Endocrinology-2013

OMICS Group Conferences
Accelerating Scientific Discovery

World Congress on
Endocrinology

August 26-28, 2013 Raleigh, North Carolina, USA

The utility of ct and MRI in diagnosis and image guided therapy of the thyroid and parathyroid glands

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Abstract

Traditionally the thyroid and parathyroid glands have been imaged with ultrasound and nuclear medicine studies. These glands however are frequently seen on CT and MRI, particularly with increasing utilization of cross-sectional imaging. A consequence is an increase in detection of anatomic variations and incidental lesions.

For instance, the posterior thyroid tubercle, or Zuckerkandl tubercle (ZT), is an important surgical landmark due to its close proximity to the recurrent laryngeal nerve. A case of ZT with a nodular configuration was deemed indeterminate on multiple ultrasound guided FNAs at outside institutions. An image-guided core biopsy of the deep lesion was requested by ENT. This was performed with CT guidance, confirming normal thyroid tissue.

A retrospective study was performed to determine how often ZT was present on CT neck studies and how often a nodular subtype was present. A total of 96 sequential patients with neck CTs were retrospectively identified. Sixty-seven patients had thyroid glands which extended posterior to the tracheo-esophageal groove at CT imaging, bilateral in 43 patients and more common on the right (60 versus 49). Thirty-two of these patients--over one third--had a nodular subtype which could be mistaken for a lesion.

This experience has paved the road for cross sectional characterization and image-guided intervention of this region. The first CT guided head and neck cryoablation of a metastatic lymph node adjacent to the recurrent laryngeal nerve and thyroid lobe and the first intraoperative MR guided parathyroid adenoma resection at our institution were recently performed, and highlight the increasing utility of CT and MRI in thyroid and parathyroid imaging and therapy.

Biography

Thomas C. Lee was raised in Toronto, Canada. He received his bachelor's degree in Biochemical Studies at Harvard College and medical degree from McGill University. After completing a radiology residency and neuroradiology fellowship at the University of Toronto, he became an attending at Brigham & Women's Hospital and Dana-Farber Cancer Institute in Boston, Massachusetts and instructor of radiology at Harvard Medical School. In early 2013 he became assistant section head of neuroradiology at Brigham & Women's Hospital and Dana-Farber Cancer Institute. Currently he is co-authoring the neuroradiology textbook for Netter's Correlative Imaging series to be completed this year.