Abstract citation ID: bvad114.343

Adrenal (Excluding Mineralocorticoids)

SAT339

Osteopenia In The Setting of Mild Autonomous Cortisol Secretion

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Background: Over 80% of adrenal incidentalomas are benign adrenal cortical adenomas, of which 30-50% are found to have mild autonomous cortisol secretion (MACS). Bone fragility is a known complication of MACS. Clinical Case: A 57-year-old postmenopausal female with no prior history of fracture, venous thromboembolism, and atherosclerotic cardiovascular disease, was referred for incidental
bilateral adrenal nodules. Body mass index was normal at 21 kg/m², and no clinical stigmata of Cushing syndrome were noted on physical exam. Unenhanced computed tomography scan revealed a 4.6 cm right adrenal nodule and a 3.3 cm left adrenal nodule; both nodules measured less than -18 Hounsfield Units.

Biochemical work-up for pheochromocytoma, primary aldosteronism, and non-classical congenital adrenal hyperplasia was negative. Evaluation for hypercortisolism revealed a morning cortisol of 20.3 mcg/dL (ref. 4-22 mcg/dL) with concurrent adrenocorticotropic hormone of <5 pg/mL (ref. 6-50 pg/mL), 24-hour urine free cortisol of 16.9 mcg (ref. 4-50 mcg), and midnight salivary cortisol of 0.07 mcg/dL (ref. <0.09 mcg/dL). A 1 mg dexamethasone suppression test measured on two separate occasions was elevated at 6.3 mcg/dL and 7.9 mcg/dL (ref. <1.8 mcg/dL). A subsequent 8 mg dexamethasone suppression test was also elevated at 6.1 mcg/dL (ref. <1.8 mcg/dL). The diagnosis of MACS was made. A bone mineral density (BMD) scan revealed T-scores at the right femoral neck, left femoral neck, and lumbar spine at -1.6, -1.3, and -0.8, respectively. Ten-year probability of major osteoporotic fracture and hip fracture were 8.3% and 1.0%, respectively. To reduce the risk for future fractures, the decision was made to proceed with adrenal vein sampling (AVS) in preparation for potential adrenalectomy.

**Conclusion:** MACS is the most frequent hormonal abnormality in adrenal incidentalomas, with an estimated prevalence of 0.8-2 cases per 1000 persons. A previous prospective study found that surgical cure of unilateral MACS may lead to a substantial risk reduction (up to 15-fold) of future incident asymptomatic vertebral fractures. Additionally, the highest risk for clinical fracture in those with adrenal adenomas (either nonfunctional or with cortisol hypersecretion) appears to occur at 7-10 years after initial diagnosis. BMD does not perfectly correlate with fracture risk, so unilateral adrenalectomy (if lateralization is observed on AVS) and/or pharmacotherapy should be strongly considered in patients with an expected longevity of >10 years even with mild osteopenia and low fracture risk assessment tool scores.

**Presentation:** Saturday, June 17, 2023