



Abnormal Liver Function Tests

SANDHIA NAIK

CONSULTANT PAEDIATRIC GASTROENTEROLOGIST

ROYAL LONDON HOSPITAL

What are LFTs

LFTS

- ▶ ALT-Alanine Transaminase
- ▶ AST-Aspartate Aminotransferase
- ▶ GGT- Gamm glutamyl transferase
- ▶ ALP-Alkaline Phosphatase
- ▶ Bilirubin
- ▶ Albumin

- ▶ INR

Source

- ▶ Hepatocytes
- ▶ Hepatocytes and Muscle
- ▶ Biliary Epithelium and Hepatocytes
- ▶ Liver, kidney and Bone
- ▶ Haem pigment
- ▶ Synthesized by Liver, excreted by kidney and gut
- ▶ Extrinsic pathway coagulation

Clues in History and Examination

History

- ▶ NB Age at presentation
 - ▶ Eg Neonatal Jaundice different work up to age 10
- ▶ Fever
- ▶ Jaundice or Bruising
- ▶ Fatigue
- ▶ Change Bowel
- ▶ Itch
- ▶ Travel
- ▶ Family History
- ▶ Alcohol and Lifestyle

Examination

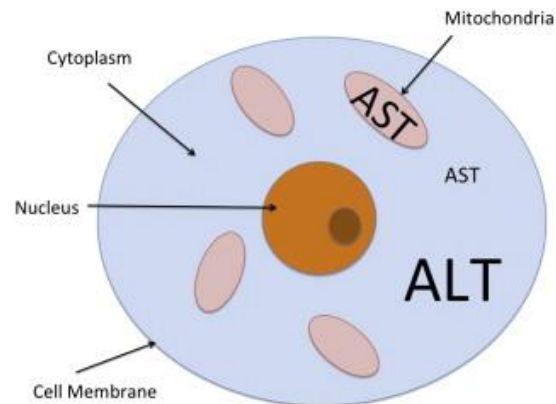
- ▶ Septic
- ▶ Dysmorphism
- ▶ Visualise stools in babies
- ▶ Cardiac Murmur
- ▶ Jaundice +/-Scratch marks
- ▶ Haemangioma
- ▶ Abdo exam- Hepatosplenomegaly

- ▶ **May be normal**

Hepatic v Biliary v Decompensated

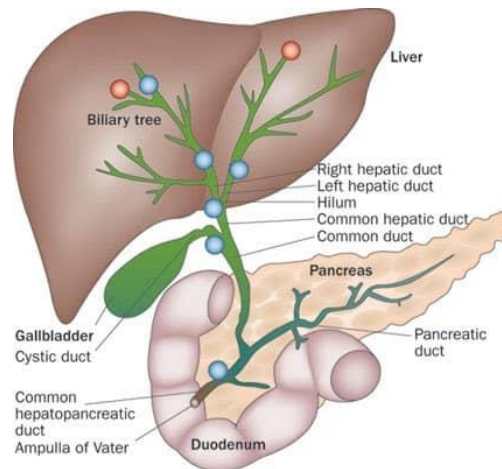
Hepatic

ALT AST



Biliary

ALP GGT BILI



Synthetic Function

INR Albumin



Usual Initial Investigations

- ▶ REPEAT full LFTS
- ▶ Clotting
- ▶ FBC + Retics
- ▶ Split bilirubin if jaundice
- ▶ U & Es
- ▶ Blood Cultures
- ▶ Urine Cultures
- ▶ Urine- reducing substances
- ▶ Blood Glucose Pre feed
- ▶ Liver USS

Case 1

- ▶ Age 4 Recurrent Abdo Pain looks well No Fam History of note
No Past Medical or Surgical History of note
- ▶ Raised ALT /AST /Normal Bili
- ▶ Choose One blood test to do next?

A GGT B Blood Cultures C INR D Creatine Kinase

Case 2

- ▶ Age 8 Cerebral Palsy Wheelchair dependent /Seizures /Gastrostomy feed dependent. Attends for routine annual nutritional bloods
- ▶ Raised ALT/AST
- ▶ Normal Bili Albumin INR and Vit D, Normal Nutritional Screen

- ▶ Most likely diagnosis?

A Autoimmune B DILI –drug induced liver injury C Viral Hepatitis D NAFLD

Case 3

- ▶ Age 14 Male. Saw GP for severe acne. Had LFTS before starting treatment
- ▶ Normal ALT ALB ALP
- ▶ Bili raised 35
- ▶ Gp refers in to paed's as flagged as high bilirubin

Diagnosis?

A Hep A B Gilberts C Drug Induced D Hep B

Not Liver Pathology?

Common when LFTs ticked as 'baseline'

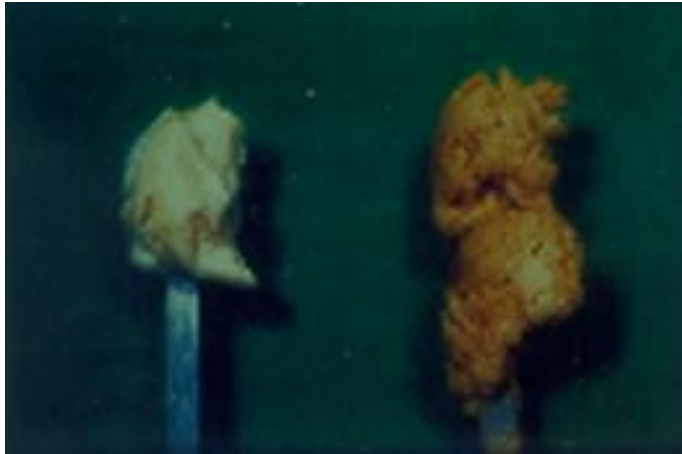
- ▶ Drug Induced
- ▶ Isolated ALP
 - ▶ Growth
 - ▶ Vitamin D deficiency
- ▶ Isolated Bilirubin
 - ▶ Gilberts
 - ▶ Crigler Najjar
 - ▶ *nb* Haemolysis
- ▶ High AST
 - ▶ Muscular Dystrophy/Neurodegenerative disorders

Case 4

- ▶ Age 11 GP referral for raised ALT .Past history Constipation
 - ▶ Most is the most common liver disease in children in UK?
- A DILI (includes paracetamol overdose)
 - B Viral Hepatitis
 - C Biliary Atresia
 - D Autoimmune
 - E NAFLD

Case 5

- ▶ 4 week old breast feeding well
- ▶ Raised BILI ALP ALT AST GGT



- ▶ What is diagnosis?

- A Cystic Fibrosis
- B EHBA
- C IFALD
- D Alagille's
- E All of above

Case 6

- ▶ Age 10
- ▶ Abdo pain and fatigue
- ▶ Raised ALT AST
- ▶ Normal Bili
- ▶ Normal Albumin
- ▶ Normal ALP

▶ What is diagnosis?

- A Autoimmune
- B Viral Hepatitis
- C NAFLD
- D Wilsons
- E All of above

Liver Pathology

WIDE SPECTRUM

- ▶ Fatty Liver Disease
- ▶ Infection
 - ▶ Viral /Bacterial/Parasites
- ▶ Drug Induced
- ▶ Cholestatic Disorders- Extra or intra hepatic
 - ▶ EHBA IFALD Alagille
- ▶ Autoimmune
- ▶ Metabolic
 - ▶ eg Wilson A1AT Tyrosinaemia Galatosaemia
 - ▶ Organic acidaemias
 - ▶ Urea cycle defects
- ▶ Genetic

Avoid Disease Progression

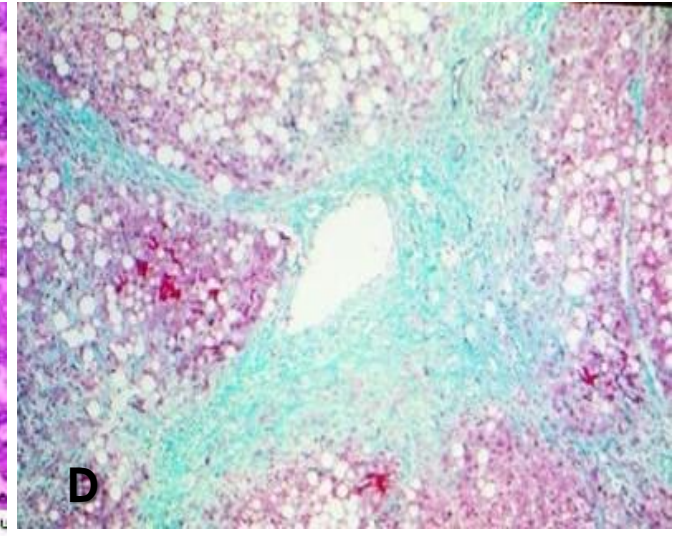
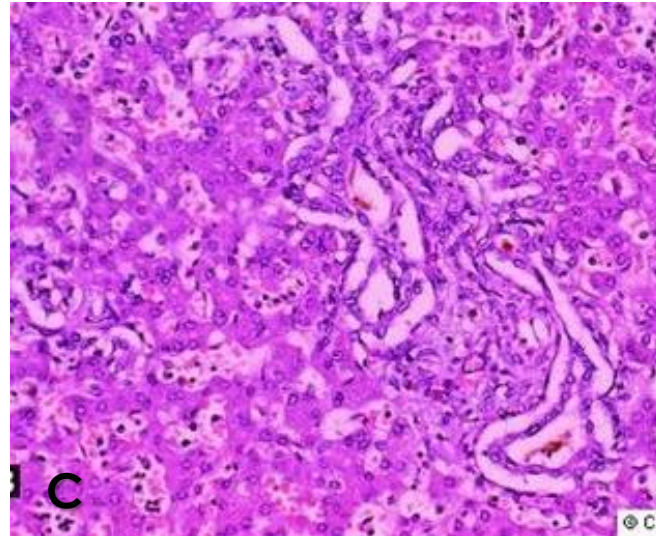
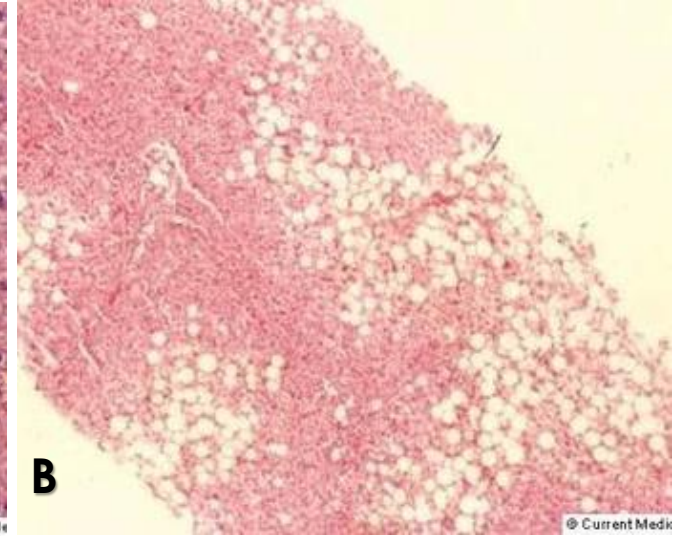
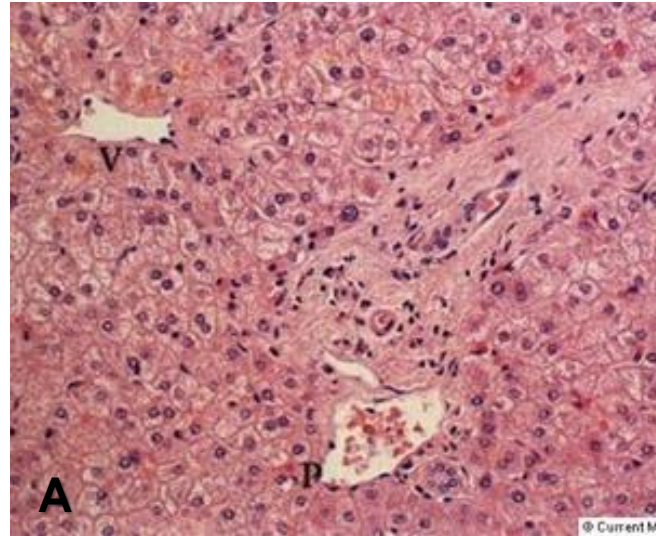
A Normal

*B Steatosis

C Fibrosis

D Cirrhosis

*B is reversible



Summary

- ▶ LFTS not always Liver
- ▶ Paediatric Hepatology – wide spectrum
- ▶ Exclude Sepsis
- ▶ Correct Coagulopathy

- ▶ Fatty Liver disease now most common cause high ALT

- ▶ **Structured work up according to clinical presentation**
- ▶ **Early discussion with PGHAN**