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## **Hepatitis A Outbreak in Various Part of India**

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### **ABSTRACT**

Hepatitis A is found after World war II by American virologist Stephen mark feinstone.hepatitis is a viral disease is highly prevalent in developing countries like India.This study is finding outbreaks of hepatitis A in various part of India last 15 years on the basis of previous studies and collected data.

Keywords: Hepatitis A, Viral disease,India

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### **1. Introduction**

#### **Definition**

Hepatitis is caused by (H AV ) hepatitis a virus it is is acute illness to severe illness of liver. Hepatitis a is infectious disease.

#### **Mode of transmission-**

- Fecooral route that is through contaminated food and water ingested
- Direct contact with infectious person (person to person).
- Fomites
- In India by the age of 10 greater than 90% of individual are sero positive
- Infection is very common in developing countries
- systematic hepatitis is more common in adult.
- Asymptomatic symptomatic ratio is 4 :1 adult 20% children.

#### **About virus of hepatitis**

- H a v- species virus
- Order -picorn virales
- Family- picornaviridae
- Genus -hepato virus
- Also called enterovirus- 72

#### **General feature of picorna virus**

- Nonenveloped
- Icohedral capsid
- Single stranded RNA virus
- Replicated in the cytoplasm

#### **Hepatitis a genome**

- Genome encoded in 4 structural capsid protein cricket from a large precursor.
- VP 1toVP 4
- Only 1 serotype

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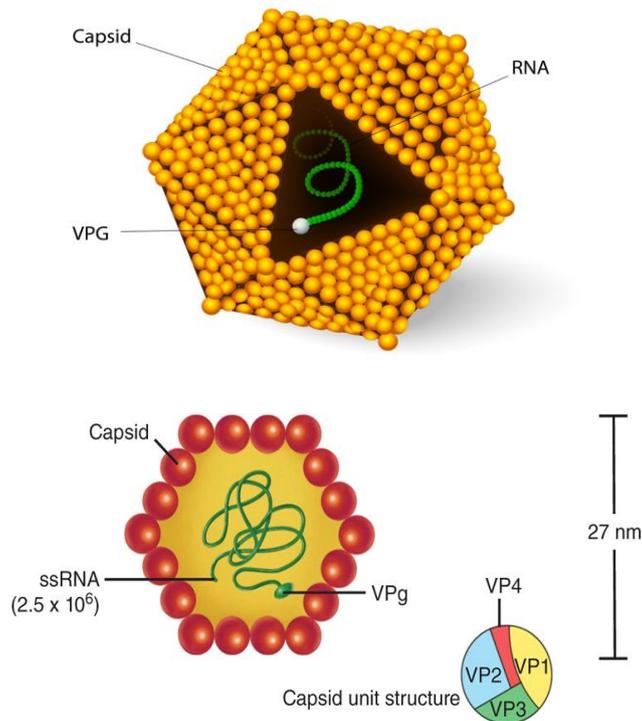
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- 4 genotype=15-25 percentage sequence variation most common genotype 3 a

#### Cultivation

- Only hepatitis virus is cultivated it is easily grown
- On diploid cell MRC-5wI38

## Hepatitis A virus



## 2. Resistance and inactivation of HAV

### Resistance of HAV

- heat at 60 degree from one hour.
- Acid pH upto 3
- Ether + chloroform
- Lipid solvent
- All non enveloped virus are resistant to lipid solvent

### Inactivation of HAV

- Boiling for just minute
- UV rays
- Autoclaving
- Chlorine in a concentrate of 1 PPM after exposure for 30 minutes

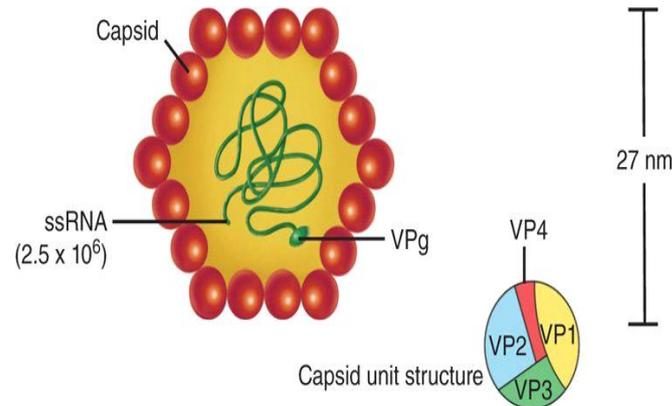
### Pathogenesis of hepatitis a

- Enter from mouth.
- Viral replication in liver g i tract and then it spread to blood aad viral replication in the liver.
- Auto site are infected but no cytopathic effect on hepatocytes has been observed.
- cytotoxic t cells produced during the immunological reaction causes the damage which is repaired infection clear and no chronically develops.
- Acute phase of the the disease IGM antibodies appear diagnostic followed by the appearance of IG g antibodies make the person immune to further infection.

### Pathophysiology

- The entero hepatic cycle will continue until interrupted by antibody neutralization.
- The exact mechanism of replication and secretion is unknown.
- On biopsy acute hepatitis is marked by hepatocellular degeneration infiltrate and hepatocyte regeneration.
- Hepatocellular degeneration occurs as a result of immune-mediated injury and not as a direct cytopathic effect of the virus.
- Cytolytic T cell-mediated hepatocyte lysis eradicates the virus and marks the cellular immune response with raised hepatic enzyme levels.
- HAV infection is usually acute self-limiting; this virus is either reabsorbed or excreted in the stool.

#### Clinical presentation graph



#### Symptoms

- I. Fatigue
- II. loss of appetite
- III. fever
- IV. dark urine
- V. joint pain
- VI. itching
- VII. nausea
- VIII. diarrhoea
- IX. body ache
- X. vomiting
- XI. abdominal pain (right upper quadrant).

#### Causes-

- a. Contaminated water
- b. sex with HIV infected person. polluted water/ sewage water.
- c. Eating raw fish raw dairy product.
- d. Fecal matter of h a v infected
- e. With out hand washing prepare food stuff.
- f. Occupation (daycare)
- g. Parenteral drug use

#### Risk factor-

- a. HIV positive .
- b. Sex with HAV positive without precaution.
- c. Injecting used needle during drug usage.
- d. Sewage system
- e. If you go to countries where hepatitis a is common or more

#### Diagnosis-

- CBC
- Prothrombin time
- U s g
- Anti HAV Igm Elisa. Appear around three weeks as person exposure. Titer high over 4-6 week then decline completely disappear after 4 - 6 month. Anti h a v IGg appeared late but persist for lifelong and provide protection. Lft increase in Bilirubin AST,ALTalkaline for phosphate. Increased PT / AP TT. Decrease in total protein albumin

#### Differential diagnosis-

- Alcoholic hepatitis
- Autoimmune hepatitis
- Cutaneous manifestation hepatitis c
- Hepatitis pregnancy
- Viral hepatitis

#### Course of disease

Following the infection in the intestinal epithelium

- Reaches liver by hematogenous route.
- Viremia faecal shedding infectively (only in preicteric jaundice last for 3 to 6 months)

#### Antibodies

- IGM antibodies appear in acute phase when the patient has jaundice last for 3 to 6 months.
- Igg antibodies appear during convalescence. Persist lifelong
- Provide protective immunity

#### Disease course

- General patient develop mild hepatitis.
- Resolve in 1 to 2 weeks no chronic complication.
- Fulminant hepatitis is rare only 40% of patient.
- Chance of fulminant hepatitis more in prior HB / HCV infection.

#### Treatment

- Supportive therapy
- New antiviral agent direct-acting antiviral (DAAs) targeting (HTAS) example sofosbuvir, interferon Lambda, acetaminophen, antiemetic metoclopramide.
- Supportive therapy according to patient.
- Dietary changes. Avoid alcohol
- Get some rest

#### Vaccine hepatitis a

- Formalin inactivated viral vaccine
- Grow in human diploid cell lines
- Children after 1 year of age 2 doses 6 months apart
- Protection starts after 4 weeks of completion of vaccination.
- Immunity for at least 20 years
- (Havrix, Vaqta): Prophylaxis -post exposure
- All non vaccinated contact (household/ sexual /institutional/ contact)
- Should receive immunoglobulin
- Effective in preventing diseases as late as two weeks after exposure.

#### Complication-

- Fulminant hepatitis -sudden severe onset of hepatitis very painful.
- Cholestatic hepatitis- liver inflammation due to arrested by excretion.
- Relapsing hepatitis -liver inflammation occurring after recovery.

#### Preventions

- Good hygiene always wash hand before preparing food stuff handling food.
- always wash your hands after toilet or going to washroom with soap
- or changing diaper.
- Don't drink water from contaminated source example tap water.
- Don't eat any raw unpasteurized food product or dairy product meet fish.
- Sex with precaution.
- Don't use Used needle.

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### 3. Method of Study

**Outbreaks of hepatitis a virus** in different part of India

**Shimla** Himachal Pradesh during January to March 2007

**Punjab** in Bhatinda 2012

**Uttarakhand** 2013

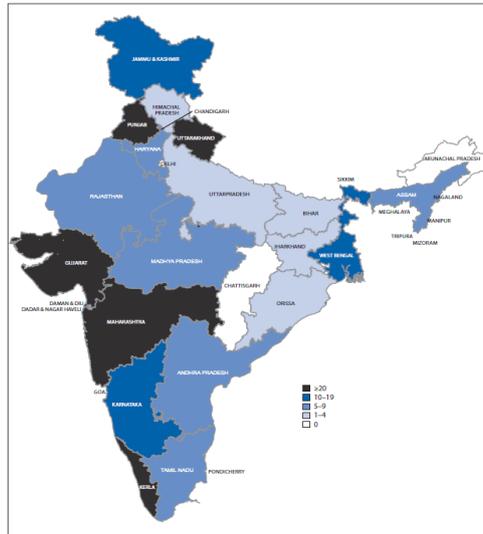
Kerala **Mylapore** village Kollam district February to June 2013.

**Delhi** Maulana Azad medical college girls hostel January 2014

**Aligarh** Uttar Pradesh during June to August 2019s

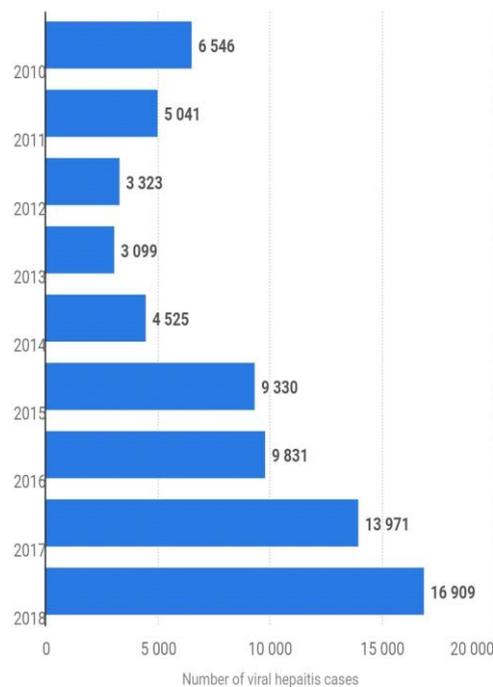
Kashmir 2015 to 2017 hepatitis outbreak in **Baramulla** region.

as we know hepatitis a virus is consider to be mostly by faecal-oralroute in developing countries like India so the main problem is water as sometime sewage water mixed in drinking water due to leakage of pipe or sometimes due to improper dumping areas due to factory contamination



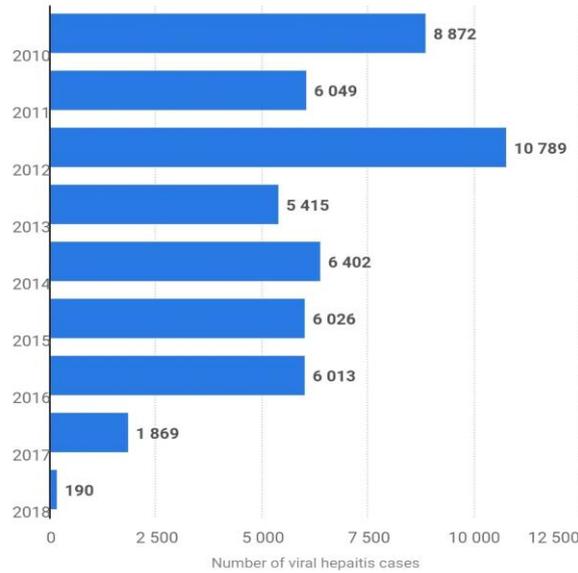
**Statistical comparison of various part of India effected with hepatitis a.**

As in Punjab the western part of India in 2018(16000)approximately from that 13000 viral cases 2017 there is a increase in this type of cases.



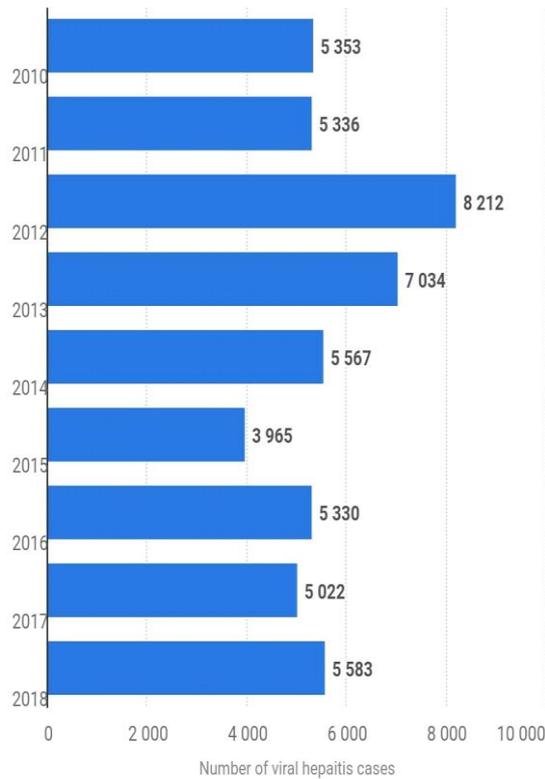
Uttar Pradesh in 2018 around 24000 suffered from this infection 20000 viral hepatitis 2017 from 2010

Karnataka southern part of India in 2018(190)cases which is down by 1.8 thousand viral hepatitis cases in 2017 from 2010.



Madhya Pradesh Central part of India in this in 2018(7000) cases which is down from 17000 viral hepatitis cases in 2017 . In 2017 Madhya Pradesh recorded highest number of cases.

Kerala South part of India in this 2018 recorded 5500 cases which is 500 cases increased as compared to 2017 in this state in 2012 recorded highest number of cases.



Uttarakhand in 2018 (8000)cases were reported as compared to 2017 the number of cases decreases in 2017 cases 10000

Maharashtra in 2018( 9000) cases as compared to 2017 6000 there is a increase in 2018 . highest number of cases were recorded in in 2016.

Delhi capital of India in 2018 reported 12000 cases violin 2017 13000 the highest number of cases were recorded in 2017

Andhra Pradesh in 2018 reported 8000 cases are reported 2017 reported 7000 there is a increase in cases in 2018 highest number ofwas recorded in 2011.

#### 4. Conclusion

Changing face of India in hepatitis a virus in different part. So main worry is about quality of drinking water. as we cannot check the quality of drinking water so this infection occurs but in day to day life it is difficult to check the quality of water as on group of people cannot afford quality check of water by themselves so for this.

- We use clean drinking water .
- Cleaning of sanitary sources so that contaminated water not reached to drinking water sources.
- Use of treatment plant for sewage water to reduce.
- Cleaning of water tank / supply tank proper chlorination.
- Vaccination for children and adult this type of measures may help to reduce the case of HAV and outbreaks.

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