



# Hypocalcaemia

Sept 2014

Total serum  $[Ca^{2+}] < \sim 2.1 \text{ mmol/l}$   
~50% as biologically active ionised  $[Ca^{2+}]$ .  
Corrected for [albumin]

## Causes

Spurious: Hypoalbuminaemia or Hyperventilation  $\rightarrow$  alkalosis  $\rightarrow$   $\uparrow$ protein binding (exchanges for  $H^+$ )  
Decr calcium absorption: Vit D deficiency/resistance, malabsorption  
Incr calcium excretion: CRF, EtOH, diuretics  
Endocrine: Hypoparathyroid, pseudohypoparathyroid (PTH resistance)  
Electrolytes: Incr  $PO_4$  (rhabdo, tumour lysis) or decr Mg (alcohol, diuretics, epilepsy, CRF)  
Misc: pancreatitis, sepsis, massive transfusion  
Drugs:  $PO_4$  (enema, laxatives), phenytoin, citrate (blood), loop diuretics, bisphosphonates, heparin, steroids

## Presentation

Symptoms: uncommon unless  $[Ca^{2+}] < 2.0 \text{ mmol}$ , paraesthesia (peripheral/circumoral), tetany, carpopedal spasm, muscle cramps  
Acute signs: Chvostek & Trousseau's signs, seizures, bradycardia, laryngo-/bronchospasm, muscle fasciculations, Chronic signs: cataracts, abnormal teeth, papilloedema, dementia/confusion

## Investigations

Urine: 24hr  $Ca^{2+}$   
Blood: CMP, Albumin, LFT, UEC, Lipase/amylase, CK, PTH, Vit D  
ECG: Prolonged QT (no U waves), heart block

## Management

### Acute symptomatic hypocalcaemia

10% Calcium gluconate 10-30ml or calcium chloride 5-10ml IV slow IV (central line)  
Alternatives: calcium gluconate/ascorbate/lactate PO  
Correct hypomagnesaemia

### Persistent hypocalcaemia

Oral supplements calcium ( $CaCO_3$  500mg bd-qds)  
Vit D: Calcitriol (oral  $1,25(OH)_2D_3$ ) 1000 U OD