## Key Statistics and Gender Ratios in GI and Liver Diseases

### Liver Anatomy & Physiology.

Normal liver weight: 1400–1600 grams (~2.5% of body weight).

Blood supply to the liver:

Portal vein: 60–70%.

Hepatic artery: 30–40%.

### **Liver Failure Threshold:**

# Liver failure occurs when 80–90% of hepatic function is lost.

<u>Massive Hepatic Necrosis (Fulminant</u> <u>Liver Failure):</u>

### Viral hepatitis causes: 50–65%.

Drugs and chemicals: 20–30%.

<u> Alcoholic Liver Disease – Prevalence:</u>

Among chronic alcohol drinkers:

Hepatic steatosis (fatty liver): 90–100%.

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Alcoholic hepatitis: 1–35%.
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Cirrhosis: 14%.

Each hepatitis episode  $\rightarrow$  10–20% risk of death.

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Progression to cirrhosis in ~33% (1 in 3).
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Hepatocellular carcinoma (HCC) occurs in 3–6% of cirrhotic cases.

Only 8–20% of alcoholics develop cirrhosis.

**Alcohol Blood Levels:** 

Legal driving limit: 80 mg/dL.

Coma: 200 mg/dL.

Death: 300-400 mg/dL.

Chronic users may tolerate up to 700 mg/dL due to enzyme induction.



# Normal thoracic duct lymph flow: 800–1000 mL/day.

In cirrhosis: up to 20 L/day.

## **Fulminant Hepatitis – Cause Ratios:**

# HBV is 2x more common than HCV in fulminant cases.

**Gastroesophageal Varices:** 

#### Present in 65% of advanced cirrhosis patients.

#### Cause death in 50% of those affected due to upper GI bleeding.

**Splenomegaly:** 

Enlarged spleen weight: 500–1000 grams (normal <300 g).

*Fulminant Hepatitis:* HBV is more common in males *Alcoholic Liver Disease:* 

Women are more susceptible to alcohol-related liver damage  $\rightarrow$  due to lower gastric alcohol dehydrogenase activity. → Results in higher blood ethanol levels compared to men drinking the same amount.

Autoimmune Hepatitis

Affects females in 70% of cases.

80% of patients have high levels of autoantibodies.

60% have associated autoimmune diseases (like RA, thyroiditis, UC, etc.).

**Risk of developing cirrhosis is about 5%.** 

<u>Hemochromatosis</u>

75–80% of patients develop diabetes and skin pigmentation.

80% of affected patients are homozygous for the C282Y mutation.

Carrier rate for C282Y mutation is 1 in 70.

Homozygous frequency is 1 in 200.

Symptoms appear after age 40.

<u>Wilson Disease</u>

# The defective gene is found in 1 in every 200 people.

**Disease incidence is about 1 in 30,000.** 

Copper overload in the liver is diagnosed when levels exceed 250 mg/g dry weight

#### **Alpha-1 Antitrypsin Deficiency**

Found in 1 in 7,000 white North American individuals.

90% of people have the normal genotype (PiMM).

Only 10% of PiZZ individuals (the disease genotype) develop liver disease.

10–20% of affected newborns show neonatal hepatitis.

2–3% of PiZZ adults develop liver cancer.

**Reye Syndrome** 

25% of affected children may fall into a coma.

**Primary Sclerosing Cholangitis (PSC)** 

70% of PSC patients also have ulcerative colitis (UC).

4% of UC patients develop PSC.

10–15% of PSC patients develop cholangiocarcinoma (bile duct cancer).

**Primary Biliary Cirrhosis** 

# More than 90% of patients have antimitochondrial antibodies.

### Sinusoidal Obstruction Syndrome (aka veno-occlusive disease)

Happens in 20% of allogeneic bone marrow transplant recipients.

Hepatocellular Carcinoma (HCC)

Makes up 5.4% of all cancers worldwide.

**Incidence by region:** 

Less than 5 per 100,000 in North America, Europe, Australia.

15 per 100,000 in the Mediterranean.

36 per 100,000 in East Asia and parts of Africa.

HBV-related vertical transmission increases risk by 200 times.

85–90% of HCC cases in the West are associated with cirrhosis.

Alpha-fetoprotein (tumor marker) is elevated in 60–75% of HCC cases.

Autoimmune Hepatitis

Female predominance (70% of cases).

So ratio is about 1 male : 2.3 females.

**Hemochromatosis** 

Male to female ratio is 5 to 7 males for every 1 female.

More severe in males, appears around the 5th–6th decade of life.

Primary Sclerosing Cholangitis (PSC)

Male to female ratio is 2:1.

So it's twice as common in males.

**Primary Biliary Cirrhosis (PBC)** 

Clearly more common in women than men.

Hepatocellular Carcinoma (HCC)

In low-incidence regions: Male to female ratio is 3:1.

In high-incidence regions (Asia, Africa): Male to female ratio jumps to 8:1.

**Fibrolamellar Carcinoma** 

Equal male and female distribution (1:1 ratio).

Typically affects young adults.