

## **Diagnosis and Treatment for Hypercalcemia**

Dr. Liang-Yu Lin

Division of Endocrinology and Metabolism

Taipei Veterans General Hospital

Calcium plays an important role in neural transmission, enzyme activity, myocardial function, coagulation and other cellular functions. Most of the calcium is found in the bones as calcium phosphate while a small percentage is found in the cells and extracellular fluids. The concentration of calcium is carefully maintained under physiological conditions with parathyroid hormone, calcitonin and 1,25-dihydroxyvitamin D at appropriate levels. Hypercalcemia is a common disorder normally caused by primary hyperparathyroidism (PHPT) or malignancy. Almost always, primary hyperparathyroidism is due to a benign overgrowth of parathyroid tissue either as a single gland (adenoma) (80% of cases) or as a multiple gland disorder (15–20% of cases). The presentation of primary hyperparathyroidism is almost asymptomatic in regions of the world where serum levels of calcium are routinely measured but the disease always has the potential to become symptomatic. A proportion of hypercalcemic cases present as an emergency, which carries a significant mortality. Emergency management of hypercalcemia is based on intravenous rehydration with normal saline but when this is inadequate, bisphosphonate therapy is used; more recently the new anti-resorptive agent denosumab (RANKL inhibitor) has been shown to have a useful role in treatment. Although parathyroidectomy is the only curative treatment for PHPT, this is indicated in a minority of cases. Many cases can be adequately managed conservatively and guidance from the 4th international workshop on the management of asymptomatic PHPT has recently been updated in 2013.