UHL Guideline for the Investigation and Management of Adult Hypocalcaemia

University Hospitals of Leicester NHS
NHS Trust

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1. Introduction

- Hypocalcaemia is defined as plasma calcium < 2.1 mmol/L
- The commonest cause is post-surgical hypoparathyroidism after thyroidectomy
- Early symptoms include peri-oral and digital paraesthesia and carpopedal spasm
- Acute severe hypocalcaemia may lead to arrhythmias, seizures and acute laryngospasm
- ECG changes include prolonged QT interval and arrhythmias
- Hypocalcaemia associated with CKD should be discussed with the on-call renal physician
- The full list of causes should be considered:

Causes of hypocalcaemia

- Post-thyroidectomy
- Post-parathyroidectomy
- Severe vitamin D deficiency
- Chronic Kidney Disease
- Magnesium deficiency
- Cytotoxic agents
- Rhabdomyolysis
- Pancreatitis
- Large volume transfusions

2. Scope

This guideline applies to all staff when they are investigating and managing hypocalcaemia in an adult patient.

3. Recommendations, Standards and Procedural Statements

a) PTH, phosphate, ALP, U&E, Vitamin D and magnesium should be measured in all patients
b) In acute severe hypocalcaemia, intravenous 10% calcium gluconate should be given (calcium chloride may also be used)
c) Always consider and reverse the underlying cause of hypocalcaemia where possible
d) See appropriate guidelines for severe Vitamin D deficiency and hypomagnesaemia where this is cause of hypocalcaemia

3.1 Management

The management of hypocalcaemia should primarily be 'cause-specific'.

Vitamin D deficiency

Replace with loading or maintenance dose of colecalciferol as appropriate (see Leicestershire Medicines Strategy Group (LMSG) guidelines http://www.lmsg.nhs.uk/?s=vitamin+d)

Post-thyroidectomy

a) Start oral calcium supplements (Calvive 1000 2 tablets bd or Adcal 3 tablets bd)
b) In post-thyroidectomy patients repeat calcium in 24 hours
c) Discharge to GP if calcium > 2.1 mmol/L
d) If serum calcium remains low more than 72 hours post-operatively start 1-alfacalcidol 0.25mcg/day and refer for endocrinology or ENT clinic follow up as appropriate

Hypomagnesaemia

a) Stop precipitating drugs
b) Consider other causes of hypomagnesaemia
c) Give intravenous magnesium sulphate infusion (see UHL Hypomagnesaemia guidelines) Hypomagnesaemia%20UHL%20Diabetes%20Guideline.pdf

3.2 Severe hypocalcaemia (Serum calcium < 1.9 mmol/L or symptomatic below reference range)

a) This is a medical emergency – seek senior advice if patient unwell
b) Ensure patient is on a cardiac monitor and in a clinically appropriate environment
c) Administer 10mls 10% calcium gluconate in 50mls 5% dextrose over 10 minutes
d) Repeat until patient asymptomatic to maximum of 40mls 10% calcium gluconate in 24 hours
e) If no clinical response and airway is compromised then refer patient to ITU
f) If patient stabilises and is asymptomatic give continuous calcium gluconate infusion (dilute 100ml 10% calcium gluconate in 5% dextrose or 0.9% sodium chloride and infuse at 50-100 ml / hour)
g) Check calcium 4 hourly and titrate infusion until calcium normal and reversible cause treated
h) In post-surgical hypoparathyroidism, start 1-alfacalcidol 0.25-0.5mcg/day and refer to endocrinology or ENT clinic as appropriate

Nursing interventions

a) Four hourly observations
b) Temperature, pulse, BP, respirations, oxygen saturations
c) More frequently if clinically indicated
d) Patients with severe hypocalcaemia on IV infusion need continuous ECG monitoring
e) Side effects of intravenous calcium include local thrombophlebitis, cardio-toxicity, hypotension, taste disturbance, nausea, flushing, vomiting and sweating

4. Education and Training

None except dissemination of guideline

5. Monitoring and Audit Criteria

Key performance indicators will be reduced morbidity and mortality caused by hypocalcaemia. Monitoring will be achieved by CMG mortality and morbidity reviews. Adverse incidents will be reported to CMGs.

6. Supporting Documents and Key References

Society for Endocrinology Clinical Guidelines

7. Key Words

Adult patient, management, hypocalcaemia

CONTACT AND REVIEW DETAILS	
Guideline Lead Dr Miles Levy, Consultant Endocrinologist	**Trust Board Lead:** Medical Director
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