greater on burosumab (-2.23 [0.117; -2.46, -2.00]) compared with higher-dose (-0.87 [0.264; -1.39, -0.35] or lower-dose (-1.09 [0.180; -1.45, -0.74]) Pi. Similarly, the mean RGI-C Lower Limb Deformity Score was greater on burosumab (+1.25 [0.170; 0.92, 1.59]) compared with either higher-dose (+0.32 [0.188; -0.05, 0.69]) or lower-dose (+0.26 [0.146; -0.02, 0.55]) Pi. Adverse events including hypersensitivity and injection site reactions, were more frequent with burosumab, and were mild to moderate in severity overall. No discontinuations occurred. In conclusion, children with XLH treated with burosumab had greater improvements in rickets and lower limb deformity compared with subjects receiving higher or lower doses of Pi.

Bone and Mineral Metabolism

PARATHYROID HORMONE TRANSLATIONAL AND CLINICAL ASPECTS

The Use of Imaging in Primary Hyperparathyroidism

David Tyler Broome, M.D.[1], Robert Naples, DO[1], Richard Bailey, MS3[2], James F. Bena, MS[1], Joseph Scharpf, MD[1], Mario Skugor, MD[3].

[1]Cleveland Clinic Foundation, Cleveland, OH, USA, [2]Case Western Reserve University School of Medicine, Cleveland, OH, USA, [3]Cleveland Clinic, Cleveland, OH, USA.

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Primary hyperparathyroidism is characterized by excessive dysregulated production of parathyroid hormone (PTH) by 1 or more abnormal parathyroid glands. Preoperative localization is important for surgical planning in primary hyperparathyroidism. Previously, it had been published that ultrasound (sensitivity of 76.1%, positive predictive value of 93.2%) and nuclear scintigraphy (Sestamibi-SPECT) (sensitivity of 78.9%, and a positive predictive value of 90.7%) are first line imaging modalities[1]. Currently, the imaging modality of choice varies according to region and institutional protocol. The aim of this study was to evaluate the imaging modality that is associated with an improved remission rate based on concordance with operative findings. A secondary aim was to determine the effect of additive imaging on remission rates. This was an IRB-approved retrospective review of 2657 patients with primary hyperparathyroidism undergoing surgery at a tertiary referral center from 2004–2017. Analyses were performed with SAS software using a 95% confidence interval ($p<0.05$) for statistical significance. After excluding re-operative and familial cases, 2079 patients met study criteria. There were 422 (20.3%) male and 1657 (79.7%) female patients with a mean age of 66 (+12.2) years, of which 1723 (82.9%) of patients were white and 294 (14.1%) patients were black. Ultrasound (US) was performed in 1891 (91.9%), sestamibi with SPECT (sestamibi/SPECT) in 1945 (93.6%), and CT in 98 (4.7%) patients. Of these, 1721 (82.8%) had combined US and sestamibi/SPECT. US was surgeon-performed in 94.2% of cases and 89.9% of the patients underwent a four gland exploration. Overall, US concordance was 52.4%, sestamibi/SPECT was 45.5%, and CT was 45.9%.US and sestamibi/SPECT both had an improved remission rate if concordant with operative findings, while CT had no effect (US p=0.04; sestamibi/SPECT p=0.01; CT p=0.50). The overall remission rate was 94% (CI=0.93–0.95), however, increasing the number of imaging modalities performed did not increase the remission rate (p=0.76) or concordance with operative findings (p=0.05). Despite having low concordance rates, US and sestamibi/SPECT that agreed with operative findings were associated with higher remission rates. Therefore, when imaging is to be used for localization, our data support the use of US and sestamibi/SPECT as the initial imaging modalities of choice for preoperative localization.

[1]Kuzminski SJ, Sosa JA, Hoang JK. Update in Parathyroid Imaging. *Magn Reson Imaging Clin N Am*. 2018;26(1): 151–166.

Bone and Mineral Metabolism

BONE AND MINERAL CASE REPORTS II

The Case of Dueling Femurs

Richa Patel, MD[1], Ana Ramirez Berlioz, MD[2], Bhavana Chinnakotla, MD[2], Lilamani Romayne Goonetilleke Kurukulasuriya, MD[3].

[1]University of Missouri, Columbia, MO, USA, [2]University of Missouri-Columbia, Columbia, MO, USA, [3]UNIV OF MO - COLUMBIA, Columbia, MO, USA.

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Introduction: Paget's disease of the bone is characterized by excessive osteoclastic bone resorption followed by formation of disorganized bone; which is often focal. Bone pain and deformities are common features and it often leads to complications such as pathological fractures, deafness or neurologic deficits. Elevated bone turnover markers and alkaline phosphatase reflect ongoing exaggerated bone resorption and osteoblastic activity. We present an unusual scenario of post-menopausal osteoporosis and Paget's disease occurring in the same patient.

Clinical Case: 86-year-old female with history of Type 2 Diabetes Mellitus, Hypertension,

Hypothyroidism, degenerative joint disease of lumbar spine with prior interbody fusion and laminectomy was referred to our clinic by Orthopedics for evaluation of newly diagnosed Paget's disease. 2 months ago, she noticed severe right hip pain limiting daily activities. She denied any

history of falls, fractures or family history of Paget's. Physical exam was notable for tenderness to right sacroiliac joint and right femoral trochanteric region. Work up included MRI of Lumbar spine and Pelvis, Pelvis X-ray, DEXA scan and routine blood work.

Interestingly, her DEXA scan showed T score of +2.9 in Right hip and -3.1 in Left hip. On Pelvis X-ray cortical thickening, coarse trabecula and osteoarthritic changes were noted in right femur and hip, consistent with Paget's disease. Left femur showed strikingly thinner cortices compared

to the right, due to underlying osteoporosis. MRI of lumbar spine and pelvis was consistent with polyostotic Paget's involving L3-L5, Sacrum and Right femur. Nuclear bone scan showed areas of uptake including anterior calvarium, lumbar spine, right hip, right femur, 8th rib, left mid tibia and 1st metatarsal of left foot. Since the distribution of uptake seemed atypical for Paget's, a skeletal survey was obtained which was negative for bone lesions suggestive of malignancy.