Hypoglycaemia

Hypoglycaemia = BSL<3.0mmol/L (but <2.5mmol/l is considered pathological, requiring inv.)
Whipple's diagnostic triad: low BSL, symptoms attributable to a low BSL & resolution with correction of BSL.
Most common: excess of insulin (exogenous or endogenous) with ↑sugar intake or ↓activity in DM
Insulinomas - usually cause semi-autonomous release of endogenous insulin → Insulin and C-peptide levels are elevated → fasting hypoglycaemia. They may be too small to be seen on CT scans and may need further inv with endoscopic ultrasound. Glucagon is rel CI in insulinoma or phaeochromocytoma.
Sulfonylurea overdose - Sulfonylurea overdose can lead to profound/prolonged/recurrent hypoglycaemia, e.g. chlorpropamide and glibenclamide.
Other causes – Exogenous insulin, alcohol, pentamidine, salicylates, iron, paracetamol and toadstools. Liver disease. Adrenal insufficiency. Sepsis. Post-gastrectomy. In children hyperinsulinism, fatty acid oxidation disorders & glycogen storage disease are occ causes.

Epidemiology

This is a common problem with diabetes the most common risk factor.

Presentation

Poor correlation between BSL and symptoms, especially in diabetic patients. Symptoms include:

- Hunger, fatigue
- Shaking and trembling
- Behaviour change, truculence
- Sweating, palpitations, paraesthesiae
- Slurred speech, confusion, seizures, coma

Some patients esp if on BB may not get warning symptoms altered LOC/seizures.

Management

- **If unconscious/fitting** give 25-50ml of 50% (child 2-5ml/kg of 10%) dextrose IV. >25% is quite irritant to veins. If impossible give 1mg (child<5y: 0.5mg) **glucagon** IM/SC.
- **If conscious: Glucose** 10-20g PO from: Granulated sugar (2 tsp), sugar lumps x 3, GlucoGel™ (was Hypostop™ Gel) contains glucose 9.2 g, milk 200 ml; non-diet Lucozade™ Sparkling Glucose Drink 50-55 ml, Coca-Cola™ 90 ml, Ribena™ Original 15 ml (dilute).
- If prolonged profound hypoglycaemia (>5hrs) & cerebral oedema ± coma. Use IV **mannitol** or **3% saline** and dexamethasone with IV **glucose** & keep BSL 5-10mmol/L until either consciousness restored or permanent brain damage diagnosed.
- Insulin or sulphonylureas O/D: 5-25% **glucose** IV infusion to maintain BSL. Maintain K+.
- Sulphonylurea O/D effect may last 12-24hr so consider **octreotide** (1-2mcg/kg q6-8hrs or infuse 25-50ng/kg/min).
- Treat any underlying cause or review diabetic control/education.
- Neonatal hypoglycaemia - Relatively common. Prompt feeding may be all that is required.
    - 5ml/kg/hour 10% glucose IV.
    - Mild asymptomatic persistent hypoglycaemia can respond to **glucagon** 20mcg/kg.

Chronic Hypoglycaemia

Diazoxide may be used in Mx children with chronic hypoglycaemia from excess endogenous insulin secretion, either from an islet cell tumour, islet cell hyperplasia or persisting hyperinsulinaemic hypoglycaemia of infancy (nesidioblastosis).

- Diazoxide has no place in the management of acute hypoglycaemia
- Glucagon is not appropriate for chronic hypoglycaemia.