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Summary: **Pituitary Dysfunction after Concussion: What Patients and Families Should Know**
July 22, 2020 Concussion Legacy Foundation webinar

- Pituitary deficiencies are seen at higher rates in patients who have suffered traumatic brain injury (TBI)
- Not all symptoms may be due to pituitary deficiencies
- It is straightforward to test for pituitary deficiencies, and to offer replacement when appropriate

- **Pituitary evaluation** should be considered in patients with a history of TBI and with persistent symptoms suggestive of pituitary dysfunction. Untreated pituitary deficiencies are associated with increased morbidity. GHD is the most commonly reported chronic post-TBI deficiency, and GH replacement has been associated with improved quality of life and physical parameters. While less common, adrenal insufficiency may be life-threatening, and must be treated prior to other hormone replacement.

- **Symptoms** may be broad and non-specific, and overlap with symptoms seen for other reasons related to TBI. Symptoms may include irregular menses, decreased libido or spontaneous morning erections, fatigue, 'mental fog,' or new changes to weight/skin/hair.

- **Lab tests** which may be useful to determine whether there is any pituitary deficiency include: cortisol, TSH and free T4, LH/FSH/PRL and free T or E2 (unless normal menses), IGF-1; cortisol and testosterone levels should be drawn in the morning (~8a). Abnormally low cortisol levels require immediate follow-up. Testosterone deficiency cannot be diagnosed by a single low morning value but will require a repeat morning blood test. GH testing often requires a provocative test (such as glucagon stimulation testing). Other than the cortisol axis, there is no clear role for testing other anterior hormones before at least 3 months post-TBI. Interpretation and replacement should be referred to the endocrinologist.

- **Replacement** of deficient hormones should alleviate symptoms due to pituitary dysfunction. Replacement must proceed in order:

cortisol → thyroid → T/E2 → GH

Evaluations may need to be repeated over time (e.g., 6 months, 12 months, yearly).