Hyperkalaemia in Primary care

Definition

Mild Hyperkalaemia	5.5 – 5.9 mmol/L	Needs review
Moderate Hyperkalaemia	6.0- 6.4 mmol/L	Needs urgent review or treatment
Severe Hyperkalaemia	≥6.5 mmol/L or if ECG changes present	Severe, potentially life threatening - needs emergency treatment

Renal patients may be more tolerant of hyperkalaemia but in general if K ≥ 6.5 mmol/L urgent action is needed. Acute changes >0.5mmol/L in 6-12 hours may be more significant than absolute values.

The NHS Improvement alert (Resources to support safe and times management of hyperkalaemia, Aug 2018) has highlighted the importance of safe and timely identification, treatment and monitoring of hyperkalaemia.

Causes

The causes are often multifactorial and can include:

Factitious
- Delay in reaching laboratory
- Contamination with EDTA (FBC) in tube
- Refrigeration
- Haemolysis during venipuncture or excess cuff time
- Drip arm
- Thrombocytosis
- Leukocytosis

Renal
- Acute or chronic renal failure
- Interstitial nephritis or tubular disease
- Lack of aldosterone e.g. Addison's disease, Congenital adrenal hyperplasia, RTA type 4
- Drugs: ACE inhibitors, ARB, NSAIDs, Spironolactone
- Advanced CCF

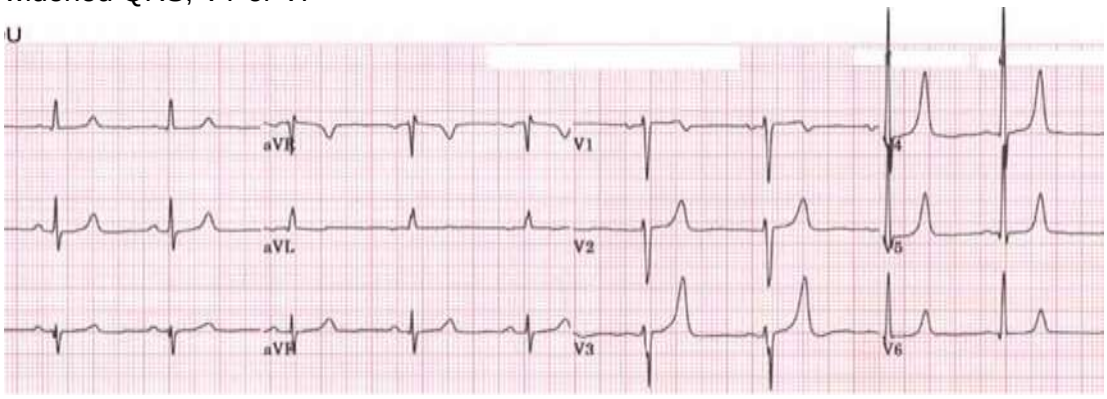
Redistribution
- Acidosis
- Diabetic ketoacidosis
- Drugs: Beta blockers, digoxin

Excess potassium
- Excess diet/ K supplements
- Cell tissue breakdown e.g. rhabdomyolysis, haemolysis, tumour lysis, transfusion.

If aetiology is unclear please feel free to discuss with the duty biochemist as there are possible further investigations that may be required. Direct Telephone number is 0117 4148437.

Investigations & Management in Primary Care

1. Assess severity and urgency
• Urgent referral to secondary care is recommended for patients with:
K ≥6.5mmol/L
Acute ECG changes and K ≥5.5mmol/L
Acute increase >0.5mmol/L in 6-12 hours
There is a risk of cardiotoxicity and sudden death with severe hyperkalemia or those with ECG changes.
•All those with K ≥6.0mmol/L should have an ECG.
ECG may show bradycardia, P waves absent or PR prolongation, peaked T waves, widened QRS, VT or VF



•Renal patients may be more tolerant of high potassium levels but if unsure about the need for admission in this group it is best to discuss with Renal Registrar.

2. Assess trend
Pseudohyperkalaemia is a common cause when there is an isolated rise in K or unexpected potassium result, especially where there are no ECG changes, symptoms or kidney disease.
• Discuss with the lab if uncertain but causes are listed below.
•An urgent repeat should be arranged when K ≥ 6.0mmol/L
•If there is a possibility of fragile blood cells (e.g. in CLL, thrombocytosis, leucocytosis, vasculitis) send a whole blood potassium in lithium heparin tube.
• Check previous K results but if there is a rapid rise (K >0.5mmol/L in 6-12 hrs) an urgent referral to secondary care should be arranged as this is associated more strongly with conduction abnormalities.

3. Assess clinical situation
• Assess for any symptoms which include lethargy, nausea, muscle weakness or paraesthesia.
• ECG when K>6.0mmol/L
• Look for any possible causes of hyperkalaemia such as acute or chronic renal failure, DKA, oliguria (see below).
• Review diet for high K intake: banana, nuts, dried fruit, avocado.
• Review medications
Most commonly hyperkalaemia is due to medications so that the most common course of action is to withhold the likely drug and repeat potassium.
The following drugs are common causes: ACE inhibitors, ARB's, NSAID's, Aspirin, K sparing diuretics, Beta blockers and K containing laxatives (Movicol and Fybogel).

4. Investigations
Review recent results or organise appropriate tests:
- •Look for evidence renal impairment (U&E)
- •Look for evidence of acidosis (venous bicarbonate)
- •Look for possible diabetes (Fasting glucose)
- •If relevant consider DKA (urine ketones)
- •Consider Addison's if hyponatraemia and hyperkalaemia (9am Cortisol)
- •Look for evidence of tissue damage (CK, LDH)
- •Look for underlying condition that may increase cell fragility (FBC)

7. Monitoring

Mild Hyperkalaemia	5.5 – 5.9 mmol/L	If eGFR has not increased >10% or no acute increase in K can repeat in 1-2 weeks Review medications & diet for causes
Moderate Hyperkalaemia	6.0- 6.4 mmol/L	Recheck ASAP If ECG changes admit Stop medications that may elevate K
Severe Hyperkalaemia	≥6.5 mmol/L or if ECG changes present	Urgent repeat: Admit

The urgency of assessment and frequency of potassium monitoring will depend on individual circumstances.

References

1. Pathogenesis, diagnosis and management of Hyperkalaemia, Lehnhardt and Kemper. 2010
2. CREST Guideline for treatment of hyperkalaemia in adults. 2005.
3. Best practice in primary care; review. Smellie. J Clinical Pathology. 2007
4. A primary care approach to Na & K imbalance 2011. Kyle . BPAC
5. Patient Safety Alert – Resources to support safe and times management of hyperkalaemia, NHS Improvement, NHS/PSA/RE/2018/006; 2018