Hypoglycemia

- Hypoglycaemia can mimic any neurological presentation, including coma, seizures, acute confusion, or isolated hemiparesis.

- *Always exclude hypoglycaemia in any patient with coma, altered behaviour, and neurological symptoms or signs.*

Plasma glucose is normally maintained at 3.6–5.8mmol/L. Cognitive function deteriorates at levels of <3.0mmol/L, but symptoms are uncommon at levels of >2.5mmol/L. In diabetics, however, the threshold for symptoms can be very variable.

Hypoglycaemia is potentially fatal and accounts for 2.4% of deaths in patients with type 1 diabetes. Even mild episodes aggraate pre-existing microvascular complications and lead to cumulative brain damage.

Causes

- Food insulin mismatch
- Alcohol
- Addison's disease.
- Pituitary insufficiency.
- Post-gastric surgery.
- Liver failure.
- Insulinomas.
- Extra-pancreatic tumours.
- Attempted suicide or homicide with large doses of insulin or oral hypoglycaemic drug.

Clinical features

- Sweating, pallor, tachycardia, hunger, trembling, altered mental state or loss of consciousness, irritability, irrational or violent behaviour, fitting, focal neurological deficit (eg hemiplegia).

Diagnosis

- Check venous or capillary blood with glucose oxidase strip (BMG).
- If <3.0mmol/L, take a venous sample for a formal blood glucose level, but *give treatment* without waiting for the result.
- Take appropriate samples if overdose of insulin, oral hypoglycaemic agent, or other drugs is suspected.

Initial management

This depends upon the conscious state and degree of co-operation of the patient. Choose the appropriate option from the following:

- A fast-acting oral carbohydrate 5–15g (eg sugar lumps, followed by biscuits and milk).

- *Glucagon 1mg*: SC, IM, or IV. Can be administered by relatives, by ambulance crew, and when venous access is diffificult. Glucagon is not suitable for treatment of hypoglycaemia due to sulfonylurea drugs, liver failure, or in chronic alcoholism.

Initial management

- Glucose 10% solution 50mL IV, repeated at 1–2min intervals until the patient is fully conscious.

- Glucose 50% solution (25–50mL IV) is hypertonic, liable to damage veins, and no more effective than glucose 10%. If glucose 50% is used, give it into a large vein and follow with a saline flush.

- The time taken for return of consciousness and the incidence of nausea, vomiting, and other adverse effects are similar for IV glucagon and glucose.

Discharge

90% of patients fully recover in 20min. Provided that the cause for the episode has been identified and fully corrected, it is reasonable to discharge the patient after observation in the ED, with appropriate follow-up.

Arrange follow-up, having considered the following:

- Why did this episode occur?
- Has there been a recent change of regimen, other drugs, alcohol, etc.?
- Is the patient developing hypoglycaemic unawareness or autonomic dysfunction?