mechanisms will be absent, and bisphosphonate therapy can lead to symptomatic hypocalcaemia. In such patients, alternative therapies should be considered together with calcium and vitamin D supplementation.

1 Royal College of Physicians. *Osteoporosis: clinical guidelines for prevention and treatment.* London: RCP, 1999.
2 Patel S, Lyons AR, Hosking DJ. Drugs used in the treatment of metabolic bone disease. Clinical pharmacology and therapeutic use. *Drugs* 1993;**46**:594–617.
3 Chesnut CH, Harris ST. Short-term effect of alendronate on bone mass and bone remodeling in postmenopausal women. *Osteoporos Int* 1993;**3**:S17–19.
4 Landman JO, Schweitzer DH, Frolich M, *et al*. Recovery of serum-calcium concentrations following acute hypocalcemia in patients with osteoporosis on long-term oral-therapy with the bisphosphonate pamidronate. *J Clin Endocrinol Metab* 1995;**80**:524–8.
5 Schussheim DH, Jacobs TP, Silverberg SJ. Hypocalcemia associated with alendronate. *Ann Intern Med* 1999; **130**:329.
6 Sims EC, Rogers PB, Besser GM, *et al*. Severe prolonged hypocalcaemia following pamidronate for malignant hypercalcaemia. *Clin Oncol (R Coll Radiol)* 1998;**10**:407–9.
7 Comlekci A, Biberoglu S, Hekimsoy Z, *et al.* Symptomatic hypocalcemia in a patient with latent hypoparathyroidism and breast carcinoma with bone metastasis following administration of pamidronate. *Intern Med* 1998;**37**: 396–7.

IMAGES IN MEDICINE

Lingual thyroid

A 26 year old woman presented with a two year history of palpitations, heat intolerance, fatigue, tremors, and an increase in neck size. Her physical examination revealed tachycardia, lid lag and an enlarged, non-tender thyroid gland. Oral cavity examination was completely normal. There was no proptosis. Her thyroid function tests and iodine-123 scan and uptake were consistent with Graves' disease. Thyroid stimulating antibody concentration was negative. Incidentally, a small area of uptake was seen superior to the eutopic thyroid which corresponded to the area at the posterior aspect of the tongue and was consistent with the presence of lingual thyroid (see figs 1A and B). There was no salivary gland uptake. The patient underwent successful iodine-131 ablation therapy.

Ectopic thyroid tissue results due to abnormal migration of the thyroid gland from the base of the tongue to its normal pre-tracheal position. The prevalence of ectopic thyroid tissue is between 7%–10% with lingual thyroid accounting for 90% of such cases. Mutations in thyroid transcription factors 1 and 2 have been found in patients with thyroid agenesis and ectopic thyroid tissue. Lingual thyroid lies on the posterior aspect of the tongue and oral examination is usually normal. Invasive fibre optic laryngoscopy is generally needed to visualise the ectopic tissue in such location. Our patient refused any invasive procedure.

SHEHZAD BASARIA
Division of Endocrinology and Metabolism, Johns Hopkins University, School of Medicine, 1830 E Monument Street, Suite 333, Baltimore, MD 21287, USA

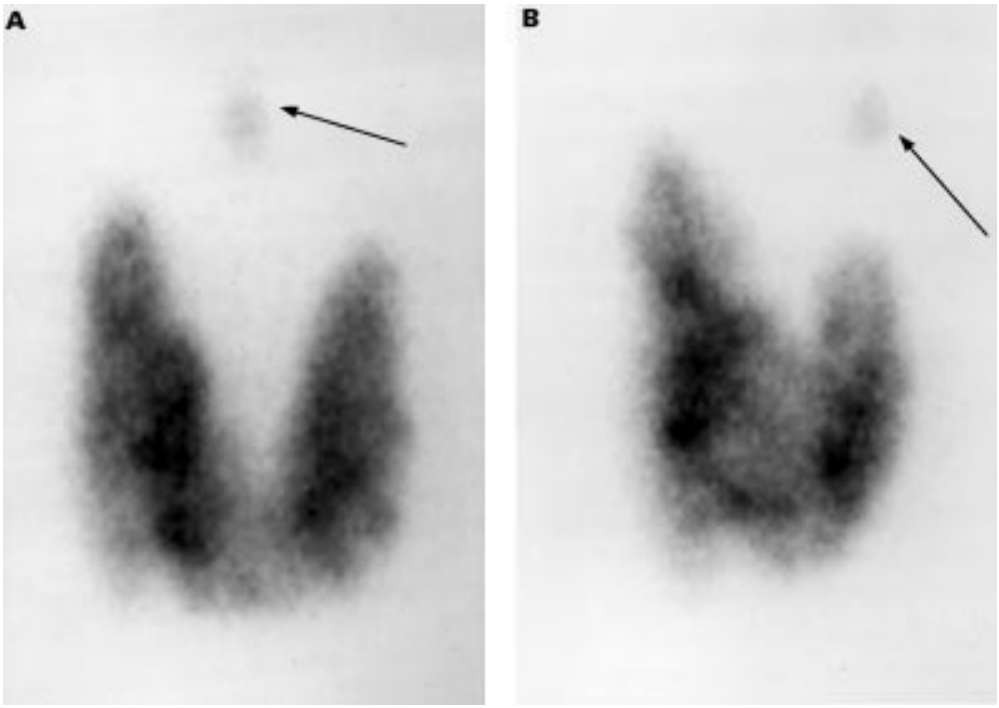

Figure 1 Iodine-123 uptake scan; arrows show presence of lingual thyroid; (A) anterior and (B) lateral views.