structural constituent. Two adenoma clusters significantly differed in urinary calcium excretion level (403 [312–488] vs. 205 [150–327], p=0.037) without significant differences in median PTH (102 [86–138] vs. 125 [92–229] pg/mL) and calcium level (11.1 ± 1.0 vs. 11.0 ± 0.9 mg/dL; P>0.05 for all). In summary, parathyroid carcinoma had distinctive transcriptional profiles which might improve the early detection of parathyroid carcinoma. Parathyroid adenomas were clustered into two groups with regard to urinary calcium excretion level based on transcriptional profiles, which merits further investigation. **Reference:** (1) Pandya C et al., JCI Insight. 2017 Mar 23; 2(6): e92061. **Sources of Research Support:** This study was supported by Severance Hospital Research Fund for Clinical Excellence (SHRC C-2019-0032; C-2020-0035).

Bone and Mineral Metabolism

BONE AND MINERAL METABOLISM MISCELLANEOUS

Fluoxetine Administration During Lactation Impacts the Bone Health of the Dam and the Offspring in Mice

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Selective serotonin reuptake inhibitors (SSRIs) are the most commonly prescribed class of antidepressants during pregnancy and lactation. SSRIs decrease bone mineral density (BMD) across all ages and sexes. Lactation is also characterized by increased bone resorption to mobilize calcium and achieves this via a serotonin-induced hormonal cascade. This serotonin-mediated bone loss is normally restored after weaning but is persistent when an SSRI is administered during the peripartum period. Our lab has previously shown that administration of the SSRI fluoxetine (FLX) during both gestation and lactation results in compromised bone health of the dam, which is characterized by a decreased bone mineral density (BMD). Along with this, we have also shown a decrease in BMD and femoral length in the offspring of the FLX-treated dams at weaning. We hypothesize that FLX usage during lactation only will impact the bone health of the dam as well as the bone health of her offspring due to exposure to FLX via the dam's milk. Female C57BL/6 mice were randomized to receive the SSRI fluoxetine hydrochloride (20 mg/kg) or saline daily from the beginning of lactation (D0) through the end of lactation (D21), resulting in the following treatments: FLX dams (n=13) and control dams (n=13). The offspring of the treated dams were then harvested at weaning (3 weeks of age). During the peripartal period, the BMD of the dam was monitored via dual x-ray absorptiometry (DEXA). A baseline scan was taken at 6 weeks of age, at the end of pregnancy (E17.5), the beginning of lactation (D2), peak lactation (D10), and at the end of lactation (D21). There was no significant difference in the BMD of the FLX dams compared to the control dams at 6 weeks of age (p=0.9992), E17.5 (p=0.9995), D2 (p>0.9999), or D10 (p>0.9999). However, at D21, the FLX dams had a decreased BMD compared to the control dams (p=0.0493). Along with the decreased BMD of the FLX dams at weaning, there was a significant decrease in femur length in the pups of the FLX dams (p=0.0040). When the pups were separated by sex, the decreased femur length was observed in both the male (p=0.0413) and female (p=0.0047) offspring. These data suggest that fluoxetine use during lactation only results in a decreased BMD of the treated dams, as well as decreased femur length in the exposed offspring in both sexes.

Bone and Mineral Metabolism

BONE AND MINERAL METABOLISM MISCELLANEOUS

Follicle-Stimulating Hormone Does Not Impact RANKL-Induced Osteoclastogenesis

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Postmenopausal osteoporosis has been attributed to decreased estradiol levels. In the hypothalamic-pituitary-gonadal axis, estradiol synthesis is stimulated by follicle-stimulating hormone (FSH). FSH is secreted from the anterior pituitary gland and estradiol feeds back to the hypothalamus and pituitary to suppress FSH production. In postmenopausal women, the loss of estradiol (and inhibin) negative feedback leads to elevated serum FSH levels. It was recently proposed that this increase in FSH also contributes to postmenopausal osteoporosis by stimulating differentiation and activation of bone-resorbing osteoclast cells. Our objectives were to determine whether FSH has direct actions on osteoclast differentiation in vitro and, if so, its mechanism(s) of action. First, a murine leukemic monocyte/macrophage cell line, RAW264.7, was differentiated into osteoclasts by treatment with receptor activator of nuclear factor kappa-B ligand (RANKL, 50 ng/mL) for seven days. As expected, we observed the appearance of osteoclasts, characterized as tartrate-resistant acid phosphatase (TRAP)-positive multinucleated cells. RANKL also induced expression of established osteoclast differentiation markers, including *Trap*, cathepsin K (*Ctsk*), and matrix metalloproteinase-9 (*Mmp9*). The mRNA expression of FSH receptor (*Fshr*), however, was low to undetectable both before and after osteoclast differentiation. Co-treatment of RAW264.7 cells with FSH (35, 70 and 140 IU/L) and RANKL did not further impact the expression of *Rank*, *Trap*, *Ctsk*, *Mmp-9*, or *Fshr*. Second, primary murine monocytes were differentiated into osteoclasts by treatment with RANKL (50 ng/mL) and macrophage colony-stimulating factor (M-CSF, 25 ng/mL) for five days. FSH co-treatment (70 and 140 IU/L) had no impact on the expression of osteoclast markers, and *Fshr* expression was low to undetectable both before and after osteoclast differentiation, consistent with the results from RAW264.7 cells. In conclusion, in our hands, FSH does not impact RANKL-induced osteoclast differentiation in immortalized or primary murine monocytes.