Abstract citation ID: bvac150.1305

**Pediatric Endocrinology**

**PMON331**

*The Natural History of Pituitary Cysts in Patients with Growth Hormone Deficiency and Idiopathic Short Stature*

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**Background:** Pituitary cysts may be implicated in short stature and affect growth hormone secretion. The natural history of cysts is not known in patients with GHD and ISS.
**Objective:** To characterize the progression of cyst volume (CV) and percentage of the gland occupied by the cyst (POGO) over time in GHD and ISS patients.

**Subjects and Methods:** A pediatric health system’s database was queried for patients diagnosed with short stature and a cyst with at least one follow up MRI between 2007-21. Data up to 7 years after first follow up was included in this study. The mean and median follow up time were 1.32±1.24 and 1.00. Cysts with a POGO≤15% were considered small, while a POGO>15% were considered large.

**Results:** The mean and median %ΔCV for all patients for all their follow up MRIs were 38.27%±179.14 and 0%. The mean and median %ΔPOGO for all patients were 38.32%±219.85 and -5.79%. The mean and median %ΔCV for patients with a small cyst (SC) (n=34) were 61.49%±215.60 and 0%. The mean and median %ΔPOGO for patients with a SC were 61.62%±267.25 and -2.89%. The mean and median %ΔCV for patients with a large cyst (LC)(n=14) were -0.4%±79.25 and 0%. The mean and median %ΔPOGO for patients with a LC were -1.08%±90.50 and -15.67%. 5 of the 35(14.3%) SCs grew into LCs and stayed large while 6 of the 14 LCs shrank into SCs. 4 cysts fluctuated between large and small: 3 started large and 1 started small. CV of patients with LCs has a significant negative correlation with time (-0.37, p=0.01). The slope of the regression line is -0.01 mm3/month. The CV of patients with SCs does not show any change in time (-0.02, p=0.84). There is no significant difference in POGO (p=0.86) or in CV (p=0.96) in GHD and ISS patients. In GHD and ISS patients, the difference in POGO is different in each group at each MRI date (p=0.02), but not in CV (p=0.38). GHD patients had an average ΔPOGO of -1.05, while ISS patients had an average ΔPOGO of 1.26.

**Conclusion:** POGO can change greatly over time. LCs tend to take up less of the gland over time. SCs tend not to change significantly over time, but a minority can still enlarge and need to be monitored. So far, there have been no significant clinical consequences related to these cysts.

**Presentation:** Monday, June 13, 2022 12:30 p.m. - 2:30 p.m.