cancer is a rare event. When this occurs, patients have a very poor prognosis. Case Study A clinical case of a 33-year-old woman, born in Piura and coming from Lima, with no major history, diagnosed with a 4-month-old cervical tumor is presented. An ultrasound scan and a further biopsy were performed before an eventual diagnosis of papillary thyroid carcinoma. Operation was performed, and a classical papillary carcinoma of 0.90 inches was detected, along with macro-metastasis in a parathyroid ganglion. Post-surgical thyroglobulin was 1071 ng/ml (n< 50 ng/ml). The tomography in her lung showed three nodules in the middle lobe. A further dose of 150 millicuries of radioactive iodine (I-131) was given, with whole-body scanning, post positive in both lung fields and right lank pain. The tomography in the abdomen revealed a hepatic pedicle injury, compatible with teratoma. A liver resection surgery was scheduled, and metastatic papillary carcinoma was identified. A V600 mutation in BRAF gene was present in thyroid gland and not detectable in the liver. Conclusions This case shows an example of thyroid cancer with uncommon metastasis in the liver, which occurs in 0.5% of all thyroid metastases. It is even rarer that positive iodine was found. Liver metastasis represents a poor prognosis, however it has been reported that resective surgery offers patients a better chance of survival. Multiple factors influence its pathogenesis, including BRAF mutations. In this case, mutation was detected in thyroid gland, but not in liver metastasis, which could represent diverse BRAF mutations.

Cardiovascular Endocrinology

ENDOCRINE HYPERTENSION AND ALDOSTERONE EXCESS

Aldosterone-Potassium Ratio Predicts Primary Aldosteronism Subtype

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SAT-547

Objective Prediction models have been developed to predict either unilateral or bilateral primary aldosteronism, and these have not been validated externally. We aimed to develop a simplified score to predict both subtypes and validate this externally.

Methods Our development cohort was taken from 165 patients who underwent adrenal vein sampling (AVS) in two Asian tertiary centres. Unilateral disease was determined using both AVS and post-operative outcome. Multivariable analysis was used to construct prediction models. We validated our tool in a European cohort of 97 patients enrolled in a clinical trial. Previously published prediction models were also tested in our cohorts.

Results Backward stepwise logistic regression analysis yielded a final tool using baseline-aldosterone-to-lowest-potassium ratio (APR, ng/dL/mmol/L), with an area under receiver operating characteristic curve of 0.80 (95% CI: 0.70 - 0.89). In the Asian development cohort, probability of bilateral disease was 90.0% (with APR <5) and probability of unilateral disease was 91.4% (with APR >15). Similar results were seen in the European validation cohort. Combining both cohorts, probability of bilateral disease was 76.7% (with APR <5), and probability for unilateral was 91.7% (with APR >15). Other models had similar predictive ability but required more variables, and were less sensitive for identifying bilateral PA.

Conclusion The novel aldosterone-potassium ratio (APR) is a convenient score to guide clinicians and patients of various ethnicities on the probability of PA subtype. Using APR to identify patients more likely to benefit from AVS may be a cost-effective strategy to manage this common condition.

Tumor Biology

ENDOCRINE NEOPLASIA CASE REPORTS I

Ectopic Cushing Syndrome Due to a Metastatic Neuroendocrine Tumor to the Breast

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SUN-927

Introduction:
We present a rare case of ectopic Cushing syndrome (CS) due to a neuroendocrine tumor (NET) metastatic to the breast.
Case:
A 38-year-old female was referred for ACTH-dependent CS. She had rapid development of cushingoid features and hypertension three months prior to presentation. A 24-hour urinary free cortisol (UFC) was elevated to 2548 µg (0-50 µg/24hr), and ACTH was 228 pg/mL (10-60 pg/mL). A pituitary MRI was normal, and inferior petrosal sinus sampling was not consistent with a central ACTH source. A DOTA-TATE scan showed mediastinal lymphadenopathy and a 0.8cm area of uptake in the right breast. The patient was placed on ketoconazole and UFC normalized. Following biopsy, she underwent breast lumpectomy at an outside hospital, and pathology showed triple negative invasive carcinoma of the breast. Chemotherapy was initiated.
However, her CS rapidly worsened: repeat UFC was 4867 µg, and ACTH was 369 pg/mL. Re-review of her pathology slides at our facility showed that the tumor stained negative for breast markers and positive for markers of NET and ACTH. Ki67 staining was approximately 30%. Chemotherapy for breast cancer was immediately stopped. A follow-up PET-CT continued to show uptake in the mediastinal lymph nodes. FNA of these lymph nodes revealed metastatic NET. In order to maximize control of her CS prior to chemotherapy, she underwent bilateral adrenalectomy (BLA). Afterwards, the patient received 10 cycles of chemotherapy with modified FOLFOX-7 for her NET. Thus far, the tumor burden appears stable, and she

has been recommended to hold off on radiation therapy. She is currently taking replacement doses of hydrocortisone and fludrocortisone.
Conclusion:
In this challenging case, determination of source of ACTH hypersecretion led to an initial diagnosis of breast cancer. Primary breast carcinoma with neuroendocrine differentiation has been reported to show significant overlap in pathology with NET metastatic to the breast[1]. However, worsening of the CS in this case led to consideration of an alternative diagnosis, resulting in diagnosis of an ACTH producing NET metastatic to the breast. Prior to chemotherapy, she underwent BLA, which may lower morbidity and mortality associated with ACTH-dependent CS[2], particularly given plan for further chemotherapy.
Reference:
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Reproductive Endocrinology
FEMALE REPRODUCTION: BASIC MECHANISMS

Estrogen-Responsive and -Unresponsive Gene Expressions Promoted by Enhancers Specifically Hypomethylated in Endometriotic Cells May Become a Molecular Marker in Endometriosis Lesions

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MON-008

Background: Endometriosis is an estrogen-dependent, inflammatory disease, and the role of estrogen is obvious because the symptoms associated with endometriosis often disappear after menopause, and GnRH agonists or progestin relieve the pelvic lesions and endometriosis-associated pain. However, there are limitations to these treatments that target the estrogen reduction in endometriotic lesions. We sought to define an aberrant gene expression derived from an epigenetic background in endometriosis.**Objective**: In the hope of overcoming the limitations of endocrine treatments in endometriosis, we examined estrogen receptor (ER)-dependent and -independent gene expressions promoted by active enhancers specifically hypomethylated in endometriotic cells.
Patients: Institutional Review Boards approved this project. We obtained the informed consent from all patients. The chocolate cyst lining in ovaries of patients with endometriosis was the source of endometriotic tissue. As the control, the eutopic endometrial tissues were obtained from uteri of premenopausal women who had uterine leiomyoma.**Methods**: Stromal cells were prepared from endometriotic and endometrial tissues. Gene expression was examined using RT-PCR. The potential function of hypomethylated gene sequence as an active enhancer was evaluated by ChIP analysis using anti-H3K4me1 and anti-H3K27ac antibodies and eRNA expression analysis. Using ChIP-seq and ChIA-PET analysis *in silico,* ER-specific loci within gene bodies and the up- and downstream regions were extracted. ER-dependent gene expression was examined using estradiol or SERM.**Results:** ER expression in endometriotic cells.1) Relative expression of ERα mRNA was estimated to be one tenth of that in endometrial cells. 2) Relative expression of ERβ1 mRNA was 40-fold higher than that in endometrial cells, which is at a comparable level of the ERα. 3) ERβ2 mRNA expression was at a comparable level of the ERβ1. From our DNA methylation and gene expression analysis, 6 genes were selected and classified into 3 categories: estrogen-responsive genes with specific methylation (*ESR1* and *ESR2*) or without any methylation (*TGFα* and *GREB1*), and estrogen-unresponsive but upregulated genes depending on specific hypomethylation (*GATA6* and *CYP19*). 4) ChIP-seq and ChIA-PET analysis *in silico* suggested the presence of ER-specific loci within gene bodies and the up- and downstream in estrogen-responsive genes. 5) ChIP and eRNA expression analysis predicted active enhancer regions both in estrogen-responsive and -unresponsive genes. 6) In response to estrogen, *TGFα* and *GREB1* expressions were upregulated, but *ESR1 and ESR2* showed marginal responses.**Conclusion**: We focused on estrogen-responsive and -unresponsive genes linked to the epigenetic environment of endometriotic lesions, and revealed a facet of gene expression in endometriotic cells.

Reproductive Endocrinology
FEMALE REPRODUCTION: BASIC MECHANISMS

The Direct Effect of Kisspeptin on Human Ovarian Granulosa Cells to Regulate Steroidogenesis

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MON-012

Kisspeptin has a central role to stimulate the hypothalamic-pituitary-gonadal (HPG) axis. Furthermore, a previous study has suggested that kisspeptin might have a peripheral role in follicular development (1). This study aimed to 1) explore the effect of kisspeptin on *CYP19A1* (aromatase) mRNA expression in human granulosa cells and aromatase concentrations in the supernatant; and 2) investigate the effect of kisspeptin on *FSHR* mRNA expression in human granulosa cells. In this study, human granulosa-like tumor cell line (KGN) (n=3) was incubated for 24 hours with FSH (10^{-8} M); FSH with IGF-1 (10^{-8} M); different doses of kisspeptin including 1, 10, 100, 1,000, and 10,000 nM; FSH with different doses of kisspeptin; and FSH with IGF-1 together with different doses of kisspeptin. FSH treatment alone or FSH with IGF-1 did not increase *CYP19A1* mRNA expression when compared to control. Interestingly, kisspeptin treatment at the doses of 100 nM (P=0.028), 1,000 nM (P=0.005),