

Overview of Liver Disease



The liver is a big organ hence also a big topic – here is a clinically orientated breakdown of liver disease with the Rule of 3!

3 Stages of Liver Disease

1. Fatty liver

Fat build-up in hepatocytes. Reversible if the underlying cause is addressed.

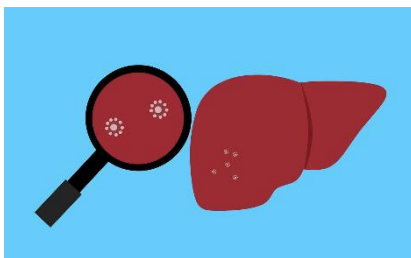
2. Liver fibrosis

Inflammation & scar formation. Potentially reversible esp. at the earlier stages.

3. Liver cirrhosis

Advanced fibrosis with irreversible distortion of normal liver architecture.

Important points



Decompensation usually occurs when liver cirrhosis has been reached.

Fibro Scan is a useful non-invasive test for detecting liver disease stages.

Not every liver disease starts with fatty liver. Hepatitis such as viral or autoimmune can start from fibrosis. A lot of patients we encounter in hospital have already progressed to fibrosis or cirrhosis by the time they are investigated.

3 Aetiology of Liver Disease

1. Alcohol related Liver Disease (ALD)

Most common type presenting to hospital and the leading cause of morbidity & mortality from liver disease.

2. Metabolic-dysfunction Associated Steatotic Liver Disease (MASLD)

Increasingly on the rise – refers to liver disease resulting from metabolic disorders such as T2DM, obesity, high cholesterol, HTN.

3. Specific Aetiology Related Liver Disease

Accounts for <10% of total liver diseases and what the non-invasive liver screen tests for. Specific aetiologies are:

- *Viral hepatitis*
- *Autoimmune hepatitis, PBC*
- *Hereditary haemochromatosis*
- *Wilson's disease*
- *Alpha anti-trypsin deficiency*
- *Hepatocellular carcinoma*
- *Primary Sclerosing Cholangitis (PSC – characteristically c-ANCA +ve)*

Mixed Alcohol and Metabolic Dysfunction Related Liver Disease (MetALD)

A relatively new diagnostic category which recognises the overlap between alcohol and metabolic-related drivers (so strictly speaking not a new aetiology!)

Clinical Signs of Chronic Liver Disease

Starting from hands down to the abdomen (unfortunately not the rule of 3...)

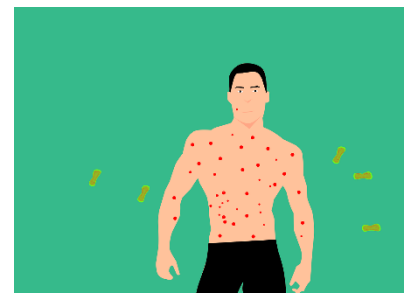
Hands – palmar erythema, Dupuytren's contracture, leukonychia

Arms – bruises, scratch marks / excoriations

Face – jaundice, xanthelasma

Chest – spider naevi, gynaecomastia

Abdomen – hepatomegaly, splenomegaly, ascites, caput medusae



3 Clinical Signs of Decompensated Liver Cirrhosis (AAA)

1. **Asterixis**
Liver flap
2. **Ascites**
Distended abdomen with shifting dullness
3. **Altered consciousness**
Hepatic encephalopathy divided into grades 1-4

Important points

Clinical features of **liver decompensation should raise strong suspicion of cirrhosis** even if previous imaging has not shown it.

Above signs do not automatically indicate liver decompensation. Flap means organ failure (e.g. uraemic flap = renal failure, CO₂ retention flap = respiratory failure), ascites can be malignant or infective and encephalopathy can be uraemic, drug related or metabolic. **Interpret in the clinical context!**

In decompensated liver failure – any of the liver blood tests can be deranged. All of them or only one of them! Although, high INR & bilirubin is typical. So do not expect a full house and do not rule out decompensation just because only the albumin is low.

Virtually anything that makes the **body unhappy can precipitate liver decompensation** (e.g. infection, constipation, dehydration, electrolyte disturbance). This is why liver cirrhosis is so dangerous!

3 Useful Tests in Liver Decompensation

1. USS abdomen with portal dopplers
Assess liver disease, ascites and splenomegaly. Excludes portal vein thrombosis. Esp. important if considering drain and anticoagulation.
2. Ammonia level
Hepatic encephalopathy (HE) remains a clinical diagnosis. Elevated ammonia may support the diagnosis and a normal ammonia may prompt reconsideration of the diagnosis.

3. EEG

Can support HE diagnosis although the West Haven grading criteria is used clinically to grade severity of HE. Can help identify other causes of encephalopathy.

3 Managements in Liver Decompensation

1. Treat the underlying cause
2. Strict bowel care inc. lactulose
3. Manage ascites with spironolactone +/- drain

3 Complications of Decompensated Liver Cirrhosis

1. Variceal haemorrhage

Main difference to the treatment of a non-variceal UGI bleed is the addition of IV terlipressin and antibiotics (urgent OGD as varices tends to be fast bleeds).

2. Spontaneous Bacterial Peritonitis (SBP)

Ascitic tap before IV antibiotics is commenced.

3. Hepato-renal syndrome (HRS-AKI)

Human Albumin Solution (HAS), IV terlipressin and TIPPS procedure can be used but generally prognosis is poor unless liver transplantation is considered.

Important Points

The mortality rate for all 3 complications is very high.

There is no specific sign/s that diagnoses each complication – it is a foremost a clinical diagnosis. **Most importantly, look for signs of chronic liver disease and acute liver decompensation – if there is an UGI bleed or tender ascites or AKI in this context then have a low index of suspicion!**

Risk balance of treatment (for & against approach) – e.g. risks of IV terlipressin if there are relative contraindications to splanchnic vasoconstriction (i.e. increased risk of

ischaemia) or risks of HAS as it causes intravascular expansion hence risk of fluid overload or pulmonary oedema esp. if pre-existing heart failure.

Consider ITU / HDU – remember the liver and the brain are organs too!

To conclude the topic of liver disease, the following are useful indications when interpreting LFTs (i.e. do not default straight to an USS!)

3 main causes of Raised ALP

1. Liver
liver disease as discussed above.
2. Biliary
i.e. obstructive (esp. with raised bilirubin & ALT) or infective (i.e. cholecystitis or cholangitis)
3. Bone
i.e. metastatic spread to the bone, myeloma, sarcoma, osteomyelitis, Paget's, osteomalacia (vitamin D deficiency) – interpret in the clinical context!

3 main causes of Raised ALT

1. Drug
e.g. antibiotics, anti-epileptics, statins, NSAIDs, chemotherapy, amiodarone
2. Viral / Autoimmune
Look for risk factors and suggestive clinical features
3. Ischaemic
Hepatic hypoperfusion from hypotension resulting in ischaemic hepatitis

3 Useful Add-ons

1. AST – if raised in 2:1 ratio with ALT – characteristic of alcoholic hepatitis
2. GGT – marked rise could indicate biliary or liver pathology
3. LDH – if raised in 1:1.5 ratio with ALT – characteristic of ischaemic hepatitis