What to do with abnormal LFTs?

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Hepatobiliary Surgeon
"it looks like there's something wrong… 
....with your television set."

Matt Groenig, creator of The Simpsons
# Probability of an abnormal screening test result

<table>
<thead>
<tr>
<th>Number of independent tests</th>
<th>Probability of abnormal test (%)</th>
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<tbody>
<tr>
<td>1</td>
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<td>2</td>
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<td>20</td>
<td>64</td>
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<td>50</td>
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Normal Bilirubin Metabolism

RBC

Hb Degraded to Globin + Fe + Bilirubin

Hepatocyte

Conjugated Bilirubin Diglucuronide

Portal Vein

Urobilinogen

Kidney

Urobilinogen

Intestine

Bilirubin

Urobilinogen

Stercobilin
Liver Function Tests

- ALT & AST indicate liver cell necrosis
- ALP indicates cholestasis (may or may not be obstruction) or bone disease
- Conjugated bilirubin - suggests liver disease

Rule 1
Repeat any abnormal tests before action
History

‘most important part of the evaluation of the patient with abnormal LFTs’
Persistence of deranged LFT

- Full history and assess risk factors
- Alcohol intake 28 units/21 units
- Foreign travel, especially medical Rx abroad, IVDU, high risk sexual activity
- Drug history, including herbal remedies
- Family history
- Symptoms - RUQ pain, pruritus, dark urine
- Signs: SCLD, Ascites=v.compromised liver function
Examination -1

1. Clinical signs - most apparent in alcoholics

- Palmar erythema
- Spider naevi
- Pseudo Cushings
- Splenomegaly
- Dupuytrens
- Clubbing
- CREST
- Jaundice, ascites
Examination - 2

2. Obstructive Jaundice

- Temp
- Tachycardic +/- hypotensive

- Cachexia, Virchow’s node, clubbing
- Courvoisier’s law ‘If in the presence of jaundice the gallbladder is palpable then the cause of the jaundice is unlikely to be gallstones’

- Murphy’s sign
- Urine

3. Investigate persistently abnormal LFTs

4. Ultrasound scan in most cases is appropriate
How to deal with an abnormal GGT

Rule 2

Do not check GGT

- Extremely poor specificity for disease
- Occasionally may help to follow alcoholics, but there are still problems, such as duct obstruction in pancreatitis
How to deal with an abnormal GGT - 2

CONSIDER (before any thoughts of liver disease)

• Enzyme inducing drugs
• Alcohol
• Sporadic elevation of GGT of u/k cause
• GGT higher in males than females
• GGT high in neonates and infants
Raised GGT in non-hepatic disorder 3

• BUPA screen: 15% males exceeded ULN

• 4% greater than 2 x ULN

• Non hepatic causes of raised GGT:
  Obesity
  Anorexia
  MI, pancreatic disease, hyperthyroidism
  Sporadic
How to deal with an abnormal GGT - 4

• If high GGT persists - requires investigation

• Elevated GGT may reflect focal liver lesion and hence **USS required**

• GGT is elevated in virtually all forms of parenchymal liver disease

• High sensitivity
• LOW SPECIFICITY
there’s never a metal thief around when you need one
ALT and AST

• Debate as to relative merits of ALT & AST
  ALT more sensitive & specific

• AST has many non hepatic sources:
  Myocardium, skeletal muscle
  Kidney & pancreas
  Red blood cells

• No method of differentiating source of AST

  Rule 3
  Use ALT
How to deal with an abnormal ALT - 1

History:

• Alcohol intake
• Diabetes
• Drugs: legal/other
• Transfusion
• Family & Social history

• ALT/AST ratio may be useful in alcoholics, since AST > ALT, in contrast to other forms of liver disease
How to deal with an abnormal ALT - 2

Examination:

- Stigmata of chronic liver disease
- Liver and spleen size
- Obesity
- Heart failure
Abnormal ALT - 3

Investigations:

- Prothrombin time, Albumin
- Hepatitis B and C
- Autoantibodies & Immunoglobulins
- Alpha-anti-trypsin / Cu studies
- Fasting triglycerides, cholesterol, glucose
- HbA1c
- Ferritin

- Ultrasound scan: fat, focal lesions, splenomegaly & cirrhosis
Abnormal ALT - 4

Management:

- **Refer:**
  - High ALT’s ( $>250$ - phone )
  - High PT
  - Chronic liver disease
  - Chronic viral hepatitis
  - USS abnormalities

- **Watch:**
  - Alcohol
  - Cholesterol/TGL
  - Obese
Raised ALT in 1000’s

- Acute hepatitis (HAV, HBV, HCV, EBV)
- Severe auto immune hepatitis
- Drug reaction
- Secret or accidental paracetamol overdose

- Liver congestion

- Gall stones or cholangitis (unlikely)
- Extreme rarities (Wilson's)
UMPIRE'S SIGNALS

FOUR

SIX

500,000
History

- Jaundice
- Pain
- Weight loss
- Itch, tiredness, fever, dry eyes etc
- Alcohol
- Drugs
- Bone disease (other sources of enzyme)
How to deal with an abnormal Alkaline Phosphatase - 3

Investigations:

• USS
• FBC & blood picture, PT
• Autoantibodies, Immunoglobulins
• CRP
How to deal with an abnormal Alkaline Phosphatase - 4

Management:

• **Refer:** Persistent elevation of ALP (4 Bx)
  - Autoimmune liver disease
  - Dilated/obstructed biliary tree
  - Tumours/abscess

• **Watch:** Alcohol abuse
  - Drug cause
  - Untreated cardiac failure
'The doctor's on strike, so I had his stitches done by the vet'
How to deal with an isolated abnormal Bilirubin - 1

History:
- Family history
- Jaundice
- Effect of infection, starvation etc
- Haemolysis
- Drugs

Examination:
- Splenomegaly
How to deal with an isolated abnormal Bilirubin - 2

Investigations:

- Bilirubin (±fasting sample)
  unconjugated vs conjugated
- Blood film, retic count, Coombs’ test
- Urinanalysis: negative for Bilirubin
- No requirement for imaging
How to deal with an isolated abnormal Bilirubin - 3

Management:

- **Refer:** Haemolytic anaemia
  → Haematologist

- **Watch:** Gilbert’s (and reassure - 5% population UK)
  ALT / ALP normal
  Bili - unconjugated
  Retic count normal
  Urine - neg for bilirubin
1. **History:**
   - Incidental finding
   - Alcohol
   - Abdominal pain
   - Diabetes/cholesterol etc

2. **Examination:**
   - Normal
   - Obese
   - Xanthelasma etc
3. Investigations: Cholesterol / HbA1

4. Management: Alcohol counselling
Weight reduction
Appropriate diet
Consider referral
Mr Andrew Smith
HPB Surgeon

Mr Giles Toogood
HPB Surgeon

Spire Clinic
• Monday 1800hrs
• Tuesday 1800hrs
• Friday 1700hrs

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