Evaluation of Hypercalcaemia

Suggested scheme for evaluation of Hypercalcaemia

Common causes

- Transient
- Primary hyperparathyroidism (PHPT)
- Malignancy
- Vitamin D excess

Transient

On first testing, ~ 4% of all subjects will have a Corrected Ca > 2.55 mmol/L; on re-testing, 75% of these will show normal values (this reflects variables such as biological variation, analytical variation, etc.).

Primary hyperparathyroidism (PHPT)

Prevalence of ~ 1:1,000; serum ALP and PO_4 values usually normal (abnormalities are late effects of PHPT).

Diagnosis confirmed by estimating serum PTH: values > 4.0 pmol/L (reference range 1.6–6.9 pmol/L) in the presence of Corrected Ca > 2.55 mmol/L are indicative of the disorder.

Malignancy

Patient usually known to have a tumour. Serum PTH useful to exclude PHPT; values < 2.0 pmol/L indicate an extra-parathyroid cause for the hypercalcaemia.

Vitamin D excess

Characteristically shows elevation of both Ca and PO_4 and a suppressed serum PTH. Commonest cause is overdosage with calcitriol (Rocaltrol). Other causes are self-medication with vitamin D, and sarcoidosis.

Evaluation

Repeat serum Ca. If it is still elevated, then:

Measure serum PTH, and

Estimate urinary calcium excretion rate (UCE*).

Familial Hypocalciuric Hypercalcaemia (FHH) is an important cause of hypercalcaemia in children. The UCE is estimated from urinary Ca and creatinine (on a spot urine) and serum creatinine, the samples being taken simultaneously. In FHH, the UCE is low; all other causes of hypercalcaemia have high values.

$$* \text{ UCE} = \frac{\text{Urine [Ca]} \times \text{Plasma [Creat]}}{\text{Urine [Creat]}}$$