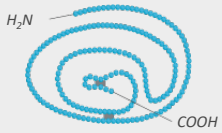
Adult Growth Hormone Deficiency

Growth Hormone Physiology

In adults, GH contributes to metabolic health, body composition, cardiovascular function, and bone health.[1,2,3]

Growth Hormone[4,5]

- 191 amino acids
- 22 kDa



GH exerts direct effects by binding GH receptors throughout the body; in addition, GH exerts indirect effects by stimulating IGF-1 production primarily in the liver.[4,6-10] The molecular size of GH is important for natural tissue penetration, as molecules 40 kDa and larger have restricted access to target tissues.[11-13]


Bone


Muscle


Heart


Liver


Adipose

Introduction to aGHD

aGHD is a rare disorder characterized by metabolic abnormalities due to decreased or total loss of growth hormone production from the pituitary gland.[3]

Prevalence[14]

2-3 per 10,000 adults

aGHD is underdiagnosed, under-reported, and undertreated

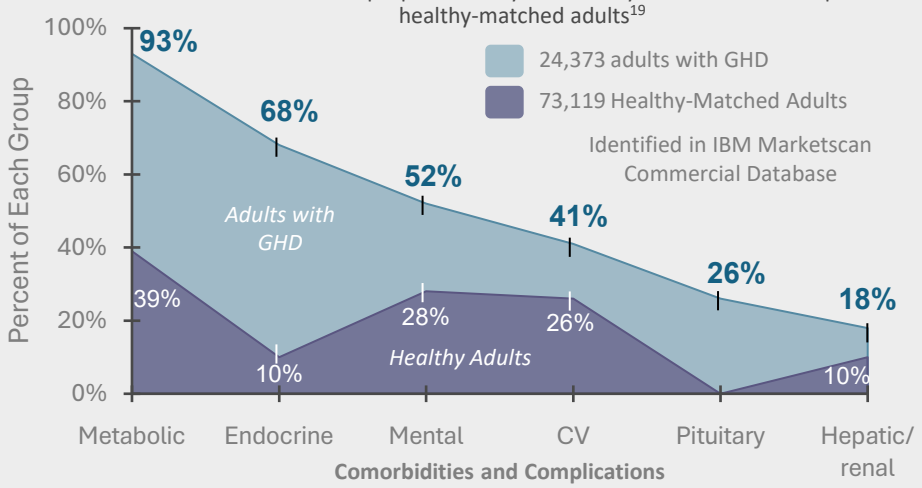
Etiology[3,15]

aGHD is caused by pituitary and hypothalamus tumors, surgical or radiation damage, TBI, Sheehan syndrome, congenital defects, or idiopathic disease

Clinical Presentation[3,16-19]

- Low bone density
- Decreased muscle mass
- Increased visceral fat
- Detrimental lipid profile
- Low insulin sensitivity
- Impaired glucose tolerance
- Diminished cognition
- Depression and anxiety
- Low energy
- Sleep disturbance
- Decreased quality of life

Adults with GHD are disproportionately affected by comorbidities compared to healthy-matched adults[19]



Abbreviations: GH: Growth Hormone; IGF-1: Insulin-Like Growth Factor 1; aGHD: Adult GH Deficiency; TBI: Traumatic Brain Injury; CV: Cardiovascular

References: 1. Tritos NA, et al. *Rev Endocr Metab Disord*. 2020; 2. Fleseriu M, et al. *J Clin Endocrin Metab*. 2016; 3. Feldt-Rasmussen U, et al. *Endotext*. 2023; 4. Blum WF, et al. *Endocr Connect*. 2018; 5. Bonert VS, et al. *The Pituitary*. 2017; 6. Betts JG, et al. *Anatomy and Physiology*. 2022; 7. Chikani V, et al. *J Mol Endocrinol.* 2014; 8. Saccà L, et al. *Endocr Rev*. 1994; 9. Isgaard J, et al. *Endocrine*. 2015; 10. Olarescu NC, et al. *Endotext*. 2023; 11. Saenger P, et al. *Horm Res Paediatr*. 2017; 12. Farnum CE, et al. *Anat Rec A Discov Mol Cell*. 2006; 13. Gill KL, et al. *AAPS J.* 2016; 14. Yuen KCJ, et al. *Int J Endocrinol*. 2022. 15. Yuen KCJ, et al. *Endocr Pract.* 2019; 16. Loftus J, et al. *Curr Med Res Opin*. 2019; 17. Brod M, et al. *BMC Res Notes*. 2014; 18. Svensson J, et al. *Growth Horm IGF Res*. 2004; 19. Smith A, et al. *J Endocr Soc.* 2022.