

## Neuroendocrinology and Pituitary

### PITUITARY TUMORS II

#### *Posterior Hypothalamic Involvement on Pre-Operative Magnetic Resonance Imaging as a Predictor for Hypothalamic Obesity in Craniopharyngiomas*

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#### MON-LB45

Craniopharyngioma (CP) is a rare embryonic tumor of the sellar and parasellar region with benign histology (World Health Organization grade I) thought to arise from embryonic remnants of Rathke's pouch. Despite its high survival rates, this tumor can lead to severe morbidity secondary to destruction of adjacent structures. Hypothalamus (HT) is a brain region that has a central role in regulating body weight through a complex mechanism involving central and peripheral signaling pathways. Destruction of its distinctive nuclei induces hyperphagia, hyperinsulinemia and weight gain. Seventy-five patients with CP who underwent first surgical resection in a single center by the same neurosurgeon between February 2005 and March 2019 were screened; those who have had prior radiation, were aged below 18 years, or did not have follow up body mass index (BMI) after surgery were excluded. Ultimately, this study included 45 patients with a mean age 50.5 years, 73.3% women. Pre and post-operative MRI were independently reviewed by three neuroradiologists to determine involvement of the hypothalamic regions: anterior, anterior and posterior, or no hypothalamic involvement. Body mass index were recorded pre operatively and subsequently after TSS up to 24 months post operation. Association between hypothalamic region involvement and BMI as well as endocrine function were examined. Posterior hypothalamic involvement seen in pre operative MRI (N=28) was significantly associated with higher BMI at 3-6 month, 7-12 month, and 13-24 month follow up ( $p < 0.05$ ) in comparison to involvement of anterior hypothalamic alone or no hypothalamic involvement. Similarly, posterior hypothalamic involvement in the pre and post-operative MRI was significantly associated with development of diabetes insipidus (DI) ( $p < 0.05$ ) compared to anterior or no hypothalamic involvement. There was no association between pre-operative BMI and hypothalamic involvement. Although the weight gain was accelerated after surgery, there was no association between post operative MRI and ensuing BMI, suggesting that the damage of the hypothalamic nuclei was done by the CP rather than surgical procedure. Conclusion: Assessment of hypothalamic involvement by anterior and posterior regions on pre operative MRI can be helpful in predicting development of obesity in patients with CP.

## Tumor Biology

### ENDOCRINE NEOPLASIA CASE REPORTS III

#### *A Case of Synchronous Non-Functioning Paraganglioma of the Urinary Bladder and Prostate Cancer*

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#### SAT-LB306

##### • Introduction

The bladder is an uncommon site for a paraganglioma, with only <1% of all paragangliomas occurring in the bladder. Management of non-functioning bladder paraganglioma is uncharted due to its rarity, and there is even less data for cases with synchronous malignancy. We found two case reports of synchronous paraganglioma and prostate cancer, only one in the bladder. Here we report a second case and discuss management.

##### • Clinical Case

A 72-year-old man with high risk prostate cancer, Grade group 5 on biopsy, was found to have a 1.2 x 1.6 cm bladder wall mass on staging CT scan. The transmural mass was only partially resectable via transurethral approach. Pathology unexpectedly revealed paraganglioma, confirmed by immunohistochemical stains for Synaptophysin, Chromogranin, and CD56.

The patient had longstanding hypertension controlled on losartan and denied any symptoms of catecholamine excess. He had no family history of paraganglioma, pheochromocytoma, or related neoplastic syndrome. Plasma free metanephrine and normetanephrine levels were 57pg/mL (normal 57pg/mL) and 157pg/mL (normal 148pg/mL), respectively. Urinary studies were not performed due to stage 4 chronic kidney disease.

Staging CT scan and bone scan did not show any other lesions. Even in cases of known distant metastases of paraganglioma, surgical resection of all tissue is recommended if possible. Thus, he underwent radical prostatectomy, bilateral pelvic lymphadenectomy and partial cystectomy. Prostate cancer was downgraded to Grade group 2, pT3aN0Mo and complete excision of the paraganglioma was confirmed.

Evaluating for metastases and follow up are challenging in all paraganglioma cases, but especially non-functioning paragangliomas. Bladder paragangliomas carry a 10-15% risk of malignancy, but no separate data is reported for non-functioning ones. Histology scoring systems that are somewhat predictive in pheochromocytoma are less helpful in paragangliomas. Imaging is also challenging. CT, MRI, and a variety of functional imaging modalities have sensitivities for paraganglioma metastases in the range of 50 – 94% depending on location, functionality, and presence of germline mutation. For now, we recommend non-contrast CT with <sup>18</sup>F-fluoro-2-deoxy-2-D-glucose (FDG) PET. Though guidelines recommend annual biochemical surveillance, the usefulness in non-functioning paraganglioma is questionable.

Genetic testing is recommended for all patients with paraganglioma. Succinate dehydrogenase B (SDHB) is