Hyperkalemia

What is Hyperkalemia?

- Hyperkalemia is an elevated level of potassium (K+) in the blood.
- Normal potassium levels are between 3.5 and 5.0 mmol/L (3.5 and 5.0 mEq/L) with levels above 5.5 mmol/L defined as hyperkalemia.

- Plasma potassium depends on the balance between intake, excretion and the distribution of potassium across cell membranes.

- Excretion is normally controlled by the kidneys.

- A plasma potassium >6.5mmol/L is an emergency and needs urgent treatment

Causes of Hyperkalemia

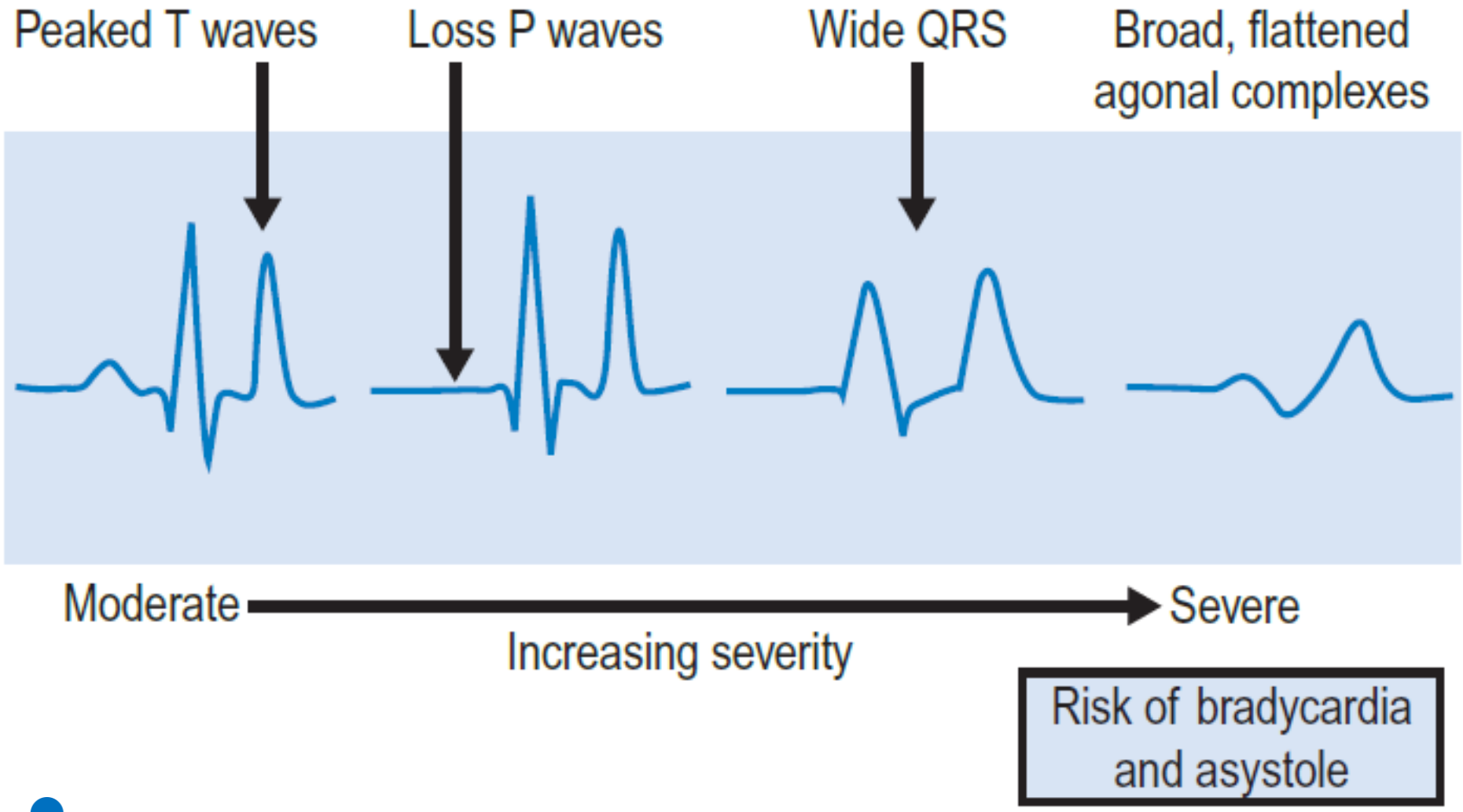
- Oliguric renal failure
- K^+ sparing diuretics
- Rhabdomyolysis
- Metabolic acidosis
- Excess K^+ therapy
- Addison's disease
- Massive blood transfusion
- Burns
- Drugs, Eg ACE-i, suxamethonium
- Artefactual result

ECG Changes in Hyperkalemia

- ECG changes include peaked T waves, broad QRS complexes and conduction defects. Asystole may occur.

- Urgent treatment is usually required, although patients with long-term end-stage renal failure may be more tolerant of hyperkalemia than the general intensive care patient population.

ECG Changes in Hyperkalemia



Treatment to reduce risk of immediate arrhythmia and protect myocardium

- 10mL of 10% calcium gluconate IV via a big vein over 2min, repeated as necessary until ECG improves. This is cardioprotective but does not affect K+ level.

- IV sodium bicarbonate (eg 50mL of 8.4% $NaHCO_3$ as an infusion or bolus into a big vein) can help to drive K+ into cells

Treatment to lower serum Potassium

- 50 ml of 50% Dextrose infusion + 10 units of short-acting insulin I.V. - given over 20 minutes
- Nebulized salbutamol 2.5 mg, repeated as necessary.
- 50 mL of 8.4% bicarbonate, particularly in the presence of metabolic acidosis.(e.g. Actrapid).
- Oral/rectal calcium resonium (chelating agent).
- Consider the need for urgent renal replacement therapy.