EMERGENCY MANAGEMENT OF POTASSIUM DISORDERS IN ADULTS

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EMERGENCY MANAGEMENT OF HYPERKALAEMIA IN ADULTS

Check Potassium (K⁺)

Serum K⁺ ≥ 6.0 mmol/l

URGENT ECG

Seek expert help!

Life threatening hyperkalaemia

Peaked T waves
Absent P waves
Broad QRS
Sine wave
Bradyarrhythmia
VT

Seek expert help!

Cardiac Arrest
VT, VF, PEA, ASYSTOLE

Commence ALS
Defibrillate if appropriate
Give Adrenaline
Treat hyperkalaemia

Acute severe hyperkalaemia

Normal ECG

Protect the Heart

Calcium chloride not necessary

Shift K⁺ into cells

Calcium chloride IV
10ml 10% [6.8 mmol] over 5 min

Insulin/50% dextrose IV
10 units in 50ml [25g] over 5 min

Sodium Bicarbonate IV
500ml 1.26% [75 mmol] over 60 min (if acidotic)

Salbutamol 10-20mg NEB

Monitor K⁺

Timing should take into account rate of action of drug therapy.

Prevent recurrence

Consider cause of hyperkalaemia and address all precipitating factors

Calcium resonium
15g PO or 30g PR x4/day

Consider Haemodialysis

Re-check K

3 K⁺ ≥ 6.5 mmol/l

Watch for rebound.

1 Calcium Chloride – Repeat every 2-3 min until QRS complex narrows or arrhythmia resolves. Calcium gluconate is acceptable but contains only 2.2mmol calcium therefore adjust dose.

2 Insulin/dextrose – Use soluble insulin preparation and check blood glucose every 15 min.

3 Sodium bicarbonate - Indicated only if metabolic acidosis (bicarbonate < 15 mmol/l) present and should not be used as monotherapy.

4 Salbutamol – Caution advised in presence of tachyarrhythmias. In patients with IHD, use only 10mg.

5 Calcium resonium – Too slow for emergency treatment. Laxatives recommended to avoid constipation.

Created by Renal Units of 1 Glasgow Royal Infirmary, 2 Dumfries and Galloway Royal Infirmary, 3 Western Infirmary.

EMERGENCY MANAGEMENT OF HYPOKALAEMIA IN ADULTS

Check Potassium ($K^+$)

Serum $K^+ \leq 3.0$ mmol/l

URGENT ECG

CHECK Mg$^{2+}$

No Symptoms
EKG may show:
- U waves
- T wave flattening
- ST segment changes

Replace $K^+$

$1$ Potassium chloride IV
10 mmol/hr

$3$ Increase dietary $K^+$

Give Mg$^{2+}$

$2$ Magnesium Sulphate
consider while awaiting Mg$^{2+}$ level

Monitor $K^+$

Re-check $K^+$

(after every 40 mmol if normal renal function or after every 20 mmol if severe renal impairment)

Consider cause of hypokalaemia and address all precipitating factors

Life threatening hypokalaemia
Associated with:
- Arrhythmias
  - VT most common
- Digoxin toxicity
  - ± unstable cardiac rhythm

Cardiac Arrest
VT, VF, PEA, ASYSTOLE

Commence ALS
Defibrillate if appropriate
Give Adrenaline
Treat hypokalaemia

$1$ Potassium chloride IV
20 mmol over 2-3 min
(repeat until $K^+ > 4.0$ mmol/l)

$1$ Potassium chloride IV
20 mmol over 10 min followed by 10 mmol over 10 min

$2$ Magnesium Sulphate IV
5ml 50% [10 mmol] over 30min

$2$ Magnesium Sulphate IV
5ml 50% [10 mmol] over 1-2 min

$1$ Potassium chloride IV
10 mmol/hr

$3$ Magnesium Sulphate
consider while awaiting Mg$^{2+}$ level

$2$ Magnesium Sulphate
5ml 50% [10 mmol] over 1-2 min

Target $K^+ 4.0 – 4.5$

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