

HYPOGLYCAEMIA

A common problem (& perhaps the most dangerous) in Type 1 diabetic patients that practice very tight glycaemic control. It is associated with significant morbidity and mortality & usually occurs with serum glucose levels below 3mmol/L.

Under normal circumstances, the body is protected from hypoglycaemia by cessation of insulin release & mobilisation of counter-regulatory hormones, resulting in increased hepatic glucose production & decreased glucose use.

Causes (Hypoglycaemia in Diabetic patients):

The most common cause is excess insulin administration with respect to glucose intake.

Others include:

- Addison's disease
- Decreased oral intake / Anorexia nervosa / Malnutrition
- Alcohol
- Excessive exercise / exertion
- Sepsis
- Hepatic impairment
- Renal insufficiency
- Thyroid disease (hyper & hypo)
- Malfunctioning / incorrectly used insulin pump
- Oral hypoglycaemic agents
- Islet Cell tumours
- Factitious hypoglycaemia
- Antimalarial medications
- Propranolol
- Salicylates

Clinical Features.

Symptomatic hypoglycaemia occurs in most adults at ~ 3.3-4.0mmol/L. This can be exacerbated by rate of glucose drop, age, gender, size, overall health & previous hypoglycaemic episodes.

Signs & symptoms include:

- sweating
- nervousness
- tremor
- tachycardia
- hunger
- neurological signs (bizarre behaviour, confusion, seizures & coma).

People with recurrent hypoglycaemic episodes have '*hypoglycaemic unawareness*'. This is linked to a longer history of diabetes, autonomic neuropathy & decreased adrenaline secretion/sensitivity.

Diagnostic Strategies.

- Blood Glucose (derrrrrr).
- Other causes (serum ethanol level, other drug ingestions)
- C-peptide levels

Management.

In alert patients w/ mild symptoms; oral consumption of sugar-containing foods or beverages is adequate.

In other patients:

- 25-50mL of 50% dextrose (adults)
- 2ml/kg of 10% dextrose (children)

If IV access is not possible:

- 1-2mg intramuscular (or subcutaneous) glucagon
 - requires glycogen stores to be effective.
 - may not work in malnourished alcoholics for example.
- Don't forget your intraosseous route.

As always, don't forget your ABCs (particularly risk of aspiration).

In special circumstances:

- Sulphonylurea overdose: octreotide.

Always consider & identify the cause...

Disposition.

T1DM patients with brief hypoglycaemia (uncomplicated by other disease processes) may be discharged if the cause is identified and there is adequate supervision.

- Must all be able to tolerate orals prior to discharge.
- Short-term followup should be arranged (GP or Endocrinologist).

NON-DIABETIC PATIENTS.

Hypoglycaemia in a non-diabetic patient must be classified as *post-prandial* or *fasting*...

A common cause of alimentary hyperinsulinism is those people post gastrectomy, gastrojejunostomy or pyloroplasty.

Emergency Department management is similar, however disposition is based on the likely culprit and availability of support & followup.

BOX 124-6 CAUSES OF HYPOGLYCEMIA

Postprandial

Alimentary hyperinsulinism
Fructose intolerance
Galactemia
Leucine sensitivity

Fasting

Underproduction of Glucose

Hormone deficiencies
Hypopituitarism
Adrenal insufficiency
Catecholamine deficiency
Glucagon deficiency
Enzyme defects
Substrate deficiency
Malnutrition
Late pregnancy
Liver disease
Drugs

Overuse of Glucose

Hyperinsulinism
Insulinoma
Exogenous insulin
Sulphonylureas
Drugs
Shock
Tumors