HEPATITIS

- Presence of inflammatory cells in the tissue of organ liver
- Viral cells attack on liver & form abnormal protein MHC-I

[DEPTH OF BIOLOGY]

MAIN REASON:
Liver inflammation

- Now hepatocytes undergo cytoxic **killing by the T-cells** apoptosis which cause liver damage [DEPTH OF BIOLOGY]

#SYMPTOMS- fever, malaise & nausea

- Hepatomegaly : liver abnormally large due to inflammation
- More & more damage in liver cause pain
- Leads to increase of **transaminase** in blood

[DEPTH OF BIOLOGY]

Breaks down various amino acid in blood

- Serum amino transaminase amount in blood is pretty low ; but when hepatocytes start damage [DEPTH OF BIOLOGY]
- Greater amount of both alanine amino transferase or ALT or aspartate amino transferase or AST [DEPTH OF BIOLOGY]

[DEPTH OF BIOLOGY] ***ALT > AST in viral hepatitis***

- Known as a typical level of a typical lymphocyte increase [lymphocytosis]
- Lymphocyte-very large : due to stimulation from antigen
- Leads to jaundice

[DEPTH OF BIOLOGY]

- 5 % U.B. ~~Liver function~~

(urobilinogen)

[DEPTH OF BIOLOGY]

Blood---kidney

yellow colour urine

[increased uribilinogen]

- Symptoms continue or viral infection lasts 6< months
- Then hepatitis goes from acute to chronic
- Here inflammation mostly happens in portal tract

DEPTH OF BIOLOGY

TYPES OF HEPATITIS

5 TYPES OF HEPATITIS

[DEPTH OF BIOLOGY]

1. **HEPATITIS A-** caused by ss RNA [no envelope]; occur when hygiene condition is poor.

It is transmitted through ingestion of contaminated food or water or the ***faecal-oral route*** [DEPTH OF BIOLOGY]

Hepatitis A-virus or HAV is almost acute [no chronic HAV}

Age group affected is mostly children

Incubation period: 10-50 days [DEPTH OF BIOLOGY]

SEROLOGY : diagnosis by sample of blood serum

HAV IgM antibody- active infection

HAV IgG antibody- recovery or vaccination

[DEPTH OF BIOLOGY]

2. HEPATITIS E- very very similar to HAV [ss RNA]

Has same route of transmission; also transmit through undercooked sea food

Acute infection [DEPTH OF BIOLOGY]

Age group affected is mostly young adults

Incubation period: 10-50 days

DEPTH OF BIOLOGY

SEROLOGY : ***HAV IgM antibody-*** active infection

HAV IgG antibody- recovery or signal recovery

NO VACCINATION

[DEPTH OF BIOLOGY]

If pregnant women has very serious condition ;

•This may lead to liver failure also sometimes called fulminant hepatitis

3. HEPATITIS C - ss RNA, enveloped; could be from child birth

Transmission via blood, intravenous drug abuse or unprotected sex

- **ACUTE + CHRONIC**

In chronic HCV CD4 + T & CD9 + T cells are affected

Due to HCV Hepatocytic injury occur which produce antiviral cytokine by T-lymphocyte

TESTS:

A. ***1. ENZYME IMMUNOESSAY:*** HCV , IgG – not protective and not confirmatory [DEPTH OF BIOLOGY]

B. ***2. RECOMBINANT IMMUNOBOLT ASSAY:*** more specificity and less sensitivity ; Not much useful test [DEPTH OF BIOLOGY]

C. HCV RNA TEST [with PCR] : early detection within 1-2 weeks after infection. [DEPTH OF BIOLOGY]

IF Viral RNA in blood decrease it indicate recovery ; if same it indicates chronic

4. HEPATITIS B- [HBV] caused by ds enveloped DNA

Same transmission route as HCV [DEPTH OF BIOLOGY]

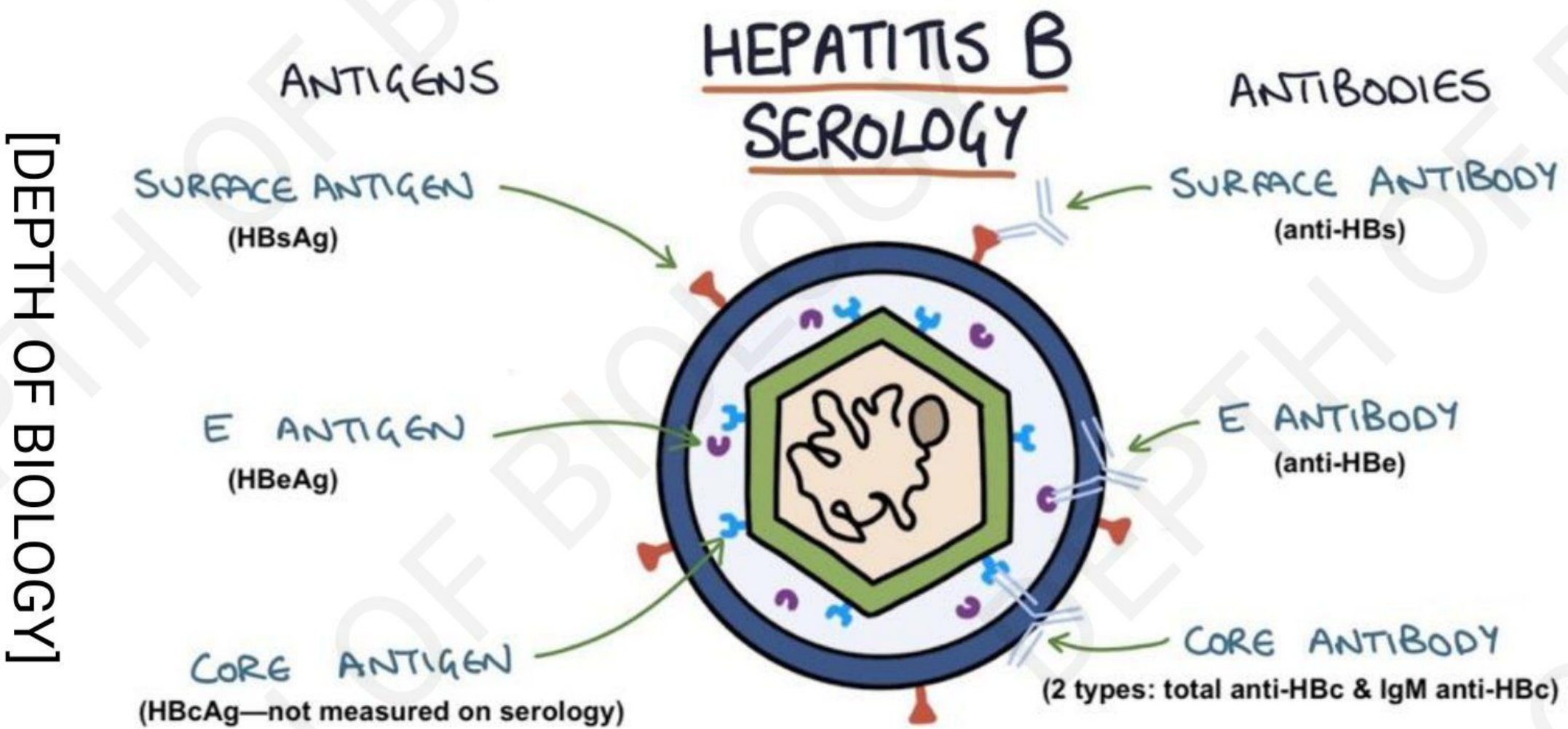
- **ACUTE + CHRONIC-** 20% overall depends on age ; < 6 year old 50% younger more likely

Incubation period: 50- 180 days

- Linked to liver cancer

Can affect any age group

SEROLOGY : key marker is HBV surface antigen



[DEPTH OF BIOLOGY]

E antigen secreted by infected cell- marker of active infection

- our immune system produces IgM antibodies against core infection
- Igm release but fail to defeat core antigen
- IgG body against surface antigen; if IgG are lost our body can`t fight

[DEPTH OF BIOLOGY]

- If this become chronic it may lead to

1.POSTNECROTIC CIRROHSIS

2.HEPATOCELLULAR CARCINOMA

5. HEPATITIS D- caused by direct hytopathic effect on hepatocyte [DEPTH OF BIOLOGY]

- Needs HBV [ss RNA envelope from HBV]
- HDV only infects a host if the host has HBV [DEPTH OF BIOLOGY]
- If both infect at same time then it is called ***CO- INFECTION.***
- ***If HDV infects***

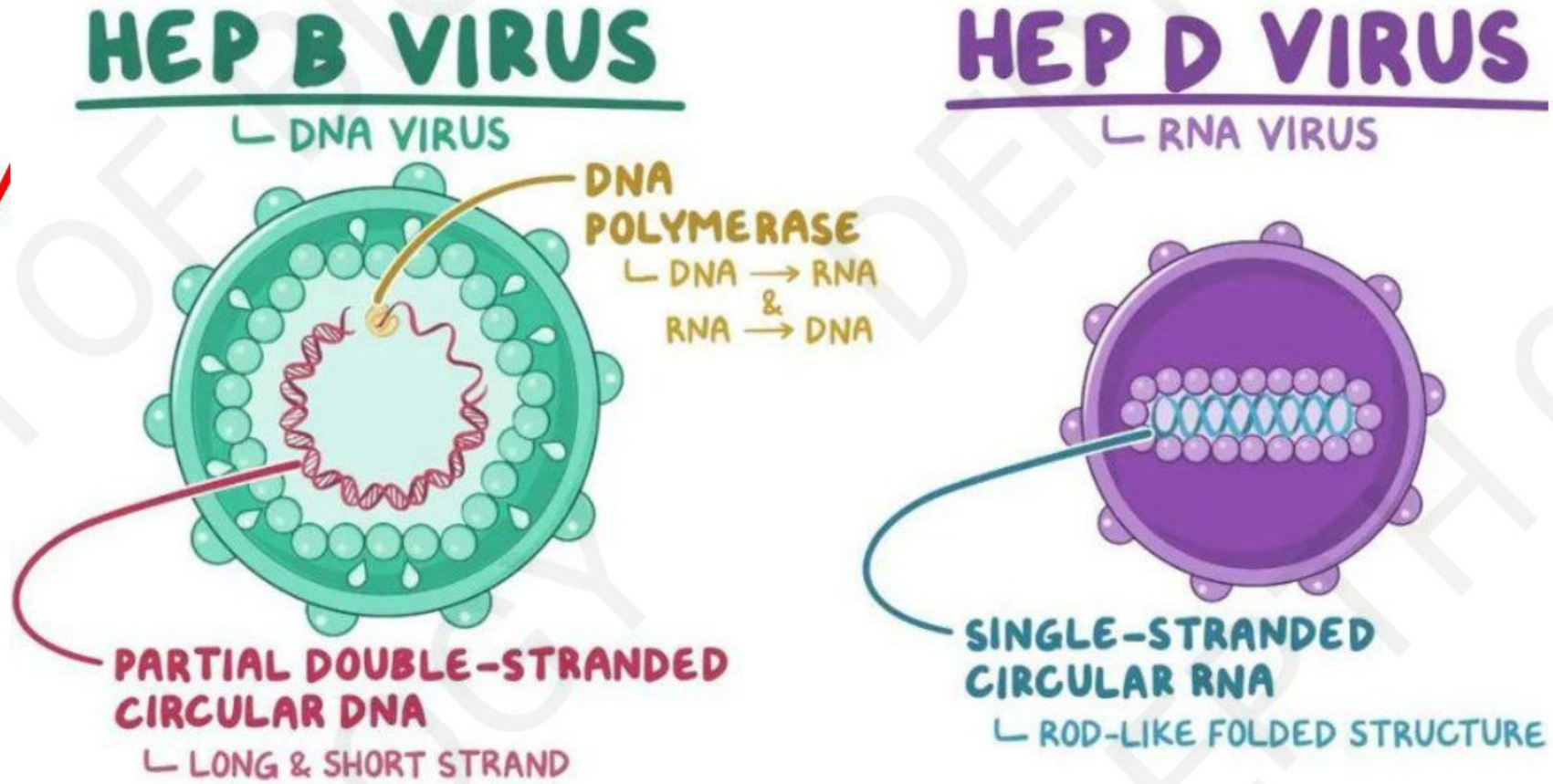
Few days after HBV

Then it is called

Super infection

More severe than

Co-infection



Can affect people of any age

Incubation period: 2-12 weeks

[DEPTH OF BIOLOGY]

TREATMENT OF HDV

1. **Alpha interferon is an effective therapry**
2. **Drug like ribavirin**
3. **Liver transplant**
4. **Can also be prevented by vaccine of hepatitis B**

SEROLOGY : [DEPTH OF BIOLOGY]

1. HDV IgG or IgM indicates active infection

2. Following HBV-HDV super infection [DEPTH OF BIOLOGY]

*in this case IgG is not protective antibody

TYPES OF HEPATITIS

[DEPTH OF BIOLOGY]

1. Viral	3. Drug induced or induced by metabolic disorder	5. auto-immune
2. alcoholic	4. ischemic	6. obstructive

SIGN & SYMPTOM OF HEPATITIS

[DEPTH OF BIOLOGY]

- Jaundice
- Nausea
- Fatigue
- Fever
- hepatomegalin
- Abdominal discomfort & pain
- Dark urine

TREATMENT OF HCV

[DEPTH OF BIOLOGY]

May be considered for patient with chronic active hepatitis. The response rate is around 50 %

RIBAVIRIN
Dose- 800ml/kg

Recent study shows the effect of interferon with ribavirin is more as compared to only interferon alone

No vaccine is available

[DEPTH OF BIOLOGY]

Liver transplant in severe cases

TREATMENT OF HEV

- Pre-regulated alpha interferon treat chronic HEV
- Ribavirin [inhibits replication of HEV]
- Was given 600-800 mg/day in 2 separate doses
- Main side effect of ribavirin is anemia
- After 3 month ribavirin therapy may be undesirable in serum [DEPTH OF BIOLOGY]