children. Her mother carried a diagnosis of rheumatoid arthritis and osteoporosis. The only pertinent physical exam finding was short stature (Height -4'6"). A DEXA scan was performed using a Hologic unit and revealed a T Score of -1.0 at the L-spine and -1.9 at the femoral neck. A FRAX score predicted a 14% risk of major osteoporotic fracture and 4% risk of hip fracture.
Laboratory data revealed: Serum Calcium 9.3 (8.5-10.5 mg/dL), Albumin 4.3 (3.5-5.0 g/dL), ALP 21 (<130 U/L), Vitamin D 25OH 46.2 (>30 ng/ml), Intact PTH 28.3 (15.0-65.0 pg/ml), Vitamin B6 87.7 (2-21 ng/ml).
On review of her medical record, low ALP levels ranging between 20-30 U/L were noted to be present for the last twenty years. Given her history of musculoskeletal complaints, short stature, elevated Vitamin B6 and low ALP, genetic testing for hypophosphatasia was performed. Her results confirmed a known pathogenic mutation in the ALPL gene.
Conclusion: This case highlights the importance of reviewing ALP levels and relevant patient history to rule out hypophosphatasia prior to initiating therapy for osteoporosis. This condition is often unrecognized. Bisphosphonates, which are often the first line of treatment in osteoporosis, are contraindicated in hypophosphatasia as they can increase the risk of atypical fractures.[1] Teriparatide may improve bone density depending on the extent of ALP deficiency. Asfotase alfa is a new agent that is currently available for the management of certain cases of hypophosphatasia.
References:
1."Atypical femoral fractures"during bisphosphonate exposure in adult hypophosphatasia; *Sutton,RA; Mumm,S;Coburn SP; Ericson,KL; Whyte, MP;* Journal of Bone and Mineral Research 2012 May;27(5):987-94.

Neuroendocrinology and Pituitary

ADVANCES IN NEUROENDOCRINOLOGY

Deletion of KNDy Neuron-Specific KISS1 Disrupts Estrous Cyclicity and LH Pulsatility in Female Mice

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SUN-243
Kisspeptin (encoded by *Kiss1*), a neuropeptide critically involved in neuroendocrine regulation of reproduction, is primarily synthesized in two discrete hypothalamic nuclei: the anteroventral periventricular area (AVPV) and arcuate nucleus (ARC). AVPV *Kiss1* is important for the pre-ovulatory luteinizing hormone (LH) surge unique to females as well as estrogen-induced positive feedback control of GnRH and LH. In contrast, ARC *Kiss1* neurons, which largely co-express the neuropeptides NKB and dynorphin (collectively known as KNDy neurons), are major regulators of pulsatile release of GnRH and LH, and mediate estrogen-induced negative feedback control of both GnRH and LH. Previous studies have not fully separated the specific roles for *Kiss1* in the AVPV versus KNDy-ARC neurons in the downstream control of GnRH and LH release. Therefore, we generated a Pdyn-Cre/Kiss1$^{fl/fl}$ (KO) mouse model to target *Kiss1* in the KNDy neurons to differentiate KNDy neuron-specific function from AVPV *Kiss1* function in the maturation and maintenance of the reproductive axis. qRT-PCR data documented a significant reduction of *Kiss1* expression in the mediobasal hypothalamus (containing ARC) compared to controls, whereas *Kiss1* in the preoptic area (containing AVPV) was similar in both KO and controls. Immunofluorescent IHC confirmed a loss of kisspeptin immunoreactivity in the ARC of KO animals while expression in the AVPV remained intact. Markers of pubertal onset (day of vaginal opening and first estrus in females; day of preputial separation in males) were normal in KO mice, suggesting that AVPV *Kiss1* and/or other neural signals may be sufficient for pubertal onset. In addition, body weight throughout pubertal growth was comparable between KO and control animals of both sexes. Interestingly, KO female mice had disrupted estrous cycles presenting with persistent diestrus and a small vaginal opening. In order to test our hypothesis that conditional deletion of *Kiss1* in KNDy neurons disrupts or ablates episodic GnRH/LH pulsatile release, we collected serial tail blood samples from mice at diestrus and measured LH. KO female mice exhibited significantly fewer LH pulses in a 3-hour timespan compared to controls, suggesting that KNDy neurons were functionally compromised. These observations indicate the central role of KNDy neurons in the regulation of GnRH/LH pulsatility and estrous cyclicity. The functional effects of disrupted estrous cyclicity and slower LH pulses observed in KO females are currently under study to assess potential abnormalities in ovarian folliculogenesis and fertility. Future experiments will determine whether ARC *Kiss1* deletion disrupts the KNDy-driven negative feedback response of LH to gonadectomy, as well as address potential sex differences in ARC *Kiss1*-mediated negative feedback control of LH release.

Thyroid

THYROID NEOPLASIA AND CANCER

Technologies of Diffuse Optics in the Diagnosis of Thyroid Cancer

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Technologies of diffuse optics in the diagnosis of thyroid cancer
BACKGROUND:
The most common tool to test malignancy in the study of thyroid nodules (NT) is ultrasound and fine needle aspiration biopsy (FNAB). However, the sensitivity and specificity of the method and the effectiveness in thyroid cancer are limited; therefore new methods to study thyroid nodules are required. In this way our goal is to introduce hybrid diffuse optical instruments that are capable to measure