mind map by Simon Brown
almostadoctor.com

Diabetes 2

- Hypoglycaemia
  - Insulin or sulphonylurea treatment
  - Normally adrenergic symptoms (sweating, trembling) which precede neuro symptoms (paraesthesia, blurred vision, confusion)
    - Reversed if loss of warning
    - More likely if: alcohol excess, young or old, long duration DM, recent severe hypo, early pregnancy, autonomic neuropathy, renal / hepatic impariment
  - Treatment
    - Lucozade (if able to cooperate)
    - Buccal glucose gel (unable to cooperate)
    - Glucagon - SC / IM / IV (very safe, even if given in wrong circumstances)
    - IV dextrose (can damage veins)
  - Somogyi Effect
    - The tendency of the body to react hypoglycemia by overcompensating, resulting in high blood sugar
- DKA
  - Precipitants: infection, surgery, MI, non compliance, wrong insulin dose
  - For diagnosis: ketosis and acidosis pH < 7.3
  - Signs & Symptoms: polyuria, polydipsia, lethargy, anorexia, hyperventilation, ketone breath, dehydration, vomiting, abdo pain, coma
  - Management: saline IV fluids > check plasma glucose & give 4 - 8 units IV insulin > investigations (serum glucose, U&Es, HCO3-, osmolarity, ABGs, FBC, blood cultures, urine ketones) > NG tube as appropriate > insulin sliding scale > fluid & K+ replacement > regular glucose and U&Es
  - Potassium Replacement
    - Loss through polyuria and vomiting
    - Total body K+ will be low, although serum K+ may initially appear normal
    - Plasma K+ falls as K+ enters cells with treatment
    - Don't add K+ to first fluid bag; check U&Es regularly
  - Clinical Features
    - Hyperglycaemia
      - Usually greater than 25 mmol
    - High white cell count
      - Generated by metabolic disruption
    - Hyponatraemia
      - Osmolar compensation for hyperglycaemia
      - As treatment commences Na will rise as water enters cells
    - Ketonuria
      - Not always ketoacidosis - normal individuals will have ketonuria after an overnight fast
    - Hyperventilation
      - Due to metabolic acidosis
    - Dehydration
      - Due to osmotic diuresis
    - Vomiting
      - Acidosis and ketosis causes nausea
  - Complications
    - Cerebral oedema
      - Brain in hypotensive state produces molecules to maintain conc gradient
      - Restoring fluids can result in too much fluid entering the brain
      - Careful fluid replacement
    - Aspiration pneumonia
      - Airway protection if appropriate
    - Hypokalaemia and arrhythmias
      - Replace K+
- HONKS
  - AKA Hyperglycaemic, hyperosmolar state
  - High blood glucose, high osmotic conc without substanital ketosis
  - Process: hyperglycaemia > osmotic diuresis > osmotic shift of water > severe intracellular dehydration
  - Type 2 DM where the pancreas secretes residula insulin, prevents lipolysis and keotgenesis
  - Signs / Symptoms: insidious development over days or weeks, dehydration (water and electrolyte loss), neurological dysfunction, reeduced tissue turgur, hypotension, weakness, coma
  - Additional Mgt: prophylactic LMWH, catheterise, NG tube if impaired conciousness
    - Patient are in a hypercoagulable state so full anticoagulation is advised if serum osmolarity > 350 mmol
  - Treatment: controlled fluid replacement > insulin infusion (stop oral meds) > correct potassium and electrolytes > treat precipitating cause
  - Diagnosis: glucose > 30, lack of ketones in urine, no severe acidosis pH > 7.2, serum osmolarity > 350 mmol
- Complications
  - Microvascular
    - Retinopathy
      - Pathogenesis
        - Capillary endothelial change > vascular leak > microaneurysms > capillary occlusion > local hypoxia & ischaemia > new vessel formation
        - Microvascualr occlusion causes cotton wool spots +/- blot haemorrhages
        - New vessel formation can cause fibrosis or detach the retina
      - Presymptomatic screening
      - Laser coagulation
        - Indication: maculopathy or proliferative retinopathy
        - Stops production of angiogenic factors from ischaemic retina
    - Nephropathy
      - Microalbuminuria when dipstick is protein -ve but urine albumin/creatinine ratio is raised
        - Reflects early renal disease
      - Microalbuminuria predicts later proteinuria
      - Inhibiting renin angiotensin system protects against worsening renal failure (regardless of BP)
        - ACE-I or ARB
    - Neuropathy
      - Signs
        - Neuropathy: decreased sensation (glove and stocking), absent ankle jerks, neuropathic deformity
        - Ischaemia: absent foot pulses
      - Management
        - Regular podiatry
        - If there is cellulitis admit for IV antibiotics - common orgs. staph, strep and anaerobes
        - Virtually any type of neuropathy is possible
    - Cataracts
      - Osmotic changes in the lens induced in hyperglycaemia
      - Can reverse with normoglycaemia
  - Macrovascular
    - Vascular disease
      - Cardiovascular
      - Peripheral Vascular
      - Cerebrovascular
      - Commonest cause of death
      - Address other risk factors: lifestyle, cholesterol