

levels [110 pg/ml] in comparison to his levels on presentation. Repeat imaging revealed a decrease in tumor burden including bilateral adrenal nodules, celiac axis mass and hepatic metastases.

Conclusion:

This is an unusual case of malignant pheochromocytoma in the absence of SDHB mutation in a patient with BWS. Genetic causes in these patients are yet to be determined. However, genes H19 and KCNQ10T1 have been implicated in addition to IGF-2 and CDK1NC

Thyroid

THYROID CANCER CASE REPORTS I

A Retrospective Diagnosis of Malignant Struma Ovarii After Discovery of Pulmonary Metastases

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Background: Malignant struma ovarii is a rare ovarian tumor that is histologically identical to differentiated thyroid carcinoma.¹ We present a case of a struma ovarii that was recognized as being malignant only after the discovery of pulmonary metastases.

Clinical Case: A 29 year old female presented to the hospital with acute right lower abdominal pain, suspicious for ovarian torsion. She underwent urgent right salpingo-oophorectomy and pathology demonstrated a mature cystic teratoma with benign struma ovarii. Two years later, a CT of the abdomen incidentally revealed bilateral pulmonary nodules. Review of the imaging showed that these pulmonary nodules were also present two years prior, and had since become larger. Video-assisted thoracoscopic surgery was performed and lung biopsy was positive for well-differentiated thyroid carcinoma. The patient then underwent total thyroidectomy which revealed a 0.3 x 0.3 cm infiltrative papillary thyroid cancer, follicular variant, without lymphovascular invasion. Thyroglobulin level decreased from 169 ng/mL pre-operatively to 80 ng/mL post-operatively, but then continued to be variable ranging from 56 to 252 ng/mL (1.6-50 ng/mL). Thyroglobulin antibodies remained negative.

Pathology from right ovary was re-reviewed at a second institution and found to be consistent with highly differentiated thyroid carcinoma with characteristic nuclear features of papillary thyroid carcinoma.

A diagnostic whole body I-131 scan showed uptake within the thyroid bed, bilateral lung nodules, left distal thigh and right mid thigh. These thigh lesions were not visualized on lower extremity ultrasound. After dosimetry was performed, the patient received radioactive iodine-131 200 mCi. Post-therapy scan six days later demonstrated uptake in the thyroid bed, bilateral lungs and bilateral thighs. About five months later, thyroglobulin level had decreased to 0.4 ng/mL with a suppressed TSH. A repeat CT chest demonstrated that the lung nodules had all decreased in size, largest from 0.5 cm to 0.3 cm.

Conclusion: Careful examination of struma ovarii pathology should be performed to evaluate for malignant

features since benign appearing histology can present diagnostic difficulty.² In this case, thyroglobulin level was lower than reported in previous cases; however, sites of metastases were responsive to radioactive iodine therapy indicating well differentiated disease and a favorable prognosis.

References: 1. Goffredo P, Sawka AM, Pura J, Adam MA, Roman SA, Sosa JA. Malignant Struma Ovarii: A Population-Level Analysis of a Large Series of 68 Patients. *Thyroid*. 2015;25(2): 211-216.

2. Roth LM, Miller AW, Talerman A. Typical Thyroid-Type Carcinoma Arising in Struma Ovarii: A Report of 4 Cases and Review of Literature. *Int J Gynecol Pathol*. 2008;27(4): 496-506.

Thyroid

THYROID DISORDERS CASE REPORTS III

Thyroid Abscess in a Healthy 22-Year Old Female

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Background: Thyroid abscess is a rare pathology, exhibiting an incidence of less than 1% of all thyroid diseases. The thyroid is highly resilient against infections. Those who do experience thyroid abscesses are commonly immunocompromised. We illustrate a case of a thyroid abscess in a young, healthy patient.

Clinical Case: A previously healthy 22-year-old woman presented to the emergency department complaining of a sore throat, fever, nausea, and body aches. On exam, the patient was febrile, but had no obvious cervical lymphadenopathy, masses, or oropharyngeal lesions/growths. Initial labs showed leukocytosis to 13.5 k/ul with left-shift. The patient was diagnosed with acute pharyngitis, and was discharged on oral steroids and antibiotics for an incidental urinary tract infection.

After some improvement, the patient returned to the ED 14 days later with a worsening odynophagia, dysphagia, and hematemesis. The patient was afebrile, but had neck swelling and possible thyromegaly. Lab results showed leukocytosis to 17.3 k/ul, and CT of the neck identified a 3.1cm x 3.3cm x 4.4cm heterogeneous cystic/solid mass that nearly completely replaced the normal right thyroid lobe parenchyma and extended to the isthmus. Right-sided lymphadenopathy was also present. Initial evaluation suggested thyroid carcinoma. The patient was re-initiated on steroids due previous improvement, and was referred to a tertiary academic medical center for biopsy and further evaluation. 2 days later, the patient returned to the ED for worsening symptoms. However, she was discharged to home with no further management.

At her endocrine surgery consultation visit, the patient reported worsening pain, inability to move her neck, inability to eat or drink, inability to lie flat, and new-onset sialorrhea and voice changes. A bedside ultrasound was performed with findings suggestive of an abscess. An in-office fine-needle aspiration produced purulent fluid, which relieved some of

the patient's compressive symptoms. Cytology showed inflammatory cells (mostly neutrophils) and numerous bacteria. The patient was emergently taken to the operating room for neck exploration, hemithyroidectomy, and incision/drainage of a suspected thyroid abscess. A drain was placed and removed POD 2 after minimal output.

The patient was discharged on oral antibiotics. 1-week post-operatively, the patient returned to the ED due to reaccumulation of the abscess. This was successfully treated with IR placement of a drain. The drain was removed 2-weeks post-operatively, and the patient is doing well.

Conclusion: Thyroid abscesses are rare but possible in young and immune-competent patients. While the imaging findings can point towards a more common diagnosis, such as thyroid carcinoma, avoiding anchoring bias is important. Imaging data should be considered in the context of the clinical picture to avoid the possibility of misdiagnosis.

Pediatric Endocrinology

PEDIATRIC SEXUAL DIFFERENTIATION, PUBERTY, AND BONE BIOLOGY

Mice Lacking Paternally Expressed DLK1 Reach Puberty at a Lower Body Weight Than Littermate Controls

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SUN-100

Body fat content along with a variety of genetic, environmental and psychosocial factors are responsible for the development and maintenance of reproductive function, especially in females. Epidemiologic studies indicate a relationship between increased body mass index and earlier puberty in girls. In contrast, a significant delay in puberty and menarche is seen in girls who are very physically active and have markedly diminished body fat. This link between reproduction and metabolism was reinforced with the recent report of loss-of-function mutations in the *Delta-like homolog 1 (DLK1)* gene in girls with central precocious puberty (CPP) and increased body fat. *DLK1* is a paternally expressed gene located on chromosome 14q32.2 in a locus associated with Temple syndrome (TS), an imprinting disorder caused mainly by maternal parental disomy (mUPD). *Dlk1* knockout mice display pre- and postnatal growth retardation, a phenotype that overlaps with human mUPD14. However, precocious puberty, a common finding associated with TS, was not carefully characterized in these mice. We used a *Dlk1* deficient mouse model to determine the effects of *Dlk1* on pubertal maturation. We confirmed by RT-qPCR that *Dlk1* mRNA was undetectable in the mediobasal hypothalamus, where kisspeptin and other regulators of puberty are expressed, of *Dlk1*^{+/-} mice (which inherited the mutant allele from their father) whereas it was present in *Dlk1*^{+/+} mice. As reported previously, body weight was significantly

lower in juvenile male and female *Dlk1*^{+/-} mice, compared to wild-type littermate controls. Interestingly, mutant and control female mice achieved vaginal opening, a marker of puberty onset, at a similar age (*Dlk1*^{+/-}: 29.8 ± 1.5 days, n=11 vs. *Dlk1*^{+/+}: 29.1 ± 0.7 days, n=15, p=0.6) despite a considerably lower body weight in the *Dlk1* deficient mice at the time of vaginal opening (*Dlk1*^{+/-}: 10.1 ± 0.8 g vs. *Dlk1*^{+/+}: 14.3 ± 0.3 g, p<0.0001). Similarly, in the *Dlk1*^{+/-} males, preputial separation occurred at a lower body weight than in controls (*Dlk1*^{+/-}: 12.4 ± 0.3 g, n=9 vs. *Dlk1*^{+/+}: 14.1 ± 0.2 g, n=19, p<0.0001). We hypothesize that the lack of *Dlk1* at the hypothalamic level may be attenuating the effect of the low body weight on determining pubertal onset. These findings suggest that DLK1 is an important link between body weight and pubertal development in mice, as has been shown in humans.

Steroid Hormones and Receptors

STEROID AND NUCLEAR RECEPTORS

Roles of Progesterone Receptor Isoform B in Non-Small Cell Lung Cancer Tumor Progression

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Lung cancer is a leading cause of cancer mortality worldwide. Premenopausal women often has worse survival with advanced stages of the disease compared to postmenopausal women, suggesting an involvement of sex steroids and their receptors in the progression of non-small cell lung cancer (NSCLC). Progesterone receptor (PR) was reported to be involved in an inhibition of NSCLC cell proliferation and correlated with better clinical outcome. In addition, PRB suppressed epidermal growth factor (EGF)-induced NSCLC cell proliferation and activation of ERK1/2, in the absence of progestin. However, clinical and biological significance of PRB in NSCLC patients has remained virtually unknown. Therefore, we performed immunohistochemistry using monoclonal antibody specific to the N-terminus of PRB (250H11 mAb) and 1294mAb which could detect both PRA and PRB in 124 NSCLC cases: 94 adenocarcinoma and 30 squamous cell carcinoma (SCC). Overall survival (OS) was analyzed using the Kaplan-Meier plotter (KM plotter) database, examining the correlation between the status of PRs and survival rate of the patients.

19 cases were immunohistochemically positive for PRB and 23 PRA/B positive NSCLC cases, and all of four cases harboring abundant PRs were also positive for PRB. Therefore, PRB positivity was considered to be significantly correlated with the whole PR (<0.01). Of particular interest, the abundance of PR or PRB was significantly correlated with lower tumor size in total NSCLC (p=0.0395) and SCC (p=0.023), and tended to be correlated with pleural invasion in adenocarcinoma cases (p=0.051). In addition, PRB positive cases tend to have lower tumor size than those