

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/m² mean LS BMD was 0.96 ± 0.204 g/cm² and mean hip BMD was 0.701 ± 0.382 g/cm². 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/m²). 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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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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Background: While elevations in fasting plasma glucose (FPG) and glycosylated hemoglobin (HbA_{1c}) are both recognized by the American Diabetes Association (ADA) as diagnostic of hyperglycemia, previous comparisons of these tests have demonstrated discordant individual classifications and population estimates. This may be due to additional postprandial glycemia reflected by HbA_{1c} and, in African-descent populations, to non-glycemic factors that contribute to higher HbA_{1c} at any given level of glycemia. We hypothesized that glycemic classifications based on FPG or HbA_{1c} would differ in a Black South African population and investigated factors associated with discordance.

Methods: 889 Black adults with previously undiagnosed diabetes, aged 40-79 years, from the population-based Health and Ageing in Africa: a Longitudinal Study of an INDEPTH Community in South Africa (HAALSI) cohort were included. Concordance between ADA FPG (normoglycemia [NG] <100 mg/dl, prediabetes [pre-DM] 100-125 mg/dl, diabetes [DM] ≥ 126 mg/dl) and HbA_{1c} (NG <5.7%, pre-DM 5.7-6.4%, DM ≥ 6.5%) classifications was assessed using Cohen's kappa statistic and logistic regression models were used to identify predictors of discordance.

Results: Median age was 55 years (IQR 49-62) and 49.3% of the sample was male. Median glucose was 86.4 mg/dl and median HbA_{1c} was 5.4%. Pre-DM, as defined by HbA_{1c}, was present in 204 participants (22.9%), while FPG-defined pre-DM was present in 122 (13.7%). DM defined by HbA_{1c} was present in 146 (16.4%), while FPG-defined DM was present in 36 (4.0%). Concordance between the two tests was poor (kappa statistic 0.18; 95%CI 0.13-0.24). Self-reported history of tuberculosis (OR 1.90, p=0.026) and higher HbA_{1c} (OR 4.70, p<0.001) were associated with increased likelihood of discordance, whereas higher fasting glucose was associated with decreased likelihood of discordance (OR 0.58, p<0.001). There was no association between discordance and hemoglobin, HIV status, BMI, waist circumference or hip circumference.

Conclusion: FPG and HbA_{1c} exhibit poor concordance in classifying hyperglycemia in this Black South African population, with HbA_{1c}-based definitions identifying higher prevalences of pre-DM and DM. Further work is needed to confirm whether these discrepancies are due solely to elevations in postprandial glucose. In the interim, clinicians should consider confirming elevated HbA_{1c} concentrations with oral glucose tolerance testing, particularly in those with a history of tuberculosis, prior to making a diagnosis of DM in this population.

Bone and Mineral Metabolism

OSTEOPOROSIS: DIAGNOSIS AND CLINICAL ASPECTS

A Dedicated Primary Fracture Prevention Program Decreased Low Trauma Hip Fracture Rates over Six Years

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SUN-384

BACKGROUND: Improvements in secondary prevention of osteoporotic fractures are widely reported following the dissemination of Fracture Liaison Services, however, few models for the primary prevention of such fractures have been described. Available published data indicates osteoporosis screening rates in the United States, most significantly in men, remain consistently less than 20% (Cheng N, Green ME). We have previously published how an interdisciplinary Bone Health Team (BHT) improves screening and treatment initiation rates in the outpatient setting. Here we describe the changes in low trauma hip fracture hospitalizations in the six years since initiation of BHT screenings.

METHODS: The BHT began osteoporosis screening in February 2013. Hip fracture admission rates at our facility for each year starting in 2007 were assessed utilizing codes ICD 9 820*/ICD 10 S72.*; our facility is not a trauma center and receives no trauma injuries. Data was divided into a period from October 2007 to September 2013 and October 2013 to September 2019, the latter period based upon the average timeline from identification to treatment initiation and expected efficacy for the first screening group.

RESULTS: From October 2007 to September 2013 there were 216 individuals admitted with a new hip fracture diagnosis, representing 0.54% of the averaged 40,362 individuals served by our facility during that time. Ages ranged from 48 to 94 years, with 156 (72.2% of fractures; 0.39% of all individuals) of individuals meeting age-based screening criteria (aged ≥65 for women and ≥70 for men) at time of fracture. Nine individuals with hip fractures had greater than one discrete hip fracture, confirmed as separate by chart review.

From October 2013 to September 2019 there were 156 individuals admitted with a new hip fracture diagnosis, representing 0.37% of the averaged 46,327 individuals during that time. Ages ranged from 26 to 99 years. Of the hip fractures, 110 (70.5% of fractures) were in individuals meeting age-based screening criteria representing 0.24% of the averaged total individuals served and a 38.5% decrease (p<0.0001) in hip fracture admissions when compared to the prior six years. One individual had greater than one discrete hip fracture, representing an 88.9% lower rate (p<0.0001) of repeated fractures compared to the prior timeframe.

Men represented 355 (95.4%) of the 372 fractures seen from 2007 to 2019. **CONCLUSION:** A statistically significant decrease in hip fracture admission rates in women aged ≥65 and men ≥70 and in repeat hip fractures was observed in the 6 years since BHT inception compared to the 6 years prior.