HEPATITS

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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 HEPATITS

- HAV
  - *Picornaviridae*
- HEV
  - *Hepeviridae*

- *Nonenveloped*
- *Icosahedral*
- *ss,+ sense RNA*
- *One serotype*

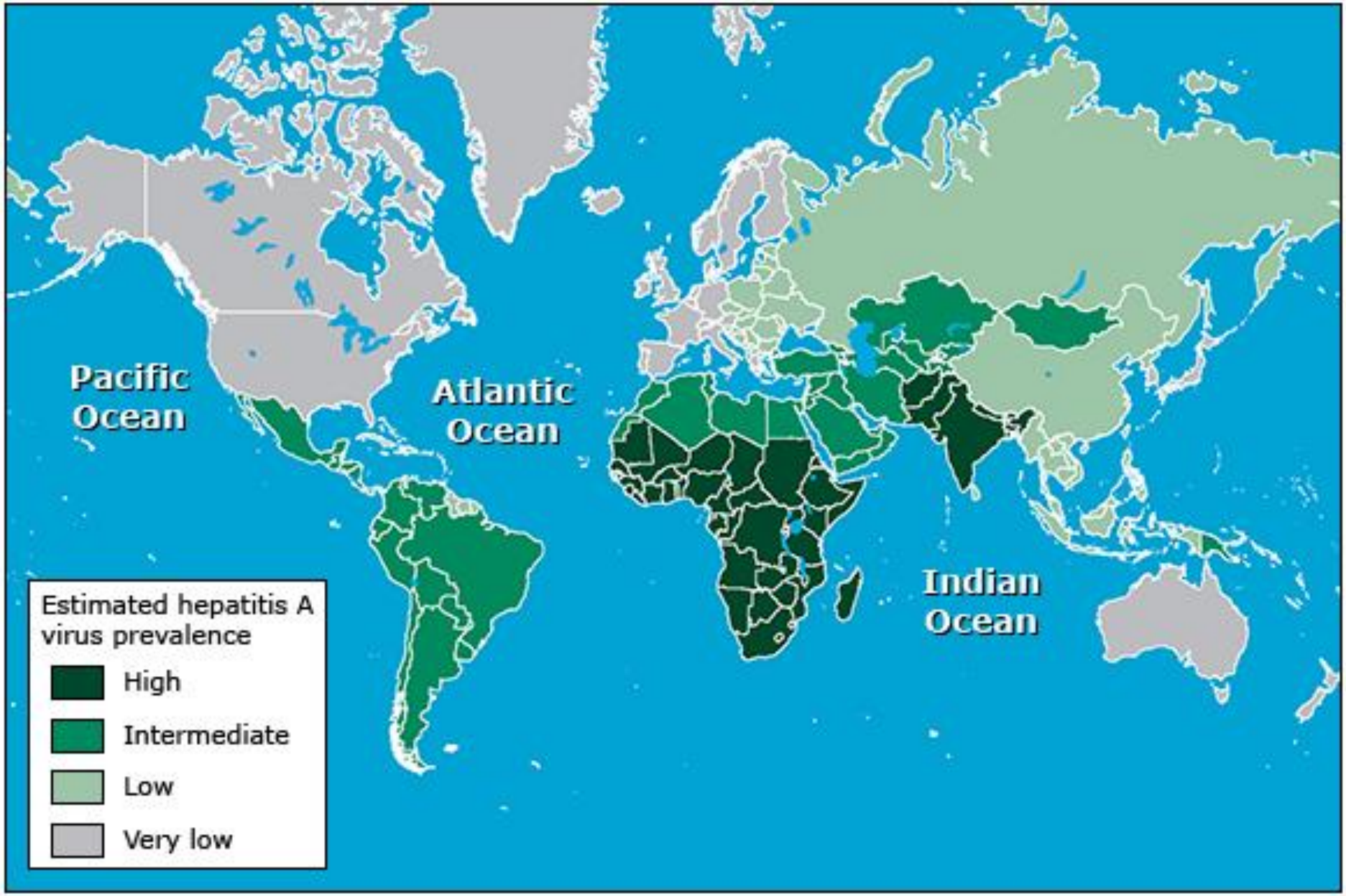
HEPATITIS A VIRUS

Hepatitis A

Short incubation hepatitis

Infectious hepatitis

Epidemic hepatitis


Pacific Ocean
Atlantic Ocean
Indian Ocean
Estimated hepatitis A virus prevalence
High
Intermediate
Low
Very low

Epidemiology

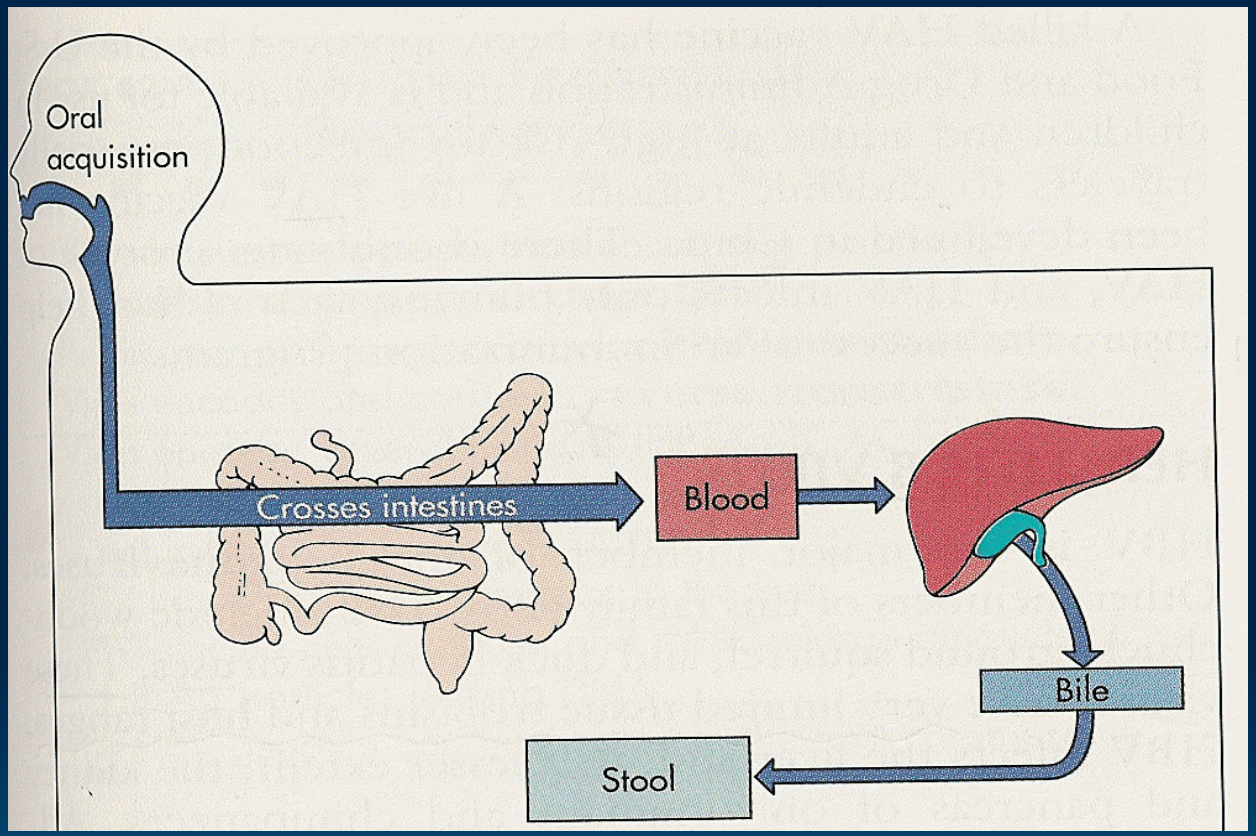
HAV

- 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

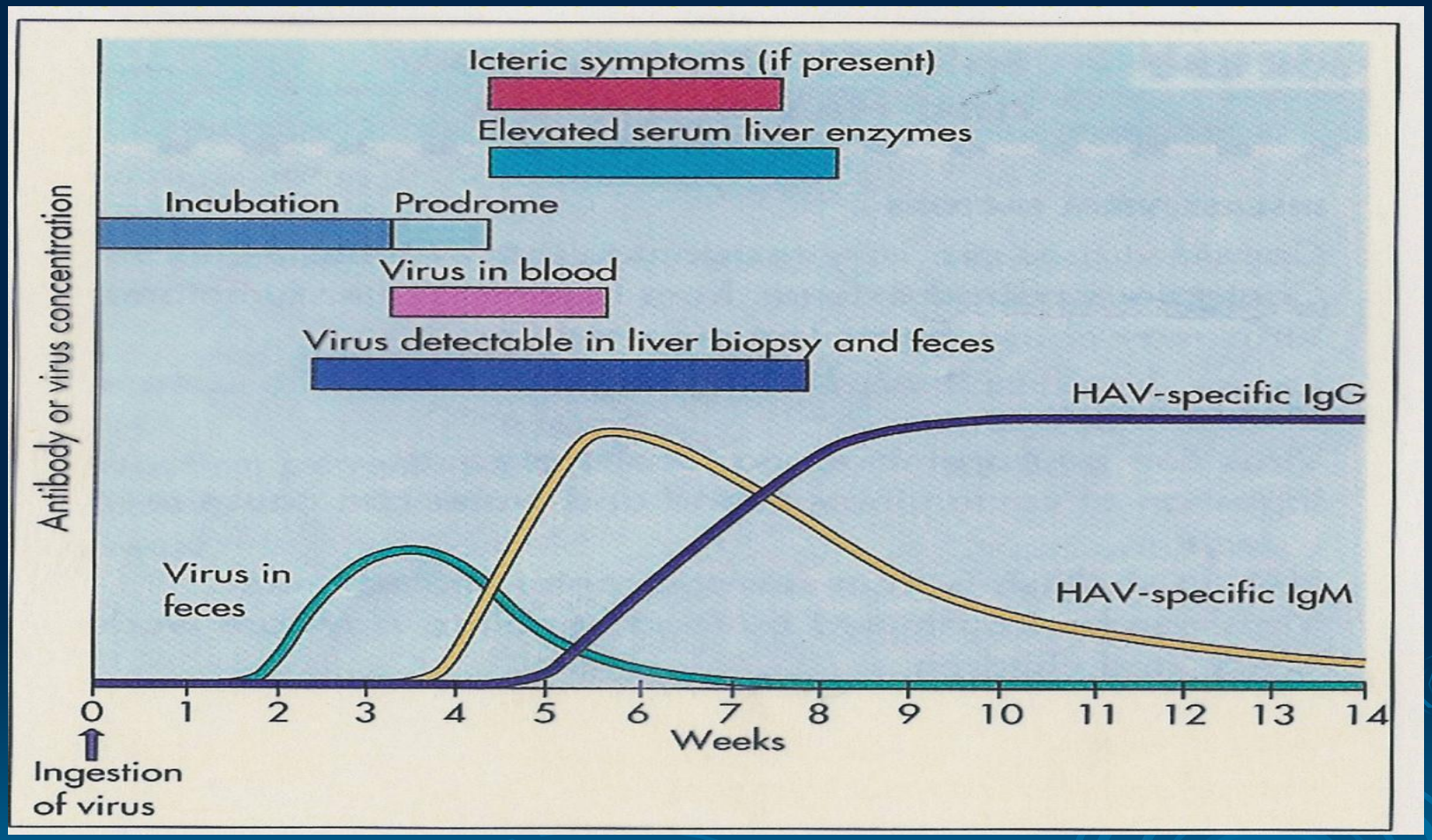
Pathogenesis

HAV



- CMI ➡ Damage of virus-infected hepatocyte
  ➡ ⬆ ALT ,AST & Bilirubin

HAV


Icteric symptoms (if present)
Elevated serum liver enzymes
Incubation
Prodrome
Virus in blood
Virus detectable in liver biopsy and feces
HAV-specific IgG
Virus in feces
HAV-specific IgM
Antibody or virus concentration
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
Weeks
Ingestion of virus

Manifestations

HAV

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

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

HAV

Prognosis

- Self-limited disease
- Fulminant hepatitis → rare
- Mortality rate ~ 0.1 - 0.3%
- No chronicity or malignancy changes

Lab. Diagnosis

HAV

- Serology:
  - Anti-HAV IgM → Current inf
  - Anti-HAV IgG → previous inf
    → immunity

Management

- Treatment:
  - Supportive therapy
- Prevention:
  - Sanitation & hygiene measures
  - HIg
  - Vaccine

Prevention

HAV

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

EBV

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
  - Fever, pharyngitis, malaise, LAP, hepatosplenomegaly & abnormal LFT ± hepatitis .
  - Complications

    (acute air way obstruction, splenic rupture, CNS inf)
- Chronic EBV infection

2- Immunocompromised host

- Lymphoproliferative disease (LD)

EBV

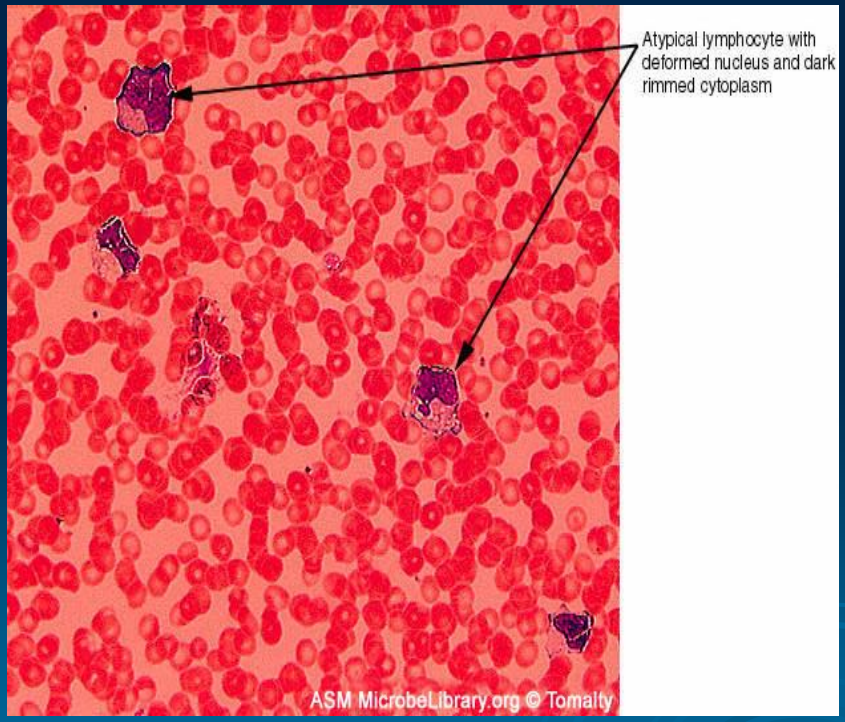
Dx:

Hematology:

- ⇧ WBC

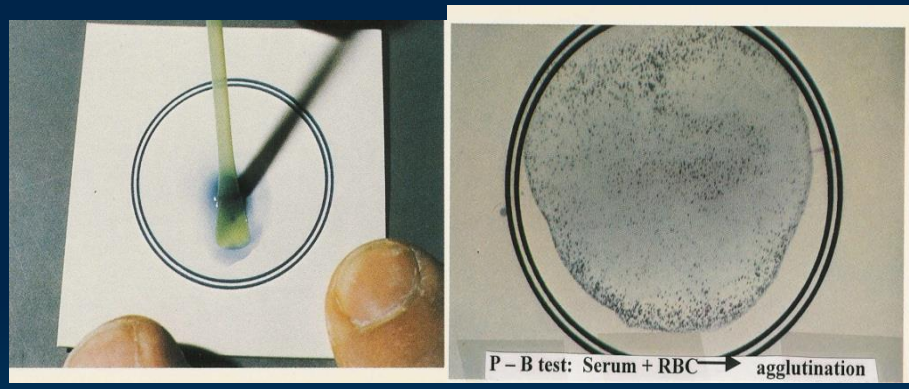
  lymphocytosis

  (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, megalo=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:

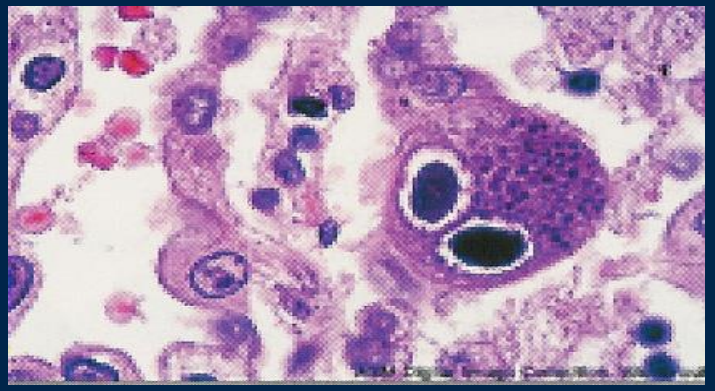
Lab. Dx

CMV

- Histology:

  Intranuclear inclusion bodies

  [Owl's –eye]



- Culture:
  - In human fibroblast

    1-4 wks → CPE
  - Shell Vial Assay → 1-3 days

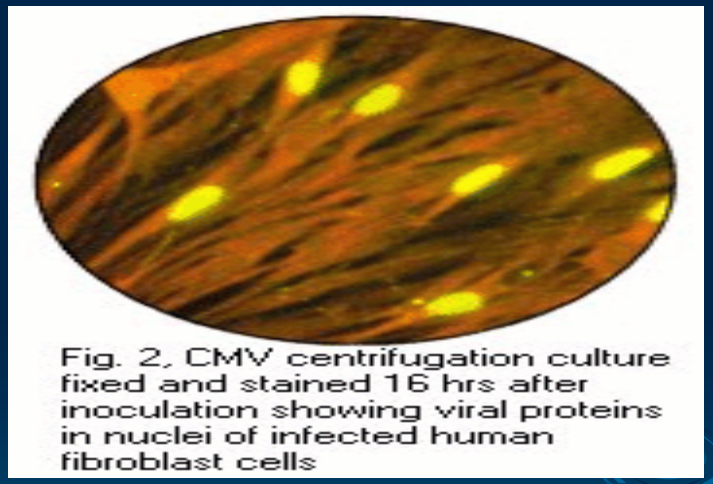


Fig. 2, CMV centrifugation culture fixed and stained 16 hrs after inoculation showing viral proteins in nuclei of infected human fibroblast cells

- Serology:
  - AB → IgM : current inf

    → IgG : previous exposure
  - Ag → CMV pp65 Ag by IFA
- 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 .

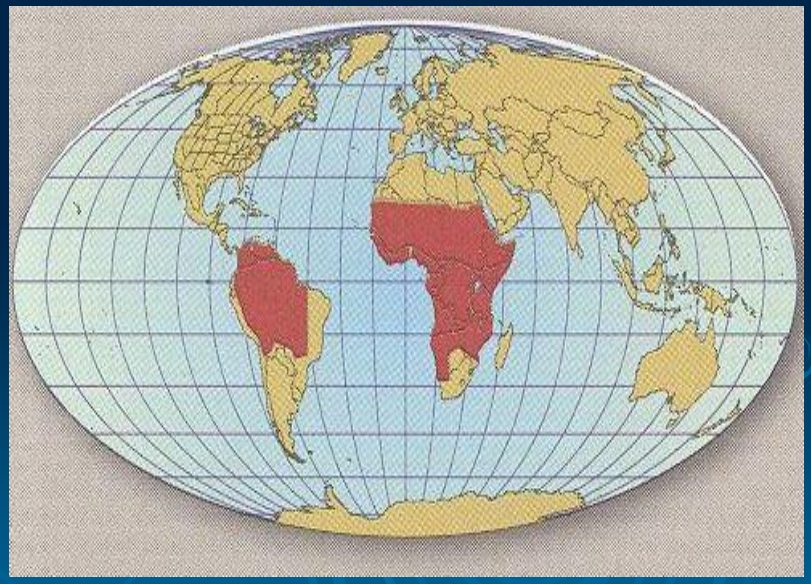
Arthropod –borne Viruses (Arboviruses)

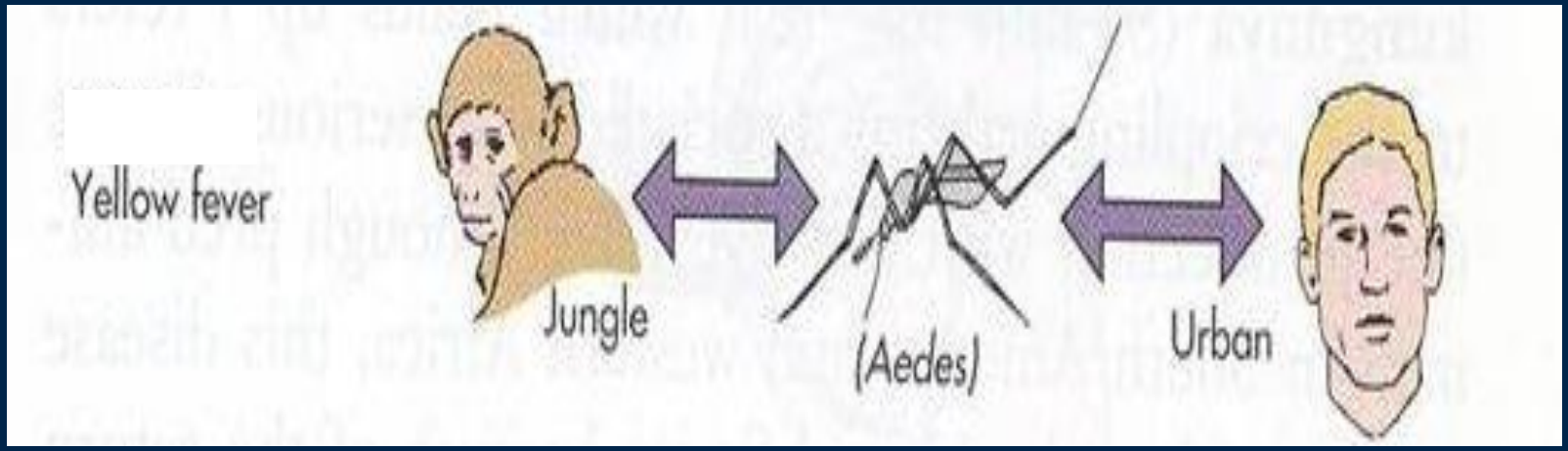
Yellow Fever virus

- 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

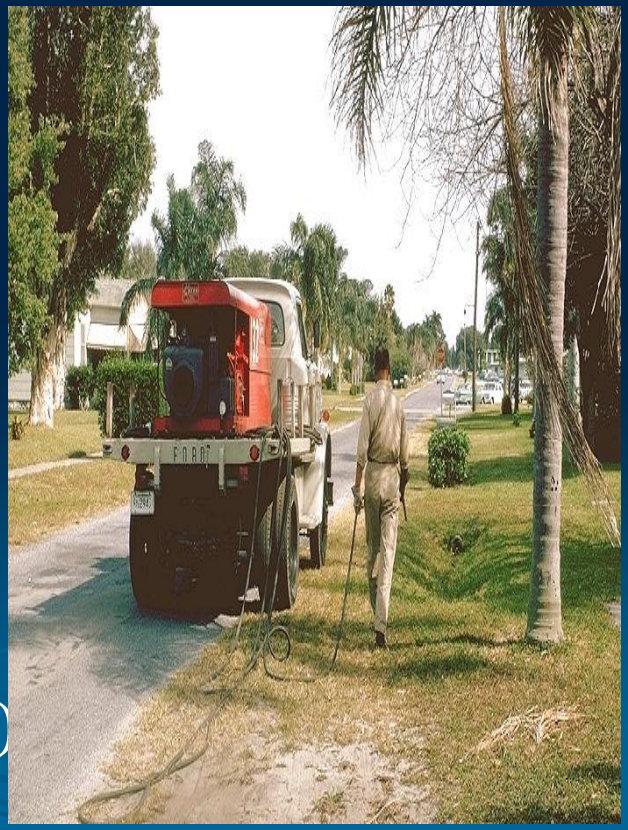
1-Vector Control:

- Elimination of vector breading sites
- Using insecticides
- Avoidance contact with vectors

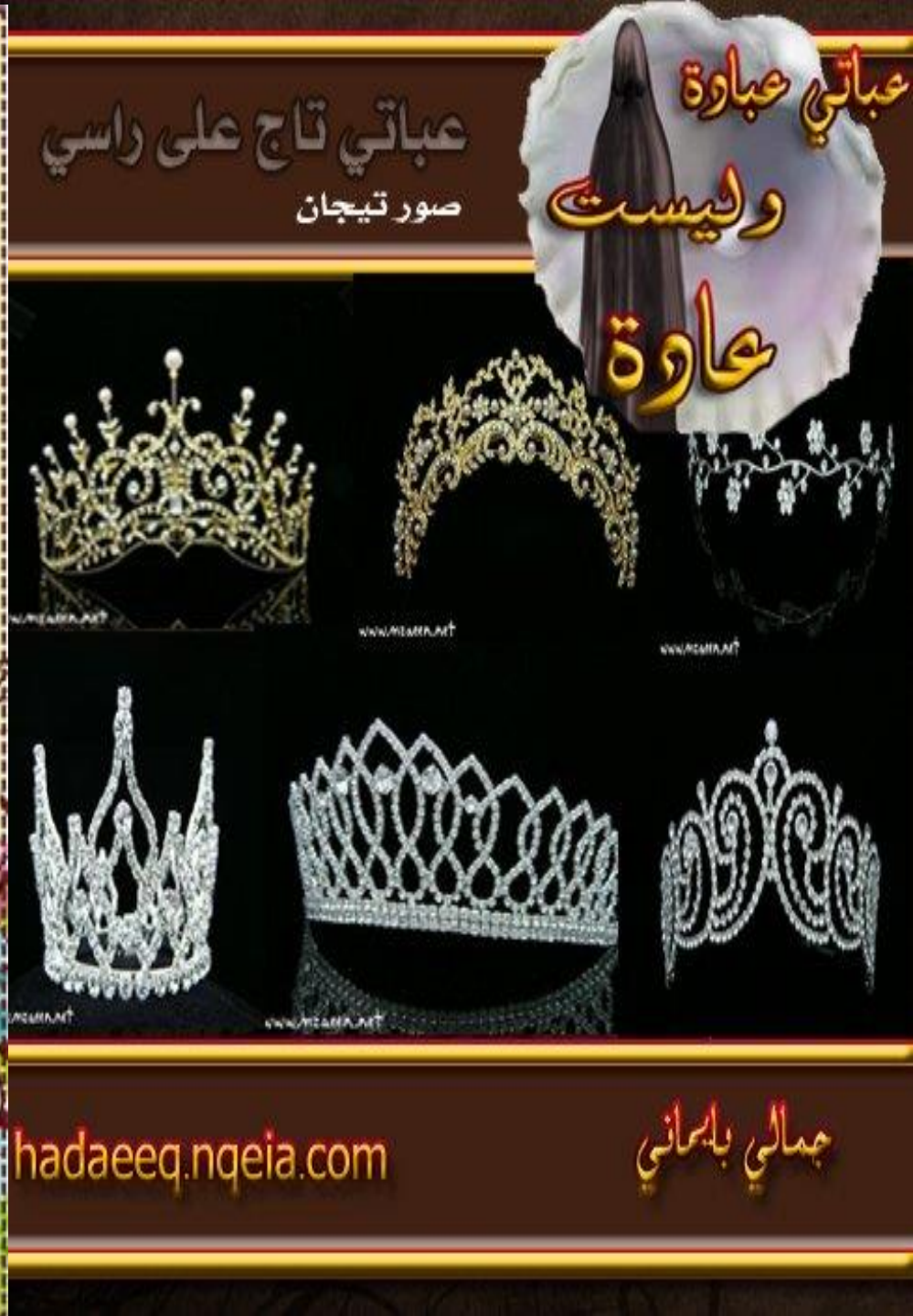
(repellants , net)

2-***Vaccine:***

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




ليكن حجابك
أختي المسلمة ... إذا كانت هذه الشّروط
تتوافر في ملابسك ...
- أن يكون ساترًا للبدن
- ألا يصف ولا يشف الجسم
- ألا يكون زينة في نفسه
- ألا يكون معطّرًا
- أن يكون فضفاضًا واسعًا غير ضيّق
- ألا يشبه ملابس الرّجال
- ألا يُقصد به شهرة بين النّاس
فاعلمي أنّ ....
حجابك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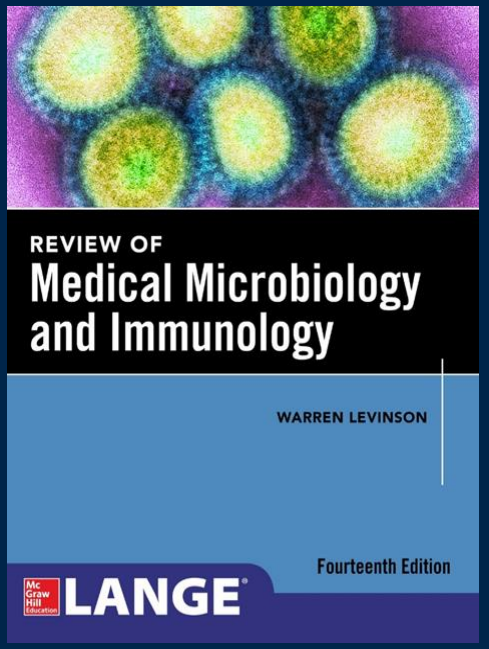

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Thank you