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Assessment of Bone Mineral Density of Patient's with Thyroid

Dorry Segev, M.D.,
Sudan University of Science and Technology,
Sudan

Abstract (600 Words):

Bone density loss and increased risk for osteoporosis are a cause for concern in Hodgkin lymphoma (HL) patients but there are no recommendations regarding identification and follow-up of patients at high risk. There is evidence of decreased bone mineral density in postmenopausal women with subclinical hyperthyroidism but little evidence in men or pre-menopausal women. In a large cohort of postmenopausal women aged 65 years or older, there was a fourfold increased risk of vertebral fractures and threefold higher risk of occurrence of hip fracture in patients with serum TSH women with subclinical hyperthyroidism than euthyroid patients. Thyroid hormones (TH) affect bone metabolism and turnover increasing the number of bone remodeling cycles, activating and increasing the number of osteoclasts and altering the relation between bone reabsorption and bone formation. The disease is typically characterized by an age-related reduction in bone strength that predisposes affected individuals to low-energy fractures. Parathyroid hormone (PTH) is released by the parathyroid glands depending on serum calcium and its major action is to stimulate bone reabsorption through the osteoclasts. Calcitonin (CT) is a hormone mainly produced by the parafollicular cells of the thyroid (C cells) and is a potent inhibitor of bone reabsorption. Its secretion is stimulated by calcium. In hypothyroidism there is a lower CT reserve and its response to a hypercalcemic stimulus is significantly reduced probably due to the destruction of (C cells) by the process of chronic thyroiditis. In hypothyroid patients when starting hormonal replacement therapy bone remodeling of high turnover owing to the action of TH. CT scanning is widely used in diagnosis and prognosis for cancers, With the high resolution MDCT images clinicians can obtain important information of BMD, trabecular microarchitectural and mechanical property, as an additional utility to clinical applications. Quantitative Computed Tomography (QCT) may serve as an alternative tool for bone sensitometry with the advantage that its results are independent of extraspinal pathology, such as aortic calcifications. QCT results in the spine have been found to be reproducible, and they are considered a prognostic factor for pathologic fractures. Dual x-ray absorptiometry (DXA) is currently the standard for assessing bone mineral density (BMD) and has been correlated with fracture risk and treatment efficacy. While useful for assessing osteopenia or osteoporosis it is not without methodological limitations. In fact, comparisons between QCT and DXA have shown that the former is better at identifying vertebral fractures. However, the obligatory use of a reference standard and the image post-processing that is required in addition to the increased cost and radiation dose has set back the wide use of the method in spite of its technical superiority. The use of Hounsfield units (HUs) from CT scanning to assess regional BMD of the spine has recently been described, Based on a defined scale of 0 for water and -1000 for air. Modern radiology imaging software programs allow this to be calculated from a region of interest (ROI) on CT scans without any additional cost or radiation exposure.

Importance of research (200 words):

Study of bone mineral density of patients with thyroid disorders was carried out in radiology department at Algazira state in Algazira Scan hospital, Wad Madani diagnostic advance, Shakrin diagnostic center and the patients sample was 100 patients whom investigation by CT scan and the results sows that the Osteoporosis was dominate in the female and Osteopenia almost same for male and female with frequency 11:10 respectively. The calcium score gives us a good value of the bone density and the relation between the calcium score and the patients gender, where the male governs the higher score start from 7-8 and the female concentrate at the medium and low scores 3-6. Comparing of means to calcium score between the male and female where the mean of male 5.70 was higher than the mean for female 6.56. The linear regression equation shows that the relation between the age and cerium was decrease with value 0.002 for each year. Recommended every patient with thyroid disorder may be undergo to CT scan examination to assess significant change in bone mineral density, every patient such as patients on high dose of steroid medication may need follow-up periodically by intervals of six months. CT scan modality should be introduced in the syllabus of the faculties of radiology and the post menopause female should takes estrogen to avoid decrease bone density.

Info of Institute and laboratory (200 words):

Sudan University of Science and Technology is one of the largest public universities in Sudan, with ten campuses in Khartoum state. The main campus is located in the so-called Al Mugran area of Khartoum, the confluence of the White Nile and the Blue Nile. SUST was founded in colonial Sudan as the Khartoum Technical School and School of Commerce in 1902. Later, the School of Radiology (1932) and School of Design (1946) and School of Commerce merged with the Khartoum Technical School to form the Khartoum Technical Institute (KTI) in 1950.

Biography (200 words)

Dorry Segev is an assistant professor of medicine at the Johns Hopkins University School of Medicine. During his training at Johns Hopkins over the past 14 years, Segev had made numerous, significant contributions, including development of a mathematical model to facilitate a nationwide paired kidney exchange program. Segev's research focuses on medical data modeling and simulation, analysis of large health care data sets, and clinical study. His clinical focus is on incompatible organ transplantation as well as kidney and liver transplantation.

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