management is challenging due to the lack of a reliable biomarker that aids initial diagnosis, surveillance, and prognostic stratification. Whether a rare form of non-secretory MTC represents a more aggressive variant is yet to be determined. The prognosis of patients with mixed MTC-PTC tumors appears to be driven by the medullary component that prioritizes the optimal surgical approach and further management.

Thyroid

THYROID CANCER CASE REPORTS

Cardiac Metastasis From Anaplastic Thyroid Carcinoma

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Background: Anaplastic thyroid carcinoma represents 2% of all thyroid carcinomas. The most common metastatic sites are lung and neck lymph nodes. Cardiac metastasis is extremely rare. Autopsy studies of patients with thyroid cancer have documented a frequency of metastatic cardiac involvement of 0%–2%. **Clinical Case:** A 57-year- old woman was admitted to the emergency room with a rapidly expanding neck mass of 3 months duration. She complained of pain in the anterior neck, dysphagia, dyspnea, palpitations and hemoptoic sputum. She further reported history of weight loss. She denied medical history of cancer in the family. Prior medical history was described as non- significant. On clinical examination, vital signs were normal. General swelling around the thyroid region was noted. A hard, tender, immobile mass was palpated. A superficial lymph node of about 5 cm in diameter was palpated in level II A and IIB. The patient was admitted to the hospital for further workup. Laboratory work up revealed, hemoglobin 7.6 g/dL, hematocrit 22.5%, white blood cells 15,000/mm^3, fasting plasma glucose 135 mg/dL and urea 59 mg/dL. Thyroid function tests revealed TSH 2.46 mUI/ml (normal range: 0.38-5.33 mUI/ ml), fT3 1.69 pg/ml (normal range: 2.39-6.79 pg/ml), fT4 0.57 ng/dl (normal range: 0.58-1.64 ng/dl). A fine needle aspiration cytology from the thyroid lesion described a poorly differentiated thyroid carcinoma. CT scan of the neck and chest revealed a large heterogeneous mass with hypointense areas involving the thyroid gland of 9 x 8 x 7 cm that surrounded the vertebral bodies and displaced and infiltrated the neck vessels, trachea and esophagus. In the right atrium and right ventricle three well- circumscribed ovoid masses were observed, the largest one measured approximately 21 x 17 mm, suggestive of cardiac metastases. Bilateral adrenal masses were also observed the largest one measuring 69 x 51 mm. Diagnosis of anaplastic thyroid cancer stage IVC was established with a large thyroid mass, widespread metastasis and poorly differentiated metastatic carcinoma on fine needle aspiration biopsy. During her hospitalization she presented both atrial tachycardia and atrial fibrillation and was started on amiodarone. A week later, the patient´s condition deteriorated and she died of respiratory arrest without having any further treatment for the tumor. **Conclusion:** In patients with established thyroid malignancy who develop cardiac arrhythmias, cardiac metastasis should be considered.

Thyroid

THYROID CANCER CASE REPORTS

Clavicular Metastasis as an Initial Presentation of Papillary Thyroid Cancer

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Background: Papillary thyroid cancer (PTC) metastases to the clavicular bone is rare. While the lung is considered the most common site of metastases from thyroid malignancy, osseous metastases, if seen, are usually observed at sites such as humerus, pelvis, radius, and scapula.
Clinical Case: A 44-year-old man presented with an enlarging right neck mass for six months after light trauma to that area. Other than mild pain in the described area, the patient reported 20 lbs of weight loss. Initial x-ray revealed a large soft tissue density mass that extended to the midline of the right proximal clavicle. Soft-tissue neck ultrasound noted a 5.4 x 3.6 cm mass extending from the thyroid with findings of increased vascularity and calcification. CT scan of the neck depicted the extension of the mass into the adjacent sternoclavicular junction with osteolysis of the middle third of the clavicle as well as the superior aspect of the sternal body. A fine needle aspiration of the mass revealed thyroid neoplasm with follicular features and positive immunostaining consistent with thyroid carcinoma. Chest CT showed invasion into the right proximal clavicle, tracheal deviation and extension into the mediastinum. The patient underwent a composite resection of the tumor, including a segmental osteotomy of approximately two-thirds of the medial clavicle. Post surgically the patient's serum calcium was low at 7.9 mg/dL with a concurrently low PTH of 9 pg/mL and a low 25-hydroxyvitamin D of 16.8 ng/mL. Thyroglobulin was markedly high at 15655.0 ng/mL (confirmed on dilution), and thyroglobulin antibody < 1.0 IU/mL. Pathology report confirmed PTC with extra-thyroidal extension and involvement of clavicle (staged pT4a pN0), however margins and lymph nodes were negative for carcinoma with further genomic findings showing positive KRAS mutation. The patient's post-operative course was complicated by a large expanding left neck hematoma after a fall; he was immediately readmitted with the hematoma subsequently safely evacuated. Levothyroxine has been held at this time with plans for radioactive iodine treatment eight weeks after surgery.
Conclusion: Bone metastases from differentiated thyroid cancer is rare, especially clavicular metastasis arising from PTC. Bone scintigraphy, x-ray and fine needle biopsy are some of the widely utilized methods employed in the evaluation of bone metastasis in the setting of thyroid malignancy. The prospect of recovery is generally favorable in cases of bone metastases, however various factors can affect prognosis and long-term outcomes.
Reference: Krishnamurthy A. Clavicle metastasis from carcinoma thyroid- an atypical skeletal event and a

management dilemma. *Indian J Surg Oncol*. 2015;6(3):267-270. doi:10.1007/s13193-015-0387-y

Thyroid

THYROID CANCER CASE REPORTS

Coexistence of Pituitary Adenoma Causing Acromegaly and Medullary Thyroid Cancer

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Background: We present a case of coexisting acromegaly and medullary thyroid cancer. As both conditions are rare, the association raises the possibility of causality (non-genomic) as opposed to pure coincidence.
Clinical Lesson: A 73 year-old man presented to our clinic with an incidental finding of a left thyroid nodule. The patient underwent an ultrasound-guided fine needle aspiration biopsy which revealed medullary thyroid carcinoma. Shortly afterward, the patient underwent a total thyroidectomy with bilateral cervical lymph node dissection. The patient tested negative for mutations involving RET exons 8, 10, 11, 13, 14, 15, and 16.
On initial presentation, the patient was also noticed to have an appearance typical of acromegaly, with spade-like hands and characteristic acromegalic facial features, including prognathism and macroglossia. These findings were long-standing. He was found to have elevated IGF-1 (121.4 nmol/L, reference range 6.1 - 26.9 nmol/L) and hyperprolactinemia (78.2 mcg/L, reference range 2.7 - 16.9 mcg/L). His growth hormone (GH) levels did not suppress following a 75 g oral glucose tolerance test. Magnetic resonance imaging of the sella turcica revealed a prominent pituitary gland and stalk with a rightward deviated infundibulum, with a suspected 1.1 cm left-sided pituitary macroadenoma. The patient declined surgical management, and he was instead managed medically with octreotide.
Conclusion: Coexistance of GH-producing pituitary adenoma and medullary thyroid cancer is a rare occurrence. We identified ten cases previously described in the literature. Specifically, this is the second reported case of a patient presenting with both medullary thyroid cancer and pituitary adenoma causing acromegaly.
The advanced acromegalic phenotype suggested long standing disease and therefore prolonged tissue exposure to elevated levels of IGF-I. Although acromegaly is more commonly associated with nodular goiter of follicular-cell origin, the possibility of a thyroidal C-cell neoplasm must be entertained especially if GLP-1 agonist therapy is being considered for the treatment of hyperglycemia.

Thyroid

THYROID CANCER CASE REPORTS

Coexisting Metastatic Papillary Carcinoma Thyroid and Clear Cell Neuroendocrine Tumour in Thyroid- A Rare Case Report

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Background: Papillary Carcinoma Thyroid is the most common form of differentiated thyroid cancer. Its coexistence with a Clear cell Neuro endocrine tumor (NET) has not been reported yet. Clear cell carcinoma is an epithelial derived tumor, characterised by the presence of clear cells. It may arise in multiple tissues including kidneys, uterus, GIT and ovary. Though these tumours may metastasize in thyroid rarely, they have not been reported to be originating primarily in thyroid gland and metastasising elsewhere. Also calcitonin negative NET of thyroid Gland are extremely rare. In our case, clear cell tumour was an aggressive one with widespread metastasis. It was Calcitonin negative and expressing other NET markers.
Clinical Case: 40 year old male, presented to endocrine OPD in September 2018, with complaints of right sided neck swelling of 4 months duration. He gave a history of similar swelling on the right side of neck 2 years ago for which he had undergone right Hemi- thyroidectomy at an outside hospital. The HPE report had mentioned the possibility of clear cell NET. Tumour cells expressed Cytokeratin(CK),Epithelial membrane antigen(EMA), CD 56,c-kit,synaptophysin. There was no expression of TTF-1,Tg,PAX 8,Chromogranin A,calcitonin,CD 5,S-100&P 63. FDG PET scan done in 2018 showed FDG avid 8 x 6.1cm soft tissue mass in the right paratracheal region along with FDG avid nodules in the left lobe. FNAC from the mass showed recurrent carcinoma with extensive hemorrhagic cystic changes. In view of the above mentioned findings, he underwent completion thyroidectomy along with bilateral modified neck dissection(MND) and central compartment clearance(FIGURE 1). HPE report mentioned left thyroid having differentiated papillary carcinoma (pT1a pN1a) with positive lymph node in lateral and central compartment. Microscopic findings of the Tissue specimen from the right modified neck dissection(MND) showed tumor cells in groups and sheets,with clear cytoplasm and fairly uniform nucleus appearance. No papillary or follicular cells, no obvious lymphovascular invasion was seen(FIGURE 2A 2B) Frequent areas of necrosis and loose fibrinous tissue were seen amidst the tumor. Mitotic count was approximately 4-5 /hpf. Immuno histochemistry (IHC)done on the specimen from right MND- patchy Epithelial membrane antigen(EMA) expression, CD 10 weakly expressed, rest markers like TTF-1/ PAX8/ RCC antigen /CEA/ Calcitonin /P 63/High molecular weight cytokeratin (HMWCK)/ CK(MNF)/ CK7/ CK20/ CK 19 were negative(figure 2C). Based on the above findings, it was reported first as CASTLE(Carcinoma with thymus like elements) tumour. Tissue specimen was sent to TATA memorial hospital, Mumbai for review. Extensive IHC profile and molecular studies were done, they suggested that it is more likely to be Ewings sarcoma with epithelial differentiation (IHC - positivity for membranous mic2, EMA, CD56 and c Kit, and presence of EWSR1 rearrangements on molecular testing). Still there was no definite consensus regarding the final diagnosis. Tissue slides were sent abroad to Professor Dr Christopher D.M Fletcher at Harvard Medical School. He termed it as unclassified clear cell malignant neoplasm.
Figure 1- GROSS SPECIMEN RIGHT NECK MASS
Figure 2AFigure 2BFigure 2A-MICROSCOPY FROM LEFT HEMI THYROID SHOWING DIFFERENTIATED PAPILLARY THYROID CARCINOMA