



Endocrine Disorder table

Human Pathophysiology and Pharmacology 2 (James Cook University)



Scan to open on Studocu

Summary tables

Complete the following tables as a summary of key information in this section

1. Common symptoms and causes of endocrine disorders

Disorder	Hormone affected	Hyper- or hypo-secretion or altered receptor	Physical symptoms	Blood results	Urine results	Test for primary/secondary/ altered receptor	Test results
Diabetes insipidus	ADH	Neurogenic – Nephrogenic -	Polydipsia, polyuria, weight loss	Hypernatraemia Hyperosmolality		Sensitivity to ADH (desmopressin)	If no response to ADH, nephrogenic
SIADH	ADH	Hypersecretion	Oedema, increased body weight (advanced – nausea, cramps weakness)	Hyponatraemia Hyposmolality	Low volume Hyperosmolar	-	
Conn's disease	aldosterone	hypersecretion	Hypervolaemia Hypertension Left heart hypertrophy	Hypokalaemia, possibly hypernatraemia	-	-	-
Cushing's syndrome	1. Cortisol 2. ACTH (Cushing's disease)	Hypersecretion of cortisol	Weight gain, face, abdomen, upper thorax, limb wasting, thin weak skin, immune compromise	Often hyperglucaemia hyperlipidaemia	-	Dexamethasone suppression test	If ACTH high and/or dexamethasone suppression – secondary
Addison's disease	1. Cortisol 2 aldosterone	Hyposecretion of both	Weight loss, loss of appetite, lethargy, hypotension, hyperpigmentation	Hypoglycaemia, Hyperkalaemia, maybe hyponatraemia	-	Synacthen test	If synacthen elevates cortisol = secondary
Giantism	Growth hormone	hypersecretion	Increased height,	Maybe hyperglycaemia	-	-	-

	(Children)						
Acromegaly	Growth hormone (Adults)	hypersecretion	Enlarged hands, feet brow, increased sweating	Maybe hyperglycaemia	-	-	-
Dwarfism	Growth hormone	hyposecretion	Reduced stature, immature features, proportionate growth (children)	Maybe hypoglycaemia	-	-	-
Laron type dwarfism	IGF-1	hyposecretion	Reduced stature, disproportionate growth	-	-	-	-
Grave's disease	Thyroid hormone	hypersecretion	Weight loss, warm skin, heat intolerance, hyperactive, tachycardia, insomnia, exophthalmos	-	-	TSH levels	If TSH elevated, not Grave's but 2ndary
Hashimoto's thyroiditis	Thyroid hormone	hyposecretion	Weight gain, cool skin, cold intolerance, low energy, depression, bradycardia, constipation, maybe goiter, myxedema	-	-	TSH levels	If depressed, not Hashimoto's but 2ndary
Diabetes mellitus Type 1	Insulin	hyposecretion	Polyuria, polydipsia, weight loss, hyperphagia, halitosis, blurred vision (when hyperglycaemic)	Polyuria, polydipsia, weight loss, hyperphagia, halitosis, blurred vision (when hyperglycaemic)	Hyperglycaemia, hyperkalaemia, diabetic ketoacidosis - ketosis, acidosis, low bicarbonate	Glucosuria Maybe ketonuria	-
Diabetes mellitus Type 2			Polyuria, polydipsia, maybe weight gain, fatigue, visual impairment, recurrent infections	Hyperglycaemia, high HbA1c	Hyperglycaemia hyperglycaemic, hyperosmolar syndrome: hyperosmolality hyperglycaemia	glucosuria	-

2. Common pharmacological treatments for endocrine disorders

Disorder	Hormone affected	Primary/secondary/altered receptor	Treatment and effect
Diabetes insipidus	ADH	Nephrogenic – altered receptor Neurogenic - primary	1. Nephrogenic – thiazide diuretics- lower glomerular filtration rates 2. Neurogenic – desmopressin - restore renal water reabsorption
SIADH	ADH	Primary	1. Hypertonic IV – remove excess water from cells 2. – Diuretics – excrete excess water
Conn's disease	aldosterone	Primary	Spironolactone, stimulate sodium excretion, inhibit potassium excretion
Cushing's syndrome	1. Cortisol 2. ACTH (Cushing's disease)	Primary – adrenal hypersecretion Secondary – pituitary hypersecretion (Cushing's disease)	Metyrapone – inhibit cortisol synthesis
Addison's disease	1. Cortisol 2 aldosterone	Primary – adrenal insufficiency Secondary – hyposecretion of ACTH	Corticosteroids including 1. Dexamethasone – long term cortisol effect Prednisone – strong cortisol, weak aldosterone effect 3. Fludrocortisone – strong cortisol, very strong aldosterone effect
Giantism, Acromegaly	Growth hormone (Children)	Primary – GH hypersecretion Secondary – GHRH hypersecretion, GHIH hyposecretion	GHIH analogue such as Lanreotide or octreotide
Dwarfism	Growth hormone	Primary hyposecretion of GH Secondary – GHRH hyposecretion, GHIH hypersecretion	GH analogue somatotropin
Laron type dwarfism	IGF-1	Altered receptor response to GH	IGF-1 analogue
Grave's disease	Thyroid hormone	Primary	Thionamides – inhibit T4, T3 production Iodide - inhibit T4, T3 secretion Radioactive iodine – destroy thyroid tissue Beta blockers – reduce tachycardia
Hashimoto's thyroiditis	Thyroid hormone	Primary	Thyroxine analogue
Diabetes mellitus Type 1	Insulin	Primary	Insulin including Insulin aspart, lispro – ultra short acting

			Insulin NPH (not common) intermediate acting Detemir, glargine – long acting
Diabetes mellitus Type 2	Insulin	Altered receptor and in some cases primary	Sulfonamides – increase insulin secretion, tissue sensitivity to insulin, inhibit endogenous insulin production Biguanides – increase tissue sensitivity to insulin, decrease endogenous production of insulin, decrease GI absorption of insulin Alpha glucosidase inhibitors – inhibit GI absorption of glucose Thiazolidinediones (TZD's) - increase tissue sensitivity of insulin

3. Common symptoms, causes and differential diagnoses

Symptom	Medical name	Possible diseases	Endocrine disorder	Differential diagnosis
High plasma glucose	Hyperglycaemia	1. Cushing's syndrome 2. diabetes mellitus 3. acromegaly	1 Elevated cortisol levels 2 insulin hyposecretion/insensitivity 3. Hypersecretion of GH	1. weight gain, distinctive change in body shape 2. polyuria, polydipsia elevated blood ketones, hyperkalaemia weight loss in Type 1 DM, elevated plasma glucose, polyuria polydipsia type 2 DM 3. distinctive change in body shape
Low plasma glucose	Hypoglycaemia	1. Addison's disease 2. dwarfism	1. Depression of cortisol and aldosterone secretion 2. Depression of GH secretion	1. Hyperkalaemia, weight loss, hyperpigmentation, maybe hyponatraemia 2. Reduced stature
High plasma	Hypernatraemia	1. diabetes insipidus	1. ADH hypersecretion	1. polyuria, hyper-osmolar, dehydration

sodium		2. Conn's disease (maybe)	2. Aldosterone hyposecretion	2. . Hypokalaemia, hypertension, maybe weight gain
Low plasma sodium	Hyponatraemia	1. SIADH 2. Addison's disease (maybe)	1. ADH hypersecretion 2. Aldosterone hyposecretion	1. oedema, hypoosmolar 2. hyperkalaemia, hypoglycaemia
High plasma potassium	Hyperkalaemia	1. diabetes mellitus 2. Addison's disease	1. Insulin hyposecretion 2. Aldosterone hyposecretion	1. Hyperglycaemia, glucosuria, maybe ketosis acidosis and low bicarbonate, hyperphagia, polydipsia, polyuria 2. Hypoglycaemia, anorexia with hyperpigmentation and hypotension
Low plasma potassium	Hypokalemia	1. Conn's disease	1. Hypersecretion of aldosterone	1. hypervolaemia, hypertension
High plasma calcium	Hypercalcaemia	Hyperparathyroidism	Hypersecretion of PTH	-
Low plasma calcium	Hypocalcaemia	Hypoparathyroidism	Hyposecretion of PTH	-
Weight gain	-	1. SIADH 2. Hypothyroidism 3. Cushing's 4. Conn's disease	1. Hypersecretion of ADH 2. Hyposecretion of thyroid hormones 3. Hypersecretion of cortisol 4. Hypersecretion of aldosterone	1. Hyponatemia and low urine output 2. Low energy levels, cool skin, bradycardia, constipation 3. distinctive change in body shape, hyperglycaemia 4. Hypertension, hypokalaemia
Weight loss	anorexia	1. Diabetes mellitus (type 1 uncontrolled) 2. Hyperthyroidism 3. Addison's disease	1. Hyposecretion of insulin 2. Hypersecretion of thyroid hormones 3. Hyposecretion of cortisol	1. Hyperglycaemia and hyperkalaemia with polyphagia, and polydipsia, glucosuria, and maybe ketosis, ketonuria acidosis and low bicarbonate 2. Warm skin, heat intolerance, exophthalmos (in Grave's disease) 3. Hypoglycaemia and hyperkalaemia with hyperpigmentation, hypotension
Increased appetite	Hyperphagia, polyphagia	1. Diabetes mellitus 2. Hyperthyroidism	1. Hypersecretion of insulin 2. Hypersecretion of thyroid hormones	1. Hyperglycaemia and hyperkalaemia with weight loss, and polydipsia, glucosuria, and maybe ketosis, ketonuria

				acidosis and low bicarbonate. 2. Warm skin, heat intolerance, exophthalmos (in Grave's disease)
Decreased appetite	Hypophagia	2. Addison's disease	1. Hyposecretion of aldosterone	-
Fluid retention	Oedema	1. SIADH 2. Conn's disease (maybe) 3. Hypothyroidism	1. Hypersecretion of ADH 2. Hypersecretion of aldosterone 3. Hyposecretion of thyroid hormone	1. oedema, hypoosmolar, hyponatremia 2. hypertension, hypokalaemia 3. Low energy levels, cool skin, bradycardia, constipation
Dehydration	Hyperosmolality (in plasma and ECF)	1. Diabetes insipidus	1. Hypersecretion of ADH	-
Increased water intake	polydipsia	1. Diabetes insipidus 2. Diabetes mellitus	1. Hypersecretion of ADH 2. Hypersecretion of insulin	1. polyuria, hyper-osmolar, hypernatraemia 1. Hyperglycaemia and hyperkalaemia with weight loss, and polyphagia, glucosuria, and maybe ketosis, ketonuria acidosis and low bicarbonate.