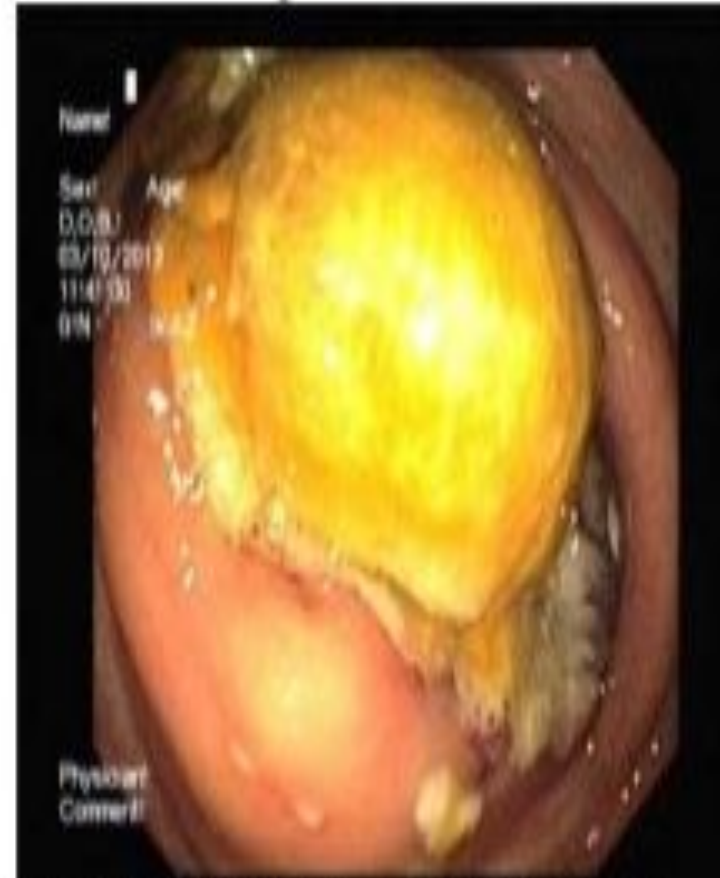
Toxic Megacolon



Amoeboma

Amoeboma of Colon Simulating Colonic Adenocarcinoma

- Necrosis, edema and inflammatory thickening of mucosa and submucosa of intestinal wall
- 1% of cases
- Palpable mass with trophozoites
- Always coexists with ulceration



Hepatic

- **More common in men**
- **Liver abscess can present in conjunction with bowel symptoms (10% of cases), or in isolation**
- **Sudden onset of upper abdominal pain with fever. Pain may radiate to right shoulder or be exacerbated by respiratory movements**
- **Hepatic tenderness may be present. Jaundice is unusual**
- **Complicated liver abscess may develop if abscess ruptures into the peritoneal, pericardial or pleural cavity. Morbidity and mortality is high**

Summary: CLINICAL MANIFESTATIONS

Incubation period from 2 weeks up to years

:Clinical syndromes caused by E.histolytica infection

:A- Intestinal

.Asymptomatic infection -1

.Acute rectocolitis(dysentery) -2

.Fulminant colitis with perforation -3

.Toxic megacolon -4

Chronic non dysenteric colitis -5

.Amoeboma -6

Appendicitis -7

:B- Extra-intestinal

.Amoebic hepatitis -1

Hepatic abscess(Amoebic liver abscess): -2

: complicated by

Peritonitis,empyema,pericarditis,lung

.abscess,splenic abscess & brain abscess

Cutaneous amoebiasis(genitourinary disease) -3

Differential diagnosis

- :Acute amebic colitis should be differentiated from ●**
- .infection due to *Shigella*(bacillary dysentery) -1 ●**
- .Infection with *Campylobacter*, *Salmonella* or *Yersinia* -2 ●**
- .Invasive *Escherichia coli* species -3 ●**
- Clostridium difficile* toxin-mediated disease(antibiotic -4 ● associated diarrhoea)**
- .chronic disease differentiated from ulcerative colitis -5 ●**
- .Amoeboma differentiated from colonic carcinoma-6 ●**

Diagnosis

- **Clinical history is important**
- **Demonstration of *E. histolytica* in stool (active, motile trophozoites & the vacuoles contain RBCs) by microscopy**
- **or ELISA assay for antigen detection or PCR**
- **Trophozoites only survive for short periods of time, therefore, fresh stool samples should be used**
- **Colonoscopy to confirm colitis and tissue biopsy to differentiate it from ulcerative & differentiates amoeboma from carcinoma**
- **Liver abscess; space occupying lesion on CT/US positive amoebic serology**

Management

Amoebiasis, in particular with liver involvement, can be fatal if not treated •

Supportive therapy: ORS or intravenous fluids

.Chemotherapy can effectively cure amoebiasis

Nitroimidazole (e.g. metronidazole) is used to treat the invasive pathogens or Tinidazole

Recurrence occur if the intestinal cysts not eradicated

So this is followed by a luminal agent (e.g. diloxanide furoate)

.Or paromomycin to eliminate the cyst

Both drugs also suitable for asymptomatic carrier to decrease infectivity in the community

Metronidazole + one of drugs to eradicate the cyst = better results(combination) •

.Complicated liver abscesses should be drained surgically •

Prevention

***E. histolytica* infection can be prevented by • the availability of clean water, adequate sanitation, and avoidance of eating undercooked foods especially from unclean source (food handlers are the main source of infection), that facilitate direct fecal-oral contamination. Boiling is the only reliable way of killing cysts (Boiling water for at least ten minutes kills amoebic cysts effectively. Chlorine and iodine tablets are not thought to be 100% effective). In endemic areas, uncooked foods such as salads and vegetables should be avoided**

Thank you

Next lectures
Toxoplasmosis