BELMATT
HEALTHCARE TRAINING

Bloods in the GP setting

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Why different

- Management of abnormal blood results in Primary Care is different to hospital:
- ◦ Less acceptable/practical to perform ‘regular’ blood tests on patients
- ◦ Delays in receiving/interpretation of results ◦ Less easy to access specialist opinion

Case 1

- ▶ You receive a blood test for Mr GO, a 56 year old man with a BMI of 33. He is fit and well, and has no symptoms:
- Glucose (fasting) 7.1
- ▶ You look at previous results and the last 2 fasting results were : 6.8 (a month ago, at a private screening clinic) and 5.6 (2 years ago).
- ▶ What would you do?

Diabetes

- Diabetes is diagnosed on the basis of history (ie polyuria, polydipsia and unexplained weight loss) PLUS
- ◦ a random venous plasma glucose concentration >= 11.1 mmol/l
- ◦ OR a fasting plasma glucose concentration >= 7.0 mmol/l
- ◦ OR 2 hour plasma glucose concentration >= 11.1 mmol/l 2 hours after 75g anhydrous glucose in an oral glucose tolerance test (OGTT)
- In the absence of symptoms 2 results from different days are required

Impaired fasting glycaemia

- Fasting plasma glucose >=6.1 but <7.0 mmol/L
- British Dietetic Association recommends all should have glucose tolerance test
- 2.2% relative annual risk progression to diabetes (?higher), remember gestational.
- Manage risk factors and arrange annual follow up
- BUT – in a 2011 report the WHO recommends that HBA1c >6.5% can be used to diagnose diabetes. This is not currently accepted practice in the UK

- After assessing GO’s cardiovascular risk you decide you'd like to initiate a statin for him, but notice his last LFTs 2 years ago were slightly abnormal:
- ▶ AST 68
- ▶ GGT 102
- ▶ ALP 114
- ▶ Bili 14
- (8-40) (11-50) (30-170) (3-17)
- ▶ What actions (if any) would you take? Would you start the statin?

- Can raise transiently due to viral infection, drugs or alcohol
- Consider Hx alcohol/recreational drug use (also penicillins/antifungals/statins/ anti-epileptics/NSAIDs/herbal medicines)
- Hepatitis screen: Hep (A)/B/C; ferritin; +/- EBV/ autoantibodies/ (alpha-1 antitrypsin/ caeruloplasmin)
- USS (?)

- Baseline reading recommended, if stronger than pravastatin/simvastatin 40mg daily repeat 3 and 12 months
- ▸ If abnormal look for cause cirrhosis
- ▸ Trial without statin if >3 times upper limit of normal AST/GGT
- ▸ Consider initiation even in patients with cirrhosis as proven benefits and no confirmed risks
- ▸ What is the most common cause of deranged LFTs in the UK?
- ▸ Non-alcoholic fatty liver disease (though alcohol commonly implicated also!

Case 2

- TD is a 40 year old woman with a history of non- specific abdominal pain. She has been treated for IBS for the last year. When she sees you she tells you that she has felt 'fluey' and had no energy for the last 2 weeks. You notice she has not had any blood tests before and you arrange a 'tired all the time' blood screen. This is all normal except for the following LFTs:
- ▶ AST 24
- ▶ GGT 46
- ▶ ALP 160
- ▶ Bili 36
- ▶ What would you do?
- (6-34) (11-50) (30-170)

- You decide to repeat the test a month later. When she comes in for the result you notice that she looks a little more yellow...
- ▶ AST 40 (6-34)
- ▶ GGT 80 (11-50)
- ▶ ALP 260 (30-170)
- ▶ Bili 60 (3-17)

- ▶ What would you do next?

Raised bilirubin

- Gilbert's: Raised unconjugated bilirubin; mild or no symptoms; if <3 times ULN interval retest and if no signs haemolysis or other disease no further testing required
- ▶ Most patients without Gilbert's Disease or self limiting virus will not require referral
- ▶ Consider haemolysis as cause of raised bilirubin, make sure you have checked FBC/reticulocytes
- ▶ Obstructive causes: gallstones; cancer; primary biliary cirrhosis; primary sclerosing cholangitis

Alk Phos

- ▶ Source may be the liver/bone/gut/kidney or placenta
- ▶ Causes: cholestasis or hepatic disease; bone mets or Pagets; puberty; pregnancy
- ▶ Investigate with liver screen, ultrasound scan and autoantibody screen
- ▶ If asymptomatic, normal liver screen/USS and raised by <50% could consider observation, otherwise refer

Case 3

- DR is a 72 year old man with a past history of: hypertension; an MI 3 years ago; COPD . He is a smoker and you notice he has a long list of medications. He came in as the receptionist said that his salt level was low. His U&Es were:
- ◦ Na 128 ◦ K 4.8 ◦ Creat 105
- (135-145) (3.5-5.2) (60-120)
- ▶ How would you manage this result?
- ▶ You repeat the test a month later and his sodium is now 124. What further investigations would you like to arrange?

Hyponatraemia

- Loss of body sodium: ◦ Diuretics (esp thiazide)
- ◦ Diarrhoea/vomiting/burns ◦ Addison's disease
- ⏵ Increased body water: ◦ Chronic heart failure
- ◦ Liver cirrhosis
  ◦ Nephrotic syndrome
  ◦ Excessive water intake
- ◦ SIADH –persistently concentrated urine (urine:serum osmoles);normal renal and adrenal function; no oedema or hypovolaemia
- • Several causes SIADH – lung pathology, neoplastic, or intracranial pathology.

Case 4

- You are the duty doctor at the surgery and a fax comes in from the biochemistry lab. JF is a 60 year old diabetic who had routine blood test at the surgery:

- ▶ Na 137
- ▶ K 6.2
- ▶ Creat 122
- ▶ What would you do?

Hyperkalaemia

- Causes of hyperkalaemia
- Artefactual
- Metabolic Acidosis
- Addison's disease
- Renal Failure
- Drugs – potassium sparing diuretics; ACEi; NSAIDs; beta blockers
- Haemolysis
- Hyperkalaemic periodic paralysis
- Management: Confirm genuine result; treat the cause; normally admit if >6.5

Case 5

- A few minutes later you receive another fax from the lab, results for BK, a 67 year old lady with heart failure who was seen last week with diarrhea and vomiting:
- ▶
- ▶ Na 132
- ▶ K 2.4
- ▶ Creat 70 ▶
- ▶ What action would you take?

- Causes of hypokalaemia:
- Diuretics Vomiting/diarrhoea Conn's syndrome Fistula
- ▸ Management:
- ◦ Admit if K+ <2.5
- Cushings syndrome/ steroids Renal tubular failure Rectal adenoma
  Hypokalaemic periodic paralysis
- Consider oral potassium supplement if <3 (but poorly tolerated due to nausea)
- If >3 and on thiazidediuretic rarely needs treatment (Oxford GP Handbook)

Case 6

- You receive the following for PB, a 67 year old diabetic man who had some routine blood tests. He takes aspirin, bendroflumethiazide, atenolol, and metformin, and is fit and well other than diabetes. His results are:
- ▶ HBA1c 8.1%
- ▶ Creat 134 (60-120)
- ▶ eGFR 40 (>90) ▶
- ▶ His last creatinine was taken 2 years ago and was 106 (no eGFR was reported at the time). What would you do?

- PB sees you again after some repeat tests. The second eGFR was 37, his creatinine was 142, and you also notice from his blood results that he was slightly anaemic (normocytic) with a haemoglobin of 12.3. His albumin/creatinine ratio on the urine sample was 32 mg/mmol.
- ▶
- ▶ What would you do in the consultation and what follow up would you arrange?

- DIAGNOSIS:
- ▶ At diagnosis: First eGFR <60 you should re-test within 2 weeks, and obtain an ACR, confirmed on an early morning ACR after first abnormal result (if not early morning sample)
- ▶ ACR >30 indicates proteinuria. In diabetics microabluminuria considered significant (ACR>2.5 in men, >3.5 in women)
- ▶ Test for haematuria using reagent strips. Investigate appropriately if persistent (2 of

Renal failure

- Education and lifestyle advice
- ▶ Monitor progression (6 monthly in CKD stage
- ▶ Offer renal ultrasound in stage 3 CKD if: ◦ Haematuria present
- ◦ Progressive CKD (>5/year or >10/5 yrs) ◦ FHx polycystic kidneys
  ◦ Outflow obstruction
- ▶ Aim to keep BP <140/90 (<130/80 if diabetic and ACR >70)
- ▶ Check Hb in stage 3B (eGFR<45)

Renal failure

- ▶ Diabetics:
  - Offer ACEi/ARB to all diabetics with microalbuminuria
- ▶ Non-diabetics:
  - Offer ACEi/ARB to patients with hypertension and
- ACR>30
  - Offer ACEi/ARB to all patients with ACR>70
- ▶ Otherwise treat according to normal hypertension guidance

Renal failure

- Refer to a specialist for:
- Stage 4 and 5 CKD
- Higher levels of proteinuria (ACR ≥ 70 mg/mmol) unless known to be due to diabetes and already appropriately treated