



HEPATITIS

(GIT block , Microbiology: 2020)

By: Dr. Malak M. El-Hazmi

Associate professor & Consultant Virologist

College of Medicine &

King Saud University Medical City

OBJECTIVES;

- viruses causing enterically transmitted hepatitis

HAV.

HEV.

- viruses that are causing hepatitis during their course of infection ;
e.g Cytomegalovirus (CMV)
Epstein-Barr virus (EBV)
Arbovirus (yellow fever virus)

- structure
- Epidemiology
- clinical presentations
- Lab diagnosis
- Treatment
- prevention

HEPATITIS

Viral hepatitis

- As part of generalized infection
(CMV, EBV, Yellow fever virus)
- Infect primarily the liver
 - Faecal-borne hepatitis (A & E)
 - Blood-borne hepatitis (B , C & D)

FECAL-BORNE HEPATITIS

 HAV

 *Picornaviridae*

 HEV

 *Hepeviridae*

 *Nonenveloped*

 *Icosahedral*

 *ss, + sense RNA*

 *One serotype*

HEPATITIS A VIRUS

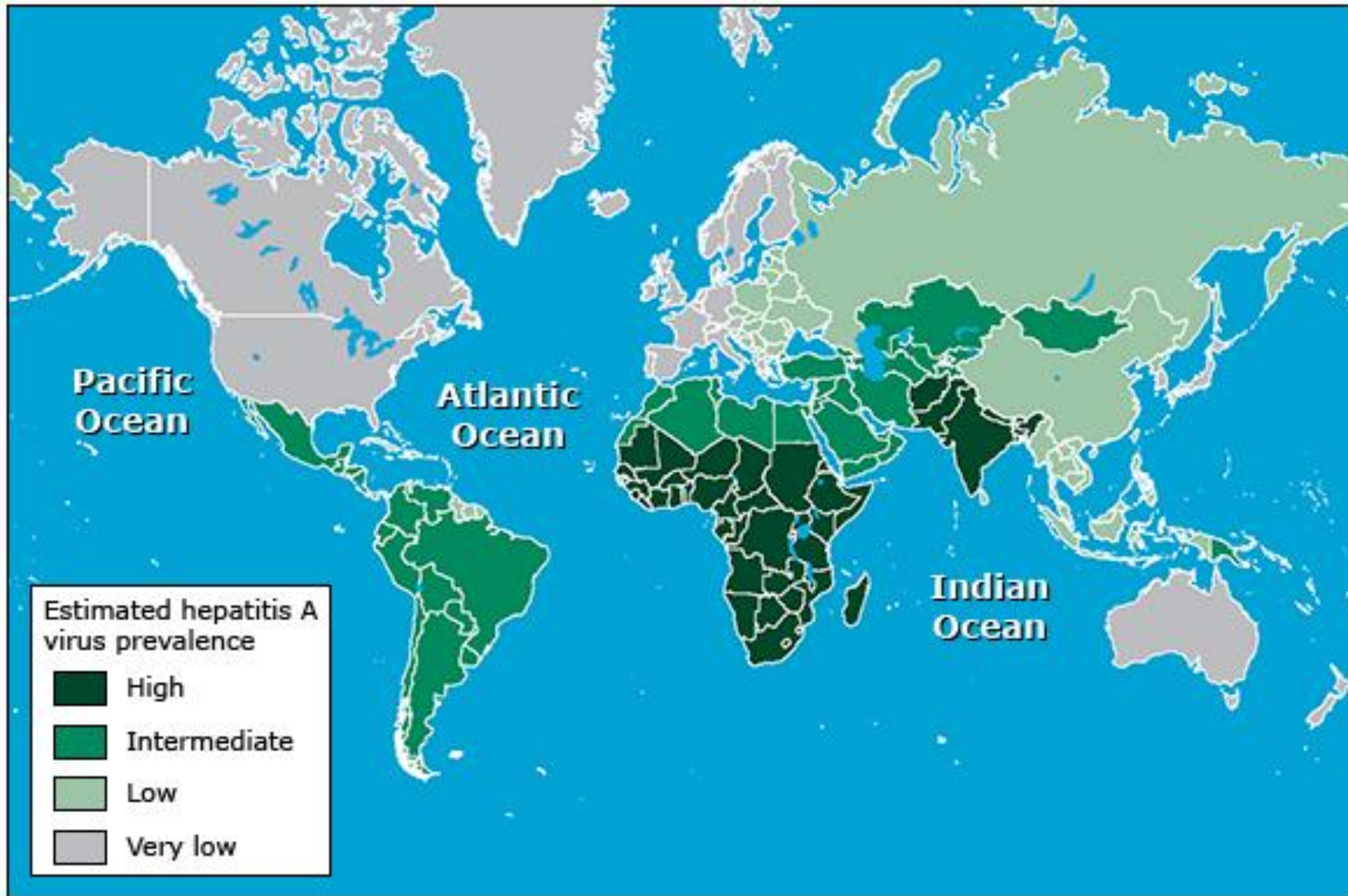
Hepatitis A

Short incubation hepatitis

Infectious hepatitis

Epidemic hepatitis








Distribution:

-  a worldwide, endemic in tropical countries

Transmission:

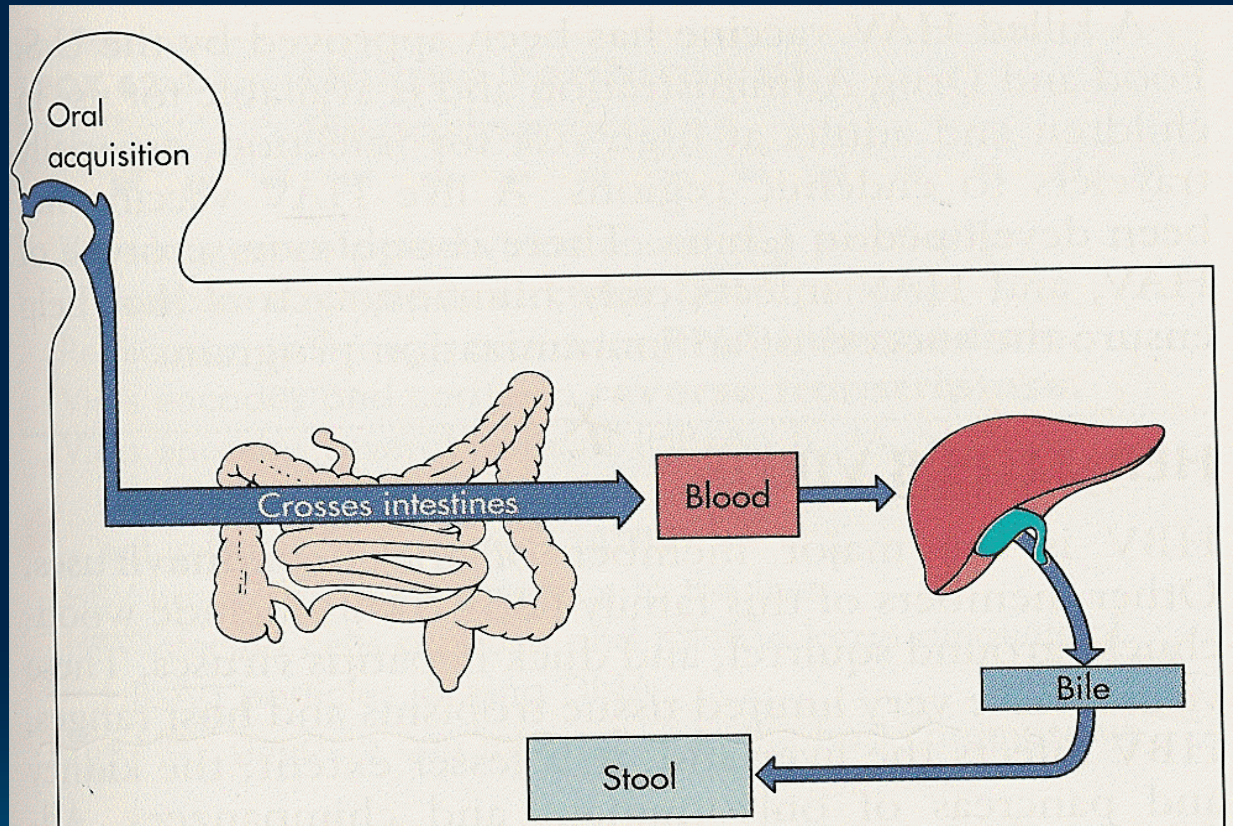
-  **Faecal-oral route** [major route]
 - Contaminated food & water
-  Sexual contact (homosexual men)
-  Blood transfusion (v.rarely)

Age:

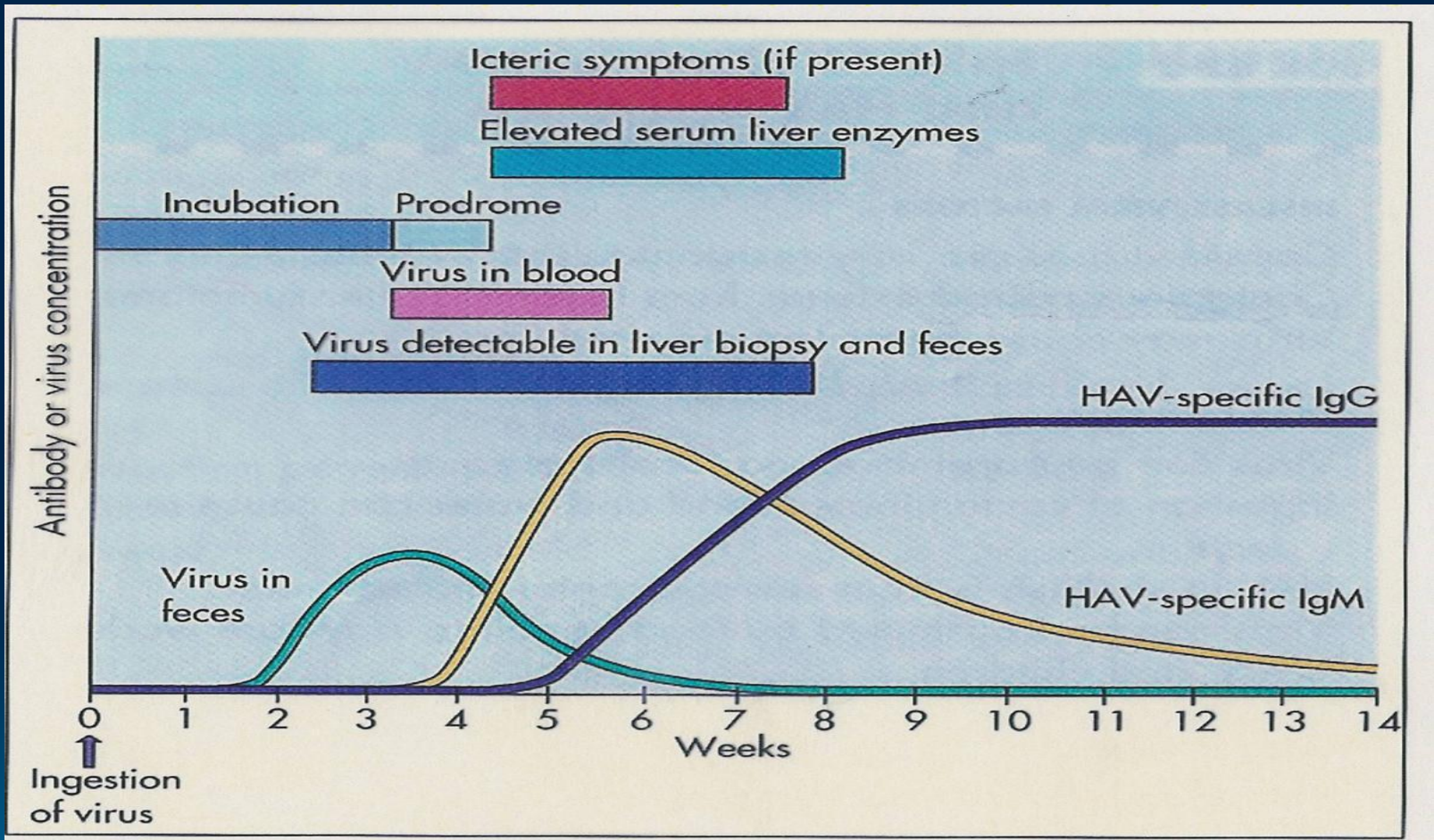
-  In developing countries; children*
-  In developed countries ; young adults

Pathogenesis

HAV






- CMI → Damage of virus-infected hepatocyte
- ↑ ALT, AST & Bilirubin



Manifestations



Hepatitis





-  IP=2-6 Ws
-  Pre-icteric phase: fever, fatigue, N, V, & RUQP
-  Icteric phase: dark urine, pale stool, jaundice



-  Asymptomatic & anicteric inf → common
-  Symptomatic illness → ↑ age

Prognosis



-  Self-limited disease
-  Fulminant hepatitis \longrightarrow rare
-  Mortality rate \sim 0.1 - 0.3%
-  No chronicity or malignancy changes

Lab. Diagnosis



Serology:

 Anti-HAV IgM  Current inf

 Anti-HAV IgG  previous inf

 immunity




Management



Treatment:

-  Supportive therapy

Prevention:

-  Sanitation & hygiene measures
-  Hlg
-  Vaccine

Prevention



HIg:

- Given before or within 2 Ws of exposure
- Indication : travelers
unvaccinated , exposed p

Prevention

HAV

Vaccine:

inactivated

Given IM at [0,6-12 M]

>1 Y of age

S/E : mild local reaction

➤ Indication : P at high risk of inf (travelers)

P at high risk of severe dis

A combination vaccine (HAV & HBV)



HEPATITIS *E* VIRUS

Hepeviridae

Epidemiology:

 outbreak of waterborne & sporadic cases of VH

 **Age;** young adults

 **4 routes of transmission;**

 Waterborne*

 Zoonotic foodborne

 Bloodborne

 Perinatal

HEPATITIS *E* VIRUS


Clinical features:

 ~ HAV infection & exceptions:

 Longer IP =4-8 Ws



 Chronic hepatitis and cirrhosis
(not HCC)

 Fulminant disease

 Mortality rate ~10 times > HAV
~ (1-3%)
~ 20% in pregnancy

HEPATITIS E VIRUS

Lab diagnosis:

 ELISA  Anti-HE IgM

Treatment:

 Not specific

Prevention:

 Sanitation & hygiene measures

 No Ig

 No vaccine

Herpesviridae

- | | |
|---------------------------------|-------|
| 1- Herpes simplex virus type -1 | HSV-1 |
| 2- Herpes simplex virus type -2 | HSV-2 |
| 3- Varicella –Zoster virus | VZV |
| 4- Epstein- Barr virus | EBV |
| 5- Cytomegalovirus | CMV |
| 6- Human herpes virus type-6 | HHV-6 |
| 7- Human herpes virus type-7 | HHV-7 |
| 8- Human herpes virus type-8 | HHV-8 |



dsDNA , Icosahedral & Enveloped Virus

Epstein – Barr Virus EBV

- It is lymphotropic .
- It has oncogenic properties ;

Burkitt's lymphoma
Nasopharyngeal carcinoma

Epidemiology

- Distribution :worldwide
- Transmission:
 - Saliva [kissing disease]
- Age:

Socio-economic status: SE

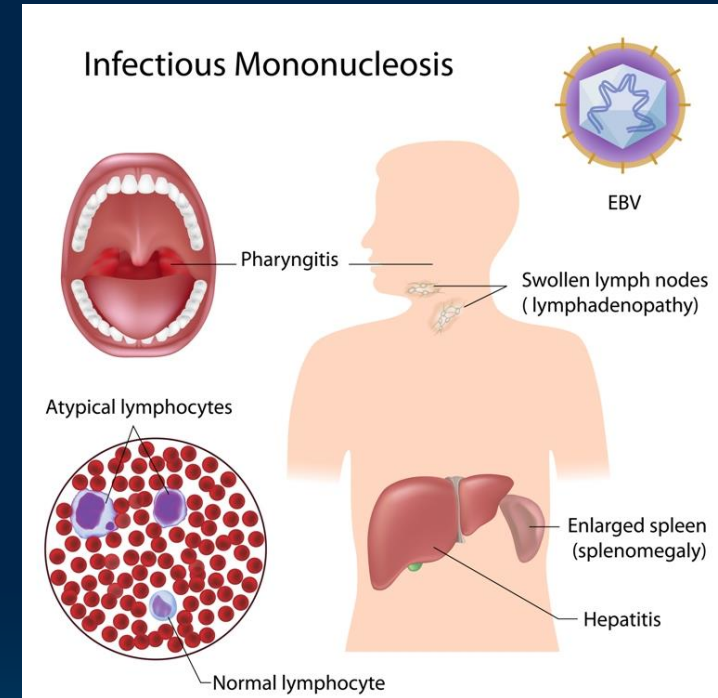
- Low SE class → early childhood
- High SE class → adolescence

Clinical Features:

EBV

1-Immunocompetent host

- ❖ Asymptomatic
- ❖ Infectious mononucleosis [glandular fever]
 - Mainly in teenagers & young adults
 - IP = 4-7 weeks
 - Complications (acute air way obstruction, splenic rupture, CNS inf)



- ❖ Chronic EBV infection

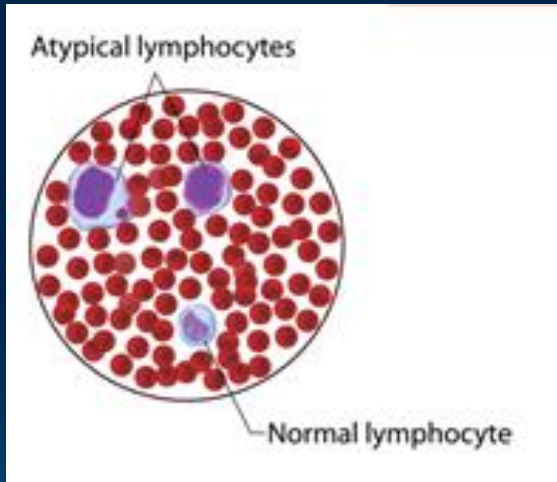
2- Immunocompromised host

- Lymphoproliferative disease (LD)

Dx:

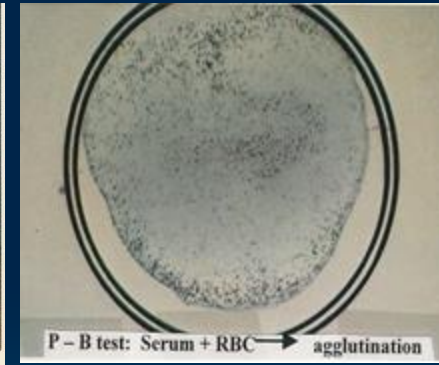
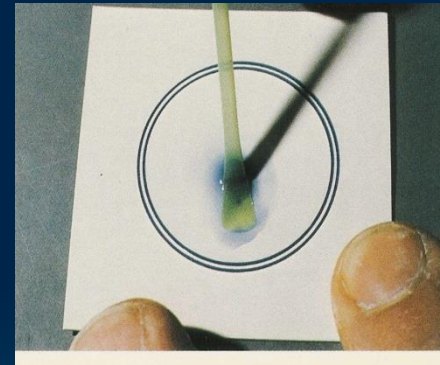
Hematology:

- **↑ WBC**
lymphocytosis
(Atypical lymphocytes)



Serology:

- **Non-specific AB test ;**
 - Heterophile Abs +ve
 - Paul-Bunnell or mono-spot test



- **EBV-specific AB test:**
IgM Abs to EBV capsid antigen

Management:

- Treatment:
 - Antiviral drug is not effective in IMN
- Prevention:
 - No vaccine

Cytomegalovirus CMV

- Special features ;
 - Infected cell enlarged with multinucleated .
[cyto=cell, megal=big]
 - Resistant to acyclovir .
 - Latent in monocyte , lymphocyte & other .
- Distribution: worldwide .
- Transmission ;
 - Early in life:
 - Transplacental
 - Birth canal
 - Breast milk
 - Young children: saliva
 - Later in life: sexual contact
 - Blood transfusion & organ transplant .

Acquired Infections;

- Immunocompetent host
 - Asymptomatic
 - Self-limited illness
 - Hepatitis
 - Infectious mononucleosis like syndrome
[Heterophile AB is -ve]

- Immunocompromised host
 - Encephalitis , Retinitis , Pneumonia ,
 - Hepatitis* , Esophagitis, Colitis

Congenital Infections:

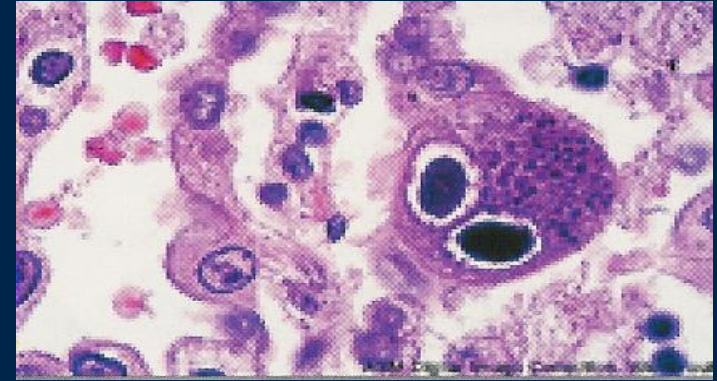
Lab. Dx

CMV

✦ Histology:

Intranuclear inclusion bodies

[Owl's -eye]



✦ Culture:

➤ In human fibroblast

1-4 wks → CPE

➤ Shell Vial Assay → 1-3 days

✦ Serology:

➤ AB → IgM : current inf

→ IgG : previous exposure

➤ Ag → CMV pp65 Ag by IFA

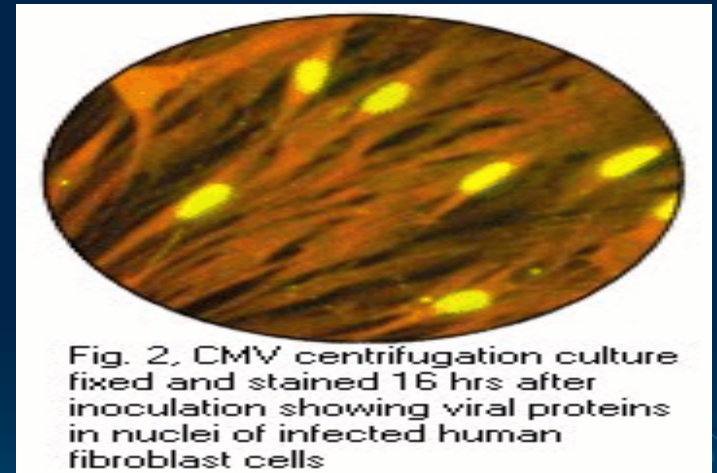


Fig. 2, CMV centrifugation culture fixed and stained 16 hrs after inoculation showing viral proteins in nuclei of infected human fibroblast cells

✦ PCR

Rx.

■ *Ganciclovir*

is effective in the Rx of severe CMV inf.

■ *Foscarnet*: the 2nd drug of choice .

Prevention:

- Screening ;
 - Organ donors
 - Organ recipients
 - Blood donors
- Leukocyte-depleted blood .
- Prophylaxis: Ganciclovir , CMVIG .
- No vaccine .

Arthropod-borne Viruses (Arboviruses)

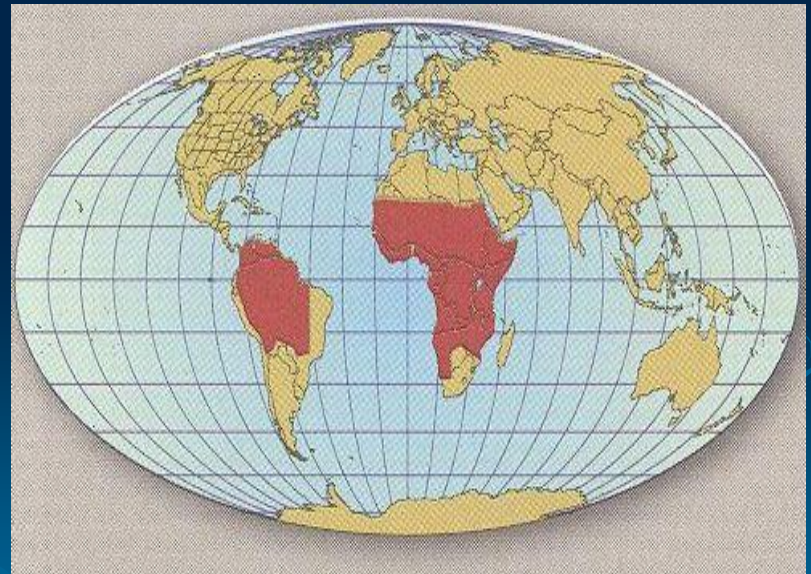
Yellow Fever virus

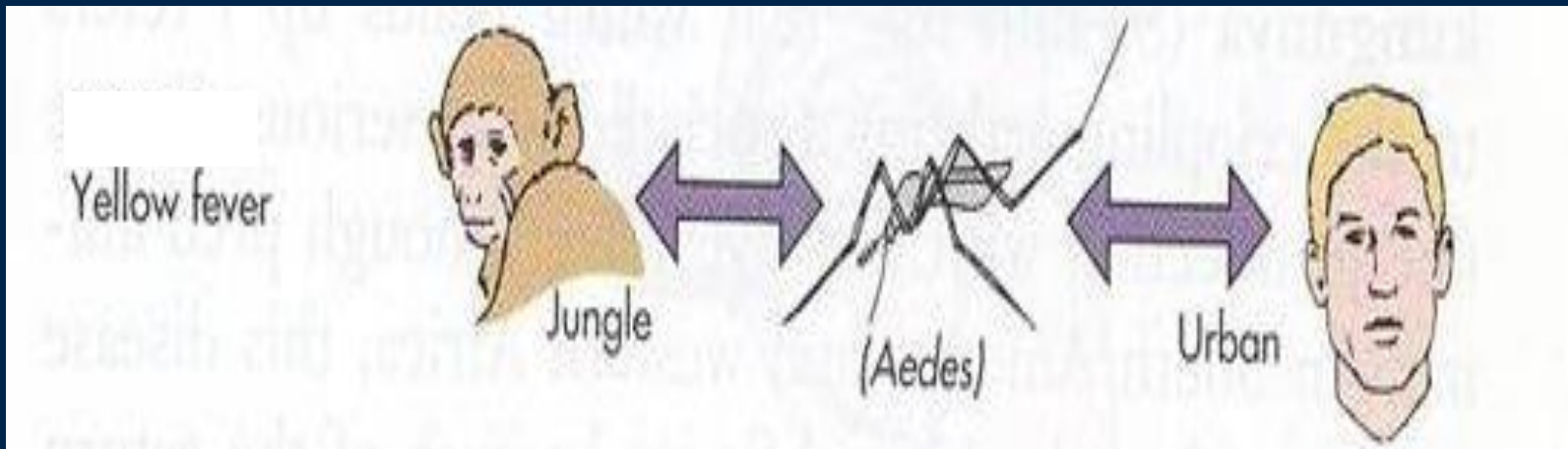
- Flaviviridae
- Asymptomatic to Fever ± Jaundice ± hemorrhage ± renal failure

- Epidemiology

Tropical Africa
& South America

1. Jungle Yellow Fever
2. Urban Yellow Fever





Jungle Yellow Fever:

- Vector: mosquito
- Reservoir: **Monkey**
- Accidental host: **human**
- It is a disease of **Monkeys**

Urban Yellow Fever:

- Vector: mosquito
- Reservoir: **human**
- It is a disease of **humans**

Dx.

➤ Lab. Methods :

A- Isolation

B - IgM -AB* - ELISA, IF: (most used)

C – YFV- RNA by RT-PCR

Prevention

1-Vector Control:

- Elimination of vector breeding sites
- Using insecticides
- Avoidance contact with vectors
(repellants , net)

2-Vaccine:

Yellow Fever vaccine (LAV, one dose /10 yrs)



ليكن حجابك ✓

أختي المسلمة ... إذا كانت هذه الشروط تتوافر في ملابسك ...

- أن يكون ساتراً للبدن
- ألا يصف ولا يشف الجسم
- ألا يكون زينة في نفسه
- ألا يكون معطراً
- أن يكون فضفاضاً واسعاً غير ضيق
- ألا يشبه ملابس الرجال
- ألا يقصد به شهرة بين الناس

فاعلمي أن ...

حجابك ✓

عباتي تاج على راسي
صور تيجان

عباتي عبادة
وليست
عبادة



hadaeeq.ngeia.com

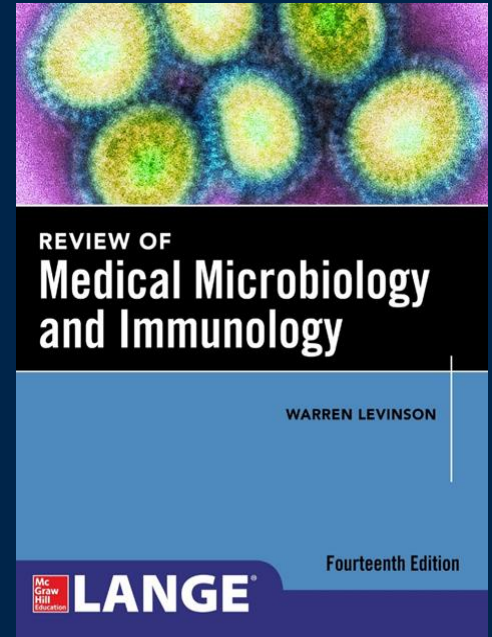
جمالي بالاسماني

Reference books

Review of Medical Microbiology and Immunology.

By: Warren Levinson.

14th Edition, 2014.



Medical Microbiology.

By: David Greenwood, Richard Slack,
John Peutherer and Mike Barer.

17th Edition, 2007.



Thank you

