



Unit IV – Problem 6 – Pharmacology: Hypothalamic-Pituitary Hormones

- Some examples on pituitary disorders and drugs which can be administered:

Disorder	Drug class	Examples
ACTH deficiency	Steroid replacement	Hydrocortisone (DOC)
ACTH excess	Somatostatin analogs	Octreotide (DOC)
TSH deficiency	Thyroid replacement	Levothyroxin
TSH excess	Somatostatin analogs	Leotrolide (DOC)
FSH/ LH deficiency	<ul style="list-style-type: none">• Sex steroids• Ovulating hormones	Estrogen (females); testosterone (males) ± hCG (if fertility is desired)

- Pituitary adenoma is the most common cause of:

- Pituitary hormone hyposecretion.
- Pituitary hormone hypersecretion.
- Central diabetes insipidus (lack of antidiuretic hormone ADH secretion). This condition is treated by ADH-replacement → intranasal desmopressin (vasopressin can also be given but it is avoided because it causes vasoconstriction).

- Hypopituitarism (deficiency of hormones produced by the pituitary gland):

- **ACTH deficiency:** treated by steroid-replacement. This condition is very dangerous because it can result in shock.
- **Growth hormone deficiency:** resulting in short stature (in children). This condition is treated by growth hormone-replacement (somatropin: it is given in a small dose and then increased gradually based on IGF-1 monitoring. It is stopped if there is no response after 6 months. Main adverse reaction is hyperglycemia).
- **TSH deficiency:** resulting in hypothyroidism because thyroid gland will not be stimulated to produce thyroid hormones. This condition is treated by levothyroxin (T4).
- **FSH and LH deficiency:** resulting in sexual dysfunction and infertility. This condition is treated by estrogen (in females), testosterone (in males) and hCG (if fertility is desired).

- Hyperpituitarism (overproduction of hormones produced by the pituitary gland):

- **Excess growth hormone:** resulting in gigantism (in children) and acromegaly (in adults). This is treated by growth hormone antagonists such as octreotide. Growth hormone receptor antagonists can also be used as 2nd line drugs (example: pegvisomant).
- **Excess prolactin:** resulting in hyperprolactinemia (increased prolactin level in the blood) which can result in infertility, galactorrhea and osteoporosis. This condition is treated by prolactin antagonists such as cabergoline or bromocriptine (dopamine agonist). Main adverse reactions of bromocriptine are: digital vasospasm, GIT distress, hallucinations and pulmonary fibrosis.