at 1, 3, and 12 months after primary treatment (surgery ± radioiodine therapy), and then yearly; the data were retrospectively evaluated for this study. Visit at one month was used to tailor LT4 dose and was not considered into the data analysis. Patients with structural evidence of disease or during pregnancy were excluded.

Results. Data of 2883 evaluations (472 patients) were collected; at baseline, the median age was 49.7 years, 73.5% were females. The LT4 formulation administered at baseline were tablets (84.9%), liquid solution (11.4%), or soft-gel capsule (3.7%). Overall, in 27.5% of clinical evaluation with unchanged levothyroxine dose (341/1243), there were meaningful spontaneous TSH variations (defined as delta TSH > 1.5 mcUI/ml) at yearly follow-up visit. It is clinically significant: in 6.6% of visits, overt thyrotoxicosis was recorded. Furthermore, the treating clinicians decided to change the LT4 dose in 37.1% of cases. These figures were not significantly higher in the first years, and a rate above 25% persist even after ten years of follow-up. The median maintenance dose needed was 1.61 (interquartile range [IQR] 1.41-1.92) mcg/Kg/day for tablets, 1.54 (IQR 1.39-1.79) mcg/Kg/day for liquid solution, and 1.46 (IQR 1.23-1.71) mcg/Kg/day for soft-gel capsules. After correction for daily dose, there was no difference in the rate of TSH variations > 1.5 mcUI/ml, or in the absolute value of median delta of TSH between the three formulations. In 20.1% of patients, the LT4 formulation was changed during the follow-up: it was more common in patients with a known gastroenteric disease (OR 1.76, p=0.03).

Conclusions. TSH spontaneous variations and dose adjustments are very common in patients after total thyroidectomy, even during long-term follow-up: wide variations happen in more than 1/4 of all visits, and dose changes are needed in more than 1/3 of all evaluations. We were more inclined to change LT4 formulation in patients with known interference in LT4 absorption: however, no difference in TSH variations was recorded between users of three different formulations, even if soft-gel capsules seem to have a lower maintenance dose.

Thyroid

THYROID DISORDERS CASE REPORTS II

A Case of Unilateral Exophthalmos Due to Thyroid Orbitopathy and Its Association with Chronic Kidney Disease

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SAT-490

Graves ophthalmopathy(GO)is the most common extra-thyroidal manifestation of Graves' disease (GD). Most cases of GO are bilateral which may be asymmetric, whereas unilateral ophthalmopathy is less common and has been observed in 9-15% cases. Association between chronic kidney disease and unilateral Grave's ophthalmopathy in a clinically euthyroid patient is rare. We report a case of a 24-year-old male with no previous history of any chronic medical illnesses who presented with protruded right eye for the past 6 months. He did not have any other visual symptoms or symptoms related to thyroid disease. Laboratory results revealed low TSH, normal free T3 and free T4. TSH receptor antibodies were positive. He also had elevated serum creatinine at 418 umol/L (normal levels 64 - 110 umol/L). US KUB showed bilateral small sized kidneys and increased parenchymal echogenicity suggestive of chronic kidney disease. MRI Head showed features suggestive of unilateral thyroid associated orbitopathy. Patient received 1-week course of oral prednisolone 10 mg per day after which his exophthalmos improved.Case report: A 24 year old male with no previous history of any chronic medical illnesses, presented to the clinic with protruded right eye for the past 6 months that was progressively getting worse. There was no eye pain, visual changes, ophthalmoplegia, dryness or discharge from eye. Patient did not report any other symptoms, Physical examination revealed a comfortable man with protruded right eye, lid retraction, normal eye movements and no signs of orbital cellulitis. Neck examination was significant for a mild diffuse goitre. Laboratory studies were significant for haemoglobin of 12.1 g/dl (normal 13-17 g/dl). He also had elevated serum creatinine at 418 umol/L (normal 64 - 110 umol/L). Serum electrolytes, liver function tests and lipid profile were within normal range. 24 hr urine collection showed 3.08 gm/24 hr proteinuria. Serum TSH was 0.04 mIU/L (normal 0.45 - 4.5 mIU/L), free T4 was 13.8 pmol/L (normal 9 - 20 pmol/L) and free T3 was 4.56 pmol/L (normal 2.89 - 4.88 pmol/L). Thyrotropin Receptor Ab titre was 4.69 IU/L (normal 0.00 - 1.75 IU/L). ANA, ANCA, C3, C4, Anti thyroid peroxidase and Anti GBM antibodies were negative. Screening for hepatitis B, C and HIV was negative US KUB showed bilateral small sized kidneys and increased parenchymal echogenicity suggestive of CKD. MRI Head was remarkable for proptosis of the right eye with increased retro-orbital fat, thickening and T2 hyperintensity with sparing of the tendinous insertion involving the right inferior, medial, superior and lateral rectus muscles with crowding at the orbital apex. Features were suggestive of unilateral thyroid associated orbitopathy. Patient received 1-week course of oral prednisolone 10 mg per day after which his exophthalmos improved. An association between CKD and GO in a clinically euthyroid patient is rare.

Healthcare Delivery and Education

EXPANDING CLINICAL CONSIDERATIONS FOR PATIENT TESTING AND CARE

Development of a Culturally Competent Skills and Knowledge Assessment Tool for Patients with Diabetes

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MON-139

Training of diabetes (DM) skills is critical to assure competency of DM survival skills (e.g. glucose testing) for immediate self-care. While DM assessments exist, we sought to develop a culturally acceptable DM Skills and Knowledge Assessment (DM-SKA) tool. A systematic search of Pubmed/Medline and Scopus (1980-2017) of assessments for DM

knowledge was performed. 24 studies were identified, only 33% reported minority populations. Studies were classified by topic: measurement of DM skills, objectives of DM training, assessments of DM education, and other non-patient assessments. Content from existing assessments was adapted to create a 12 question DM-SKA to address 6 domains: DM, blood glucose and self-monitoring, support services, identification management of hypo and hyperglycemia, and insulin administration. To assess cultural acceptance, cognitive evaluations were conducted in individual user sessions and focus groups. The DM-SKA had a baseline Flesch reading score of 81.3 (low complexity language) and Flesch-Kincaid reading grade level of 5.3. Of 39 approached, 85% (N=33) participated (6 inpatients refused, feeling "overwhelmed"). Participants were diverse, including 8 clinicians, 10 patients/caregivers, and 15 laypersons; 46% were non-Hispanic whites, 33% non-Hispanic blacks, 12% Hispanics, and 9% Asian Americans. Mean age of patient/caregiver/laypersons was 57.8±17 (44% > age 65) and 40.1±12 years for clinicians (12.5% > age 65). All clinicians reported that appropriate DM skill domains were included and felt patients would complete the tool. All patients/caregivers and laypersons (N=25) verbalized adequate comprehension of each question; 96% reported willingness to complete the DM-SKA if provided and 88% reported their family, friends or someone in their community would be willing to complete it. However, both providers (N=2) and patients (N=2) reported concerns about assessment format and delivery [e.g. "testing" or "quiz"]. Some younger (<65 years) patients/caregiver/laypersons (N= 4) reported concerns about potential willingness of elderly family members to complete the tool. However, acceptability of the DM-SKA was noted from all participants >65 years. Vision problems and older age were identified as potential barriers. Of those offered the assessment (N = 25), 5 (20%) participants needed assistance [N=2 vision, N=3 English as second language]. Mean DM-SKA score was 10.2±1.7 of 12. Incorrect answers mostly occurred for questions with multiple correct answers. The DM-SKA has acceptable literacy characteristics, cognitive validity, and cultural acceptability by racial/ethnic minority populations, including elderly persons. Future work includes integration into clinical workflows and incorporation of patient preferences.

Tumor Biology

TUMOR BIOLOGY: GENERAL, TUMORIGENESIS, PROGRESSION, AND METASTASIS

Neutrophil Elastase Promotes Proliferative Signals in Prostate Cells Through EGFR and DDR1

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SAT-138

Studies examining many different cancers have demonstrated that inflammation plays a critical role in tumor progression, in part through the release of proteases from stromal cells that function to either remodel the tumor microenvironment or to directly stimulate cancer cells to grow. One specific protease, neutrophil elastase (NE), has been shown to be a critical regulator of cancer growth in several mouse models. Accordingly, our laboratory demonstrated that NE, most likely from granulocytic myeloid-derived suppressor cells, potentially promotes prostate cancer progression in several different *in-vivo* and *in-vitro* models. To date, however, little is known regarding the mechanisms utilized by NE to promote tumor growth. It has been suggested that NE might cleave epidermal growth factor (EGF) or transforming growth factor-α from the cell surface to induce activation of EGFR/ERK signal transduction in an autocrine fashion. Alternatively, NE has been shown to enter into early endosomes to degrade insulin receptor substrate-I, ultimately resulting in phosphoinositol 3-kinase hyperactivity and subsequent tumor cell proliferation. Here we demonstrate that NE triggered proliferative signals in six prostate cell lines representing the spectrum of prostate cell differentiation, including normal prostatic epithelium, benign prostatic hypertrophy, and metastatic prostate cancer. Focusing on ERK signaling, we found that the stimulatory effect of NE on ERK phosphorylation was dose dependent and was abrogated by small interfering RNA induced EGFR knockdown, as well as by pretreatment of cells with irreversible EGFR inhibitor AG1478. Unlike EGF, however, NE-initiated EGFR phosphorylation was minimal. Thus, while EGFR appears to be critical for NE-induced ERK activation, perhaps it is not extensively activated directly by NE. Notably, discoidin domain receptor-1 (DDR1) was strongly expressed in normal prostate epithelium cells, but gradually decreased and had little expression in benign and metastatic prostate cancer cells sequentially. Nevertheless, similar to EGFR knockdown, silencing of DDR1 in all cell types inhibited NE mediated pERK upregulation, suggesting that DDR1 may also be important for NE-induced action. Together, our data suggest that NE, in concert with low level signals from the EGFR and DDR1, play an important role in promoting prostate cell proliferation both in normal and cancerous prostate epithelial cells.

Tumor Biology

TUMOR BIOLOGY: GENERAL, TUMORIGENESIS, PROGRESSION, AND METASTASIS

Periodic Cushing Syndrome in a Patient with an Intestinal Neuroendocrine Tumor (NET). A Novel Case Report.

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SAT-142

Introduction A major diagnostic enigma regarding ACTH-dependent Cushing syndrome is the distinction between the source of ACTH, which may have either a pituitary or ectopic origin. We present the first described patient with