Introduction

• While there is an intimate anatomical and embryological relationship between the inferior parathyroid gland and thymus, concurrent pathology is rare. 3 cases have been reported in the literature of a parathyroid adenoma in conjunction with a thymoma. 18% of atypical parathyroid adenomas are found in the anterior mediastinum. (2) Jaskowiak et al reviewed surgical cases of 215 operations for primary hyperparathyroidism and found that 14/222 operations required cervical thymectomy (1). We report a case of a patient who underwent neck exploration for a parathyroid adenoma who was incidentally found to have a spindle cell thymoma.

Case Report

• AL is a 60 year old female who initially presented to the Endocrinology clinic with a chief complaint of hypercalcemia.

• 2 years prior to the clinic visit with interval calcium checks. Bone mineral density test prior to presentation on 2/18/2011 revealed T score of -2.5 in the left hip and -2.21 in the lumbar spine consistent with osteoporosis.

• Subsequent testing which revealed a Calcium of 12.8, PTH of 142.0, and a Vitamin D of 8. She was started on Vit-D2 therapy at 50,000 units weekly and repeat laboratory testing revealed a Vitamin D of 44 after several months of therapy.

• Referred to the Otolaryngology clinic for evaluation for parathyroidectomy.

• Presented with a Sestamibi parathyroid scan from 2/18/11 which was interpreted as increased uptake below the left thyroid lobe consistent with an ectopically located parathyroid adenoma.

• Thyroid ultrasound performed at that time which was interpreted as normal.

• Pre-operatively, a PTH level of 132.1 was found.

• Utilizing a lower anterior neck incision, a four gland exploration was undertaken. After a thorough dissection was undertaken which included exploration of retroesophagus and carotid sheath, a mass was palpated in the upper mid mediastinum, adjacent to the innominate artery. The mass was somewhat fixed to surrounding thymic tissue and removed along with a cuff of thymus. This was sent off for frozen pathology and a rapid PTH was sent with an expected drop to a PTH of 16.4.

• Patient had subsequent resolution of her hypercalcemia and was asymptomatic after surgery.

Pathology

• Permanent pathology revealed a 2.3 gram parathyroid adenoma along with a 1 cm Stage I, Type A spindle cell thymoma with negative margins.

WHO Classification of Thymoma (12)

• Type A thymoma: a proliferation of spindle- or oval-shaped epithelial cells with scant cytoplasm and absent or inconspicuous nucleoli.

• Type B thymoma: round, plump "epithelioid" cells with large vesicular nuclei, small eosinophilic nucleoli, and abundant amphophilic or lightly eosinophilic cytoplasm.

- B1: by an overwhelming majority of small lymphocytes containing a few scattered round epithelioid cells devoid of cytologic atypia
- B2: approximately equal admixture of proliferating thymic epithelial cells and small lymphocytes
- B3: predominant population of thymic epithelial cells with a significantly reduced small lymphocytic population

Discussion

• The inferior parathyroid glands and the thymus are both derived from the third branchial pouch. As they descend into their final anatomical location, parathyroid glands can move variably into the superior mediastinum along the thyrothymic ligament.

• Jaskowiak et al evaluated 288 patients with persistent or recurrent hyperparathyroidism. They found that the most common ectopic site for an abnormal gland was within the thymus or mediastinum. They found 37 lesions (16.7%) had descended down into the mediastinum. (2)

• Depending upon literature, incidence of thymoma is 10% to 42%. (8)

• Up to 20% of patients with a thymoma have myasthenia gravis. (7)

• Parathyroid adenomas may occur in any of the 4 parathyroid glands but more commonly occur in the inferior parathyroid glands. (5)

• Jaskowiak et al found the thymus to be the single most common true ectopic site, either in the low neck or in the superior mediastinum. This occurred in 16.7% of their reoperative series. (2)

Previous Case Reports

• First case of thymoma accompanied by hyperparathyroidism was described by Palmer and Sawyers in 1978. They described a case of a thymoma associated with myasthenia gravis and hyperparathyroidism. (4)

• Byrne in 1989 described an associated case of thymoma with myastenia gravis and hyperparathyroidism. They described a case of four gland parathyroid hyperplasia in their patient. (1)

• Suzuki et al described a case of non-invasive thymoma accompanied by hyperparathyroidism without the presence of myasthenia gravis.

• Triggiania et al described a case of a patient with a wide invasive malignant thymoma with myasthenia gravis and primary hyperparathyroidism due to a parathyroid adenoma. (7)

• Several case reports of PTH-secreting thymic tissue (10,11)

Bibliography