Prolactin

Peptide hormone produced by the anterior pituitary gland that is primarily associated with lactation and plays a vital role in breast development during pregnancy.

The normal values for prolactin are: Men: less than 20 ng/mL (425 µg/L) Nonpregnant women: less than 25 ng/mL (25 µg/L) Pregnant women: 80 to 400 ng/mL (80 to 400 µg/L)

Secretion

Prolactin (PRL) and growth hormone (GH) are peptide hormones that bind to the class 1 cytokine receptor superfamily, a highly conserved cell surface class of receptors. Both hormones control their own secretion via a negative autocrine loop in their own mammosomatotroph, lactotroph, or somatotroph. In this regard, GH and PRL are regulated by similar signaling pathways involving cell growth and hormone secretion. Thus, GH and PRL dysregulation and pituitary neuroendocrine tumor (PitNET) development may have common pathogenic pathways. Based on cell lineage, lactotroph and somatotroph PitNETs come from pituitary-specific POU-class homeodomain transcription factor (Pit-1). Mammosomatotroph and plurihormonal PitNETs are a unique subtype of PitNETs that arise from a single-cell population of Pit-1 lineage. In contrast, mixed somatotroph-lactotroph PitNETs are composed of two distinct cell populations: somatotrophs and lactotrophs. Morphologic features that distinguish indolent PitNETs from locally aggressive ones are still unidentified, and no single prognostic parameter can predict tumor aggressiveness or treatment response. In this review, we aim to explore the latest research on lactotroph and somatotroph PitNETs, the molecular mechanisms involved in PRL and GH axis regulation, and the signaling pathways involved in their aggressiveness, particularly focused on mammosomatotroph and mixed subtypes. Araujo-Castro et al. summarize the epidemiological, clinical, and radiological features of these exceptional tumors. They aimed to shed light, from basic to clinical settings, on new perspectives and scientific gaps in this field [1].

Co-secretion of growth hormone (GH) and prolactin (PRL) from a single pituitary neuroendocrine tumor is common. In fact, up to 25% of patients with acromegaly may have PRL co-secretion. The prevalence of acromegaly among patients with a newly diagnosed prolactinoma is unknown. Given the possibility of mixed GH and PRL co-secretion, the current recommendation is to obtain an insulin-like growth factor-1 (IGF-1) in patients with prolactinoma at the initial diagnosis. Long-term follow-up of IGF-1 is not routinely done [2].

Hyperprolactinemia

see hyperprolactinemia.

1)
Araujo-Castro M, Marazuela M, Puig-Domingo M, Biagetti B. Prolactin and Growth Hormone Signaling and Interlink Focused on the Mammosomatotroph Paradigm: A Comprehensive Review of the Literature. Int J Mol Sci. 2023 Sep 12;24(18):14002. doi: 10.3390/ijms241814002. PMID: 37762304; PMCID: PMC10531307.

2)
Manuylova E, Calvi LM, Hastings C, Vates GE, Johnson MD, Cave WT Jr, Shafiq I. Late presentation of acromegaly in medically controlled prolactinoma patients. Endocrinol Diabetes Metab Case Rep. 2016;2016. pii: 16-0069. PubMed PMID: 27855229.