

He was diagnosed with Hashimoto thyroiditis (thyroid peroxidase antibody level 355 IU/mL, normal <9 IU/mL). He recovered without neurological deficits and was discharged home with thyroid replacement therapy (levothyroxine 100 mcg).

Discussion: Myxedema coma occurs as a complication of undiagnosed/untreated thyroid disease. It may be precipitated by an event such as infection, drug overdose, or myocardial infarction. The mainstay of treatment is T4 replacement along with supportive therapy, and glucocorticoids to counter possible underlying adrenal insufficiency. Massive pericardial effusion due to hypothyroidism, especially resulting in cardiac tamponade, is extremely rare. The incidence of pericardial effusion in patients with hypothyroidism has significantly decreased from 30–80% to 3–6%, due to early recognition of this common disorder. Our case highlights the importance of prompt recognition of hypothyroidism as a cause of cardiac tamponade, thus allowing rapid life-saving treatment. In patient populations with limited access to health care, it should be remembered that very late and potentially fatal complications of otherwise easily treatable conditions can occur. Awareness of this may help limit morbidity and mortality.

References: Kabadi UM, Kumar SP. Pericardial effusion in primary hyperparathyroidism. *Am Heart J.* 1990; 120:1393.

Healthcare Delivery and Education

EXPANDING CLINICAL CONSIDERATIONS FOR PATIENT TESTING AND CARE

Inappropriate Ordering of Parathyroid Scintigraphy in an Academic Medical Center

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Introduction: The diagnosis of primary hyperparathyroidism is a biochemical, not radiologic one. Unfortunately, many practitioners even in academic centers order parathyroid scintigraphy to “confirm a diagnosis of adenoma” or distinguish primary from secondary hyperparathyroidism. Knowing the location of single or multiple parathyroid adenomas is unnecessary unless parathyroidectomy is planned. The financial burden of nuclear imaging is substantial. The goals of this study were to determine the proportion of inappropriately ordered parathyroid scans and the cost to the health care system.

Methods: We generated a database of patients who had consulted with at least one physician at our institution and underwent parathyroid scan between December 2012 and December 2017. We focused on the subset that did not undergo parathyroidectomy. “Slicer dicer” software in our EMR was used to generate the database. Chart review extracted data on diagnoses and reasons for parathyroid scintigraphy.

Results: Over 5 years, a total of 325 parathyroid scans were performed. 171 of these did not have parathyroidectomy in our system. However, 18 underwent surgery elsewhere leaving 153 that received parathyroid scans but no surgery (47% of the total). Of the 91 cases so far analyzed of the 153

in our database, average age is 64, with 28 males and 63 females. 61 of the 91 scans (67%) were performed to confirm the diagnosis of parathyroid adenoma; 3 performed because of possible parathyroid adenoma seen on other imaging; and 24 (26%) were done supposedly to localize the adenoma for surgery. Ordering physicians were from primary care (41%), endocrinology (26%), nephrology (18%), and surgery (10%). Final diagnoses for these 91 patients were true primary hyperparathyroidism in 37 (41%), secondary hyperparathyroidism in 38 (42%), unclear in 10 and FHH in 4. In the primary hyperparathyroidism group, 19/37 met criteria for consideration of parathyroidectomy, but only 5/19 received surgical consultation. These 5 patients either refused surgery or surgeon decided against, usually because of high surgical risk.

Conclusion: 47% of parathyroid scans at an academic institution were performed in patients who did not undergo parathyroidectomy. Many parathyroid scans were ordered inappropriately to “confirm” a diagnosis of primary hyperparathyroidism, leading to unnecessary charges and resource waste. Physician charges for sestamibi scans range from \$237-\$1942, depending on whether planar imaging, SPECT, or SPECT-CT is used; hospital charges are \$1165-\$3211. We propose to change the ordering system for parathyroid imaging to clarify that this is not a method to diagnose parathyroid adenoma, rather a tool to optimize surgical planning when the diagnosis is secure.

Reproductive Endocrinology

REPRODUCTIVE ENDOCRINOLOGY: REPRODUCTIVE FUNCTION AND DYSFUNCTION ON DEVELOPMENT

11-Oxygenated C19 Steroids in Polycystic Ovarian Syndrome

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Background: Polycystic ovarian syndrome (PCOS), an endocrine and reproductive disorder consisting of hyperandrogenism, menstrual dysfunction and ovarian changes, affects 6–20% of reproductive aged women worldwide. While hyperandrogenemia is traditionally determined by evidence of elevated testosterone (T), this hormone can be difficult to accurately measure in women with relatively lower circulating levels compared to men. Recent studies have suggested that four adrenal androgens known as 11-oxygenated C19 steroids (11OxyAs), specifically 11-ketotestosterone (11KT), may be good alternative markers for hyperandrogenism in PCOS. Using a multi-ethnic population seeking evaluation for PCOS symptomatology, we sought (1) to investigate the utility of 11OxyAs to differentiate women with and without NIH PCOS relative to classical androgens such as T, androstenedione (A4) and DHEAS levels, and (2) to evaluate the relationship of 11OxyAs to clinical findings of androgen excess.

Methods: Using the University of California, San Francisco PCOS Tissue Bank, serum samples from 131