Management of Hypocalcaemia Following Thyroid Surgery

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Introduction

BACKGROUND

- Hypocalcaemia is a known risk post total thyroid surgery. It is important to recognise this early so treatment can be given promptly and to prevent long hospital stays.

OBJECTIVES

- To review hypocalcaemia rates following thyroid surgery.
- To review the management of hypocalcemia in these patients and adherence to the Pennine Acute Hospitals NHS Trust's Guidelines.
- To assess whether our local hypocalcaemia management guidelines are able to successfully treat these patients.
- To consider a revision of the Trust's guidelines to incorporate the British Thyroid Associations recommendations¹.

Guidelines

- Pennine Acute Hospitals Hypocalcaemia Management Guidelines
- Other guidelines available:
British Thyroid Association 2015
BAETS 2012

Methods

- Retrospective analysis of patients who underwent thyroid surgery and developed hypocalcaemia over 12 months.
- Inclusion criteria: Adults, total thyroidectomy and completion thyroidectomy.
- Exclusion criteria: Paediatric patients, hemi-thyroidectomy only, thyroid surgery associated with other head and neck procedures.

Results

- There were a total of 47 patients, 39 females: 8 males. Mean age was 46 years.
- Histology: 12 Cancer and 35 benign cases.
- 9 out of 47 patients (19.1%) developed hypocalcaemia.
- Adherence rate to local guidelines was 100% and all patients were discussed with endocrinology.
- However, variations in dosing and frequency – Ranging from 500mg OD to 4500mg.
- Alfacalcidol variations in when it was started and doses ranging from 0.25mcg to 1.0 mcg.

Recommendations

Updating PAT guidelines to BTA guidelines

- Discharge patients only when calcium levels within the normal range (>2.10).
- Follow up hypocalcaemic patients at regular intervals.
- Complete 2nd audit loop prospectively.

Post Thyroidectomy Calcium Protocol Implemented

Proposed Post op Total Thyroidectomy Guidelines

General

Check **Calcium and PTH** on day of surgery and repeat calcium **DAILY** thereafter if there is hypocalcemia.

Treatment of hypocalcemia:

- ➔ Normal calcium levels - 2.1 – 2.5 mmol/L
- ➔ Hypocalcemia <2.1 mmol/L

Start with initial dose of: **Adcal 3 tabs BD (first choice)** / Calcit 4 tabs BD / Calcichew forte 2 tabs BD / Sandocal 1000 2 tabs BD or 1 tab QDS

If calcium levels not normalised after 24 hours...

Asymptomatic + Mild hypocalcemia

➔ Ca < 2.1 mmol/L but more than or equal to 1.9 mmol/L

- Increase oral calcium supplementation to an equivalence of **Adcal D3 3 tabs TDS**

Persistent Asymptomatic + Mild hypocalcemia

➔ Ca < 2.1 mmol/L but more than or equal to 1.9 mmol/L persisting for 72 hours despite treatment

- Oral calcium as above and **add alfacalcidol 0.25mcg/day or calcitriol 0.25mcg/day**

Asymptomatic + Severe hypocalcemia

➔ Ca less than 1.9 mmol/L

- Oral calcium as above and **add alfacalcidol 0.25mcg/day or calcitriol 0.25mcg/day** as alternative to IV calcium gluconate

Symptomatic + mild/severe hypocalcemia

➔ Symptoms of hypocalcemia – tetany, paraesthesiae, cramps, anxiety, Chvostek and Trousseau signs, seizures, cardiac arrhythmias or vomiting.

- 10-20ml 10% calcium gluconate in 50-100ml 5% dextrose IV over 10 minutes with ECG monitoring. (Can repeat till asymptomatic)
- Then, 100ml of 10% calcium gluconate in 1 litre of NS or 5% dextrose, infuse at 50-100ml/hr. (Calcium chloride can be used as an alternative to calcium gluconate but it is more irritant to veins and should only be given via a central line)
- Titrate till normocalcemia. Calcium infusion to continue till calcium levels are normalised.
- Add **alfacalcidol 0.25mcg /day or calcitriol 0.25mcg/day**

Discharge – When calcium is > **2.1mmol/L** and repeat calcium levels after **1 week**

Conclusions

- Hypocalcaemia rate was less than national reported rates (27%)².
- There was good compliance with local guidelines, however, variations in dosing and frequency were noted.
- There were no clear guidelines regarding when to discharge patients.
- Frequent monitoring of calcium, prompt treatment and clear guidelines can prevent complications and facilitate early discharge of patients.

REFERENCES

- British Thyroid Association Guidelines for the Management of Thyroid Cancer. *Clinical Endocrinology* (2014), 81 (Suppl. 1), 1–122.
- British Association of Endocrine and thyroid surgeons (BAETS) UK Registry of Endocrine and Thyroid Surgery National Audit. Available at: www.baets.org.uk/audit [Accessed on 27.6.18]