

Hypercalcaemia

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Common causes

- Hyperparathyroidism
- Malignancy, with or without tumour metastases
- Sarcoidosis
- Oral Vitamin D or calcium intoxication
- Thiazide diuretics

Minor degrees of hypercalcaemia are commonly related to venous stasis so should be checked with stasis - free calcium estimation.

Most Common causes are malignancy and hyperparathyroidism

Treatment

- Avoid factors that can aggravate hypercalcaemia, including thiazide diuretic and lithium carbonate therapy, volume depletion, and vitamin D therapy,
- Treat as below if symptomatic (nausea, vomiting, abdominal or bone pain, confusion) or if corrected serum $\text{Ca}^{2+} > 3.0$ mmol/L.

1. If not fluid overloaded:

- Intravenous 0.9% NaCl (1 litre each 4 hours)
- Induces saline diuresis and increases calcium excretion. Aim to achieve an urine output of 100 to 150 ml per hour
- Frusemide (40mg ivi) ONCE REHYDRATION is complete.
- Measure serum calcium, potassium and magnesium each 4 hours

2. If fluid overloaded (e.g heart failure):

- May need to avoid saline infusion; careful and judicious use of loop diuretics to maintain diuresis may be required

3. If hypercalcaemia is thought to be due to malignancy OR failure to improve despite 12 hours of therapy as above:

- Bisphosphonates - **Pamidronate** (Aredia) 60mg in 500 mls 0.9% NaCl over 4 hours IVI. (If serum $\text{Ca}^{2+} > 3.5$ give 90 mg).
- Repeat dose after 3 days if no response.
- Bisphosphonates are relative contraindicated in the presence of significant renal impairment (eGFR less than 30 ml/min).
- **Denusomab** may be considered in patients with renal failure and in those with poor response to bisphosphonates. Please contact the consultant or renal registrar before denusomab is used. The use of denusomab is associated with significant hypocalcemia especially in patients with renal impairment and /or vitamin D deficiency.



4. If hypercalcaemia is secondary to sarcoidosis or lymphoma:

- Prednisolone initially 25 mg, then 10 mg daily. Serum calcium usually drops in 2 to 5 days .
- Calcitonin no longer used much as bisphosphonates are effective.

If on dialysis check that low calcium dialysate is being used for either haemodialysis or peritoneal dialysis.