Hormones	
Hypothalamus	releasing and inhibiting factors
Pituitary Gland - anterior lobe	GH, TSH, ACTH, FSH, LH, Prolactin
Pituitary Gland - posterior lobe	ADH (vasopressin), oxytocin
Thyroid Gland	T3, t4, calcitonin
Adrenal Gland - medulla	epinephrine, norepinephrine
Adrenal Gland - cortex	glucocorticoids, mineralocorticoids, sex hormones
Gonads	testes = testosterone // ovaries =estrogen, progesterone
Pancreas	insulin, glucagon, somatostatin, PP (including gastrin)
Parathyroid Glands	parathyroid hormone

Hypothalamic Hormones // Pituitary Hormones	
CRH	increase ACTH
GnRH	increase FSH and LH
PIH	decrease prolactin
GHRH	increase GH
GHIH	decrease GH
TRH	increase TSH

Pituitary Hormones	
GH	promotes tissue growth, increase bone, muscle and fat
TSH	promotes production and secretion of T3 & T4 in thyroid
ACTH	promotes secretion of glucocorticoids in adrenal cortex
FSH & LH	the gonadotropic hormones - promotes gamete production and sex hormones secretion in gonads
Prolactin	stimulates milk production in mammary glands
---	---
ADH	controls thirst and amount of urine produced by kidneys
oxytocin	stimulates uterine contractions in women and acts on mammary glands to release milk

pituitary gland functions with a feedback loop

Thyroid Disorders	
Goiter	thyroid enlargement; causes = puberty/pregnancy, iodine deficiency (endemic goiter), hashimotos thyroiditis, goitrogens (food that suppress production of thyroid hormones)
Hyperthyroidism	Thyrotoxicosis, increased T3 & T4, decreased TSH
Hypothyroidism	Myxedema, decreased t3 & T4, increased TSH (primary)
Hyperthyroidism results in...	generalized increase in metabolic rate, heat intolerance, sweating, irritability, weight loss, increased appetite, exopthalmia, lid lag, tremor, hyperpigmentation, friable/fine hair, tachycardia, thyroid storm
hypothyroidism results in...	fatigue, depression, cold intolerance, dry skin, decreased intellectual function slow HR, constipation, enlarged tongue (macroglossia), malocclusion, gingivitis, rampant decay, candidiasis
Graves Disease	Hyperthyroidism, autoimmune disease; dx = TSI, elevated T3/T4 but low TSH, diffuse radioactive iodine uptake (thyroid scan)
Graves disease clinical features - triad	thyrotoxicosis, infiltrative opthalmopathy, localized dermopathy
thyroid storm	abrupt onset of hyperthyroidism; when exposed to stress or have graves disease; can lead to uncontrolled heart arrhythmias, pulmonary edema, CHF --> coma --> death
childhood oral manifestation of thyroid storm	premature loss of primary teeth and early eruption of permanent

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Thyroid Disorders (cont)

primary hyperthyroidism	diffuse toxic goiter or tumor; serum levels show INCREASED T3/T4, BUT DECREASED TSH
secondary hyperthyroidism	TSH-producing pit. tumor; serum levels show INCREASED T3/T4 AND INCREASED TSH
Cretinism	congenital hypothyroidism; symptoms = coarse/dry skin, puffy, pale lips, impaired development of skeletal and CNS (results in dwarfism and mental retardation); oral manifestations = macroglossia, mouth breathing, underdeveloped mandible, overdeveloped maxilla, late eruption, enamel hypoplasia
Juvenile Hypothyroidism	primary hypothyroidism in children; mental sluggishness, dragging, cold intolerance, obesity, constipation
Hashimoto's Thyroiditis	primary hypothyroidism; characterized by lymphoid infiltrated and Hurthle cells
primary vs. secondary hypothyroidism	primary has INCREASED TSH // secondary has DECREASED TSH

function of T3 & T4 = physical and brain growth and maturation, help oxygen consumption, elevated basal metabolic rate, increases body heat, upregulates metabolism, protein synthesis

function of calcitonin = helps Ca2+ absorption by bone and inhibit osteoclast resorption

low levels of circulation T3 & T4 --> no negative feedback to ant. pit. --> increase TSH --> trophic effect on thyroid gland --> GOITER

Pituitary Disorders

Hypopituitarism	deficiency in one or multiple hormones; can result from inschemic injury or non-functional pituitary neoplasms
Hyperpituitarism	excessive secretion of hormones (adenoma, hyperplasia, carcinoma)

Space Occupying Lesion (SOL)

Pituitary Disorders (cont)

Sheehan Syndrome	postpartum necrosis/postpartum hypopituitarism; hypertrophy/plasia of lactotrophs; results in enlargement of ant. pit. lobe; symptoms: agalactorrhea, amenorrhea, hot flashes, decreased libido; has features of both hypopituitarism (fatigue, intolerance to cold, constipation, weight gain, hair loss, low BP) and adrenal insufficiency (similar to addisons)
Craniopharyngioma	rare, benign tumor in children; develops from remnants of Rathke's pouch; a tumor mimicking the enamel organ of embryonic tooth
Bitemporal Hemianopia	bilateral loss of outer/peripheral visual fields, tunnel vision
Pituitary Adenomas: --------	
Prolactinoma	most common type of functional adenoma; hyperprolactinemia; clincally- amenorrhea, galactorrhea, loss of libido, infertility
Giantism	GH adenoma - BEFORE closure of epihyses; juvenile, generalized increased body size with disproportioned limbs, CV problems; dx= elevated GH levels and CT positive pit tumor
Acromegaly	GH adenoma - AFTER closure of epiphyes; adult, coarse skin, enlargement of visceral organs, increase in facial bones (prognathism, flaring of teeth), CV problems, diabetes mellitus, hypertension, arthritis; dx= elevated GH levels and failure to suppress GH by oral load of glucose
ACTH-producing adenoma	thyrotrophs; results in hyperthyroidism
pan-hypopituitarism: ----------	
diminished GH	failure of growth --> Dwarfism
diminished TSH	hypothyroidism
diminished LH/FSH	failure of sexual maturity and fuunction (amenorrea, infertility)
diminished ACTH	Addison's Disease

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Pituitary Disorders (cont)

diminished ADH	diabetes insipidus (excessive thirst and urination)

Adrenal Gland Disorders

Hyperadrenalism	excess cortisol production
Hypoadrenalism	decreased cortisol production??
Cushing Syndrome	hyperadrenalism; ACTH-producing pituitary adenoma (60% of cases); clinical = weight gain, truncal obesity, hypertension, thinning skin, flushing of face, purple striae, easy bruising, hirsutism (excess hair), acne, osteoporosis, buffalo hump, moon faces, muscle weakness
Hyperaldosteronism	??
Addison's Disease	chronic adrenocortical insufficiency; reduction/lack of cortisol and aldosterone; excess ACTH?; symptoms = tiredness, lack of energy, weight loss, GI disturbances, hypoglycemia, hyperpigmentation (bronzing), susceptible to infection
primary vs secondary Addisons disease	primary = reduction/lack of cortisol and aldosterone // secondary = due to deficiency of ACTH (hypothalamic/pituitary dysfunction)
Waterhouse-Friderichsen syndrome	caused by overwhelming sepsis due to bacterial infection, usually Neisseria meningitidis; symptoms = rapid hypotension leading to shock, DIC, wide spread purpura on skin, acute and rapid adrenocortical insufficiency
Adrenal Crisis	hypotension, weakness, collapse, N/V, headache, fever; tx = hydrocortisone

Adrenal Gland Disorders (cont)

Pheochromocytoma	tumor of adrenal medulla; catecholamines-producing tumor arising from medullary paraganglionic cells (chromophine cells); clinical = epinephrine increase HR and force of contraction, relaxation of bronchiolar smooth muscle and glycogenolysis

Endocrine Pancreas Disorders

Gastrinoma	gastrin-producing tumor in pyloric antrum and duodenum
Glucagnoma	glucagon-producing tumor (ultra cells)
Insulinoma	insulin-producing tumor (beta cells)
Somatostatinoma	somatostatin-producing tumor (delta cells)
Zollinger-Ellison syndrome	1 or more gastrinoma in duodenum; results in excess HCL production, leading to frequent peptic ulcers and hyperplasia of gastric mucosa
islets of langerhans (pancreas)	glucagon, insulin, somatostatin, PP cells, gherlin (epsilon cells)

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