and discriminate altered microvascular blood flow, blood volume and tissue scattering coefficients of TN. Near-infrared diffuse optical technologies aim to overcome the shortcomings of present techniques while screening for malignant thyroid nodules for early and fast diagnosis of cancer. This idea was based on the previous experience in breast cancers with diffuse optical techniques.
METHODS:
We have developed a device based on near-infrared diffuse correlation spectroscopy (DCS), which is a technology aimed at retrieving the microvascular flow of a certain region of tissue by mean of low power near-infrared laser light, and used in combination with a commercial ultrasound system (US). In order to combine these devices, we have developed a probe enabling multimodal data acquisition and subsequently we have analyzed the optical properties and the blood flow index in the thyroid lobes of eleven subjects who presented a thyroid nodule.
RESULTS:
Four subjects have required FNAB: P4 and P7 were reported as being malignant (Bethesda VI and IV respectively) while P6 and P8 were evaluated as being benign (Bethesda II). Surgical removal confirmed papillary thyroid carcinoma in P4, while denied the result of FNAB for P7 (Multinodular thyroid hyperplasia). We have considered the contralateral lobe as intra-subject reference to validate the feasibility of the DCS system in a very absorbing tissue as thyroid is. The difference between the blood flow index of the nodule and the contralateral lobe is maximum for subject P4, while the difference in benign subjects is lower. T-test showed no significant difference between benign nodules and contralateral lobes. Subject P7 showed a small difference as for other benign subjects despite the FNAB results indicating presence of malignancy.
CONCLUSION:
Apparently diffuse optics technologies would be able to differentiate malignant thyroid nodules from benign thyroid nodules, but more measurements require confirming our preliminary results as that diffuse optical technology can complement the current techniques such as US and FNAB. A new measurement campaign is being scheduled with a completed, fully integrated device that was developed within the LUCA project (http://www.luca-project.eu).

Bone and Mineral Metabolism

CLINICAL ASPECTS OF OSTEOPOROSIS AND VITAMIN D ACTION

Insulin Resistance and Osteoporosis in People Living with HIV

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MON-385

The life expectancy of people living with HIV (PLHIV) increased considerably after the advent of antiretroviral therapy (ARV). Nowadays, it is almost the same as the general population. However, this increase in survival exposes PLVH to age-related morbidities, including chronic metabolic and bone diseases. PLHIV has a low bone mineral density (BMD) and a high prevalence of osteoporosis. Moreover, the frequency of diabetes mellitus (DM) seems to be twice the frequency of the general population. Insulin resistance and DM might be associated with bone diseases in PLHIV. Our study aim was to evaluate the association between insulin resistance and osteoporosis in PLHIV. We carried out a cross-sectional study at the municipality of Santa Maria, South Brazil. PLHIV age 50 yrs or over on treatment with ARV were included. All subjects registered to receive ARV in the university hospital during the period 2016 to 2018 were invited to participate. Those who accepted responded to a standardized questionnaire, performed a bone density scan and a lateral spinal X-ray, underwent peripheral blood collection, and had their weight and height measured. Insulin resistance was considered present when HOMA-IR> 2.7 (Gelonese, 2009). The TyG index was also calculated (VASQUES, 2011). Of the 101 PLHIV who agreed to participate, 84 underwent both insulin and BMD measurements. The prevalence of osteoporosis was 19%. Vertebral fractures were twice as frequent in individuals with osteoporosis (73.3% vs. 36.5%, p = 0.018). Participants with osteoporosis had lower BMI and triglyceride values than those without it. The frequency of insulin resistance calculated by HOMA-IR was 68.2%, and it was associated with glucocorticoid use, smoking, and BMI. HOMA-IR [4.8(6.6) vs. 8.68(9.6), p =0.013], and TyG [5.0(0.3) vs. 5.2 (0.4), p=0.029] mean values were lower in the group with osteoporosis; however, this association disappeared after correction for BMI in the logistic regression model. In conclusion, in our study, PLHIV with osteoporosis have lower insulin resistance than PLHIV without it. Nevertheless, this finding appears to be relating to a lower BMI. Further studies are needed to assess the effect of insulin resistance on fracture risk in PLVH.

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Bone and Mineral Metabolism

OSTEOPOROSIS: DIAGNOSIS AND CLINICAL ASPECTS

Bone Mineral Density and Body Mass Index in Men with Cystic Fibrosis

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SUN-392

Osteoporosis is an important endocrine complication of cystic fibrosis (CF). Low bone mass in CF patients has multiple contributing causes including vitamin D deficiency,

calcium malabsorption, pulmonary infection and cytokine production, malnutrition, a sedentary life style, cumulative steroid dose, delayed puberty, and hypogonadism. The objective of this study was to examine the relationship between BMI and bone density of the hip and spine in adult men with CF. We conducted a retrospective chart review of adult men with CF receiving care at an academic medical center. Medical records of 43 men ages 19-60 (32.1±9.8) years were reviewed. 8 men with lung transplant, or receiving chronic glucocorticoid or androgen treatment were excluded. One subject was excluded as his BMI was >3SD above the mean. BMD was measured by dual-energy x-ray absorptiometry at the lumbar spine (LS) and hip. The mean ± SD BMI of the study population was 24.10 ± 5.24 kg/m^2 mean LS BMD was 0.96 ± 0.204 g/cm^2 and mean hip BMD was 0.701 ± 0.382 g/cm^2. Men were divided into three groups: normal BMD, osteopenia, or osteoporosis, based on current guidelines. 8 (24%) men were found to have normal bone density (Z=0.40±0.60), 19 (56%) had osteopenia (Z= -1.57±0.67) and 7 (20%) had osteoporosis (Z= -3.27±0.83). Of these 7, 6 had osteoporosis of the LS only, and one patient had osteoporosis of the hip; 5 were being treated with a bisphosphonate. The three groups of men were similar in age (P=0.93). 25OH-vitamin D levels were 22.6±4.4, 35.6±12.7 and 27.0±13.4 ng/mL, respectively (p=0.03). There was a significant (p=0.023) difference in BMI among these three groups (26.33±4.80 vs 23.25 ± 3.01 vs 20.96±3.64 kg/m^2). BMI was strongly positively correlated with LS BMD (r = 0.54, P<0.001) but not with BMD of the hip (r = 0.11, p=0.55). Moreover, LS BMD was highly predicted by body weight (r = 0.90, P<0.0001) but not significantly by height (r = 0.26, p=0.16). These findings indicate that CF-related bone disease (CF-RBD) affecting the LS is common in adult men, and that body weight is a major determinant of LS BMD in men with CF. Possible mechanisms for this association include signaling pathways related to nutritional status and sex steroids.

Adrenal

ADRENAL - TUMORS

Clinical Course of Adrenal Myelolipoma: A Long-Term Longitudinal Follow-Up Study

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SAT-170

Myelolipoma is the second most common adrenal tumor. Yet, systematic approach to these tumors remains poorly defined. Thus, we aimed to describe natural history of myelolipoma and to identify predictors of tumor growth and need for surgery. We conducted a retrospective longitudinal follow-up study of consecutive patients with myelolipoma. A total of 321 myelolipomas (median size, 2.3 cm [range, 0.5-18.0]) were diagnosed in 305 patients at median age of 63 years (25-87). Most myelolipomas were discovered incidentally (86.6%), whereas others were discovered on imaging done for cancer staging (8.8%) or during workup of mass effect symptoms (4.6%). Median duration of follow-up was 54 months (range, 0.03-267). Compared with myelolipomas <6 cm, tumors ≥6 cm were more likely to be right-sided (59% vs 41%, *P*=0.02), bilateral (21% vs 3%, *P* <.0001), cause mass effects symptoms (32% vs 0%, *P*<.0001), have radiographic hemorrhagic changes (14% vs 1%, *P*<.0001), and undergo adrenalectomy (52% vs 5%, *P*<.0001). There was no difference in sex or age at diagnosis between the groups. Hemorrhagic changes were noted in 9 (3.0%) patients with median tumor size of 7.0 cm (range, 1.8-18.0). Concomitant adrenal hormone excess was diagnosed in 12/126 (9.5%) patients. Primary aldosteronism was noted in 9 patients: due to concomitant ipsilateral (n=3) or contralateral adrenocortical adenoma (n=3), or bilateral idiopathic adrenal hyperplasia (n=3). Autonomous cortisol excess was noted in 3 patients: due to concomitant contralateral (n=2) or ipsilateral adrenocortical adenoma (n=1). Of 162 patients with ≥6 months of imaging follow-up, tumor size change ranged from -10 to 115 mm (median, 0 mm) and tumor growth rate ranged from -5.6 to 140 mm/year (median, 0 mm/year). Tumor growth ≥1.0 cm (n=26, 16.0%) was associated with larger initial tumor size (3.6 vs 2.3 cm, *P*=0.02) and hemorrhagic changes on imaging (12% vs 2%, *P*=0.007), compared with <1 cm size change. Myelolipomas with ≥1.0 cm growth were more likely to undergo adrenalectomy (35% vs 8%, *P*<.0001). Among 37 (12%) patients that underwent adrenalectomy for myelolipoma, surgical indications included: large tumor size/tumor growth (32%), diagnostic surgery (27%), mass effect symptoms (14%), concomitant ipsilateral tumor leading to hormonal excess (11%), acute hemorrhage (8%), and concomitant resection during non-adrenal surgery (8%). In conclusion, most myelolipomas are discovered incidentally, whereas myelolipomas ≥6 are more likely to cause mass effect symptoms, have
radiographic hemorrhagic changes, and more commonly undergo resection. Hormonal excess is rare and is usually attributed to concomitant adrenocortical adenoma or hyperplasia. Tumor growth ≥1.0 cm is associated with larger myelolipoma and presence of hemorrhagic changes. Surgical resection should be considered in symptomatic patients with large tumors, evidence of hemorrhage, or tumor growth.

Diabetes Mellitus and Glucose Metabolism

DIABETES DIAGNOSIS, TREATMENT AND COMPLICATIONS

Poor Diagnostic Concordance Between Fasting Plasma Glucose and Glycosylated Hemoglobin in a Black South African Population

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