**Hyperthyroidism**
Elevated levels of the thyroid hormones (T4 and T3)
Etiology: Grave`s Disease, toxic thyroid adenoma (tumor that secretes T3 & T4), toxic nodular goitre and subsequent cardiac arrhythmia or failure (glandular enlargement in people over 50 who have had a non toxic goiter for years), thyroid hormone secreting tumours in the ovary or pituitary, ingestion of exogenous thyroid hormone, excess pituitary TSH or hypothalamic TRH secretion
Signs and Symptoms: speedy metabolism, with tremor, weight loss, tiredness and weakness, but also restlessness, sweating, diarrhea, anxiety and emotional instability, a rapid bounding pulse, arrhythmias and eventually heart failure, osteoporosis and increased calcium excretion can occur
Pathophysiology: increased basal metabolic rate and overactivity of the sympathetic nervous system, thyroid storm is used to describe the acute onset of severe hyperthyroidism- a medical emergency that can lead to death due to cardiac arrhythmia
Recommendations: text p. 267
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**Hypothyroidism**
Decreased levels of the thyroid hormones (T4 and T3)
Etiology: inability of the thyroid gland to produce T4 hormone, inability to convert T4-T3 (the active form of the hormone), or both forms are low (T4: autoimmune, radioactive therapy, thyroidectomy, dyshormonogenesis associated with a goitre (congenital), inhibition by exogenous goitrogens and drugs, decreased pituitary TSH or hypothalamic TRH secretion) & (T3: selenium deficiency, liver dysfunction, adrenal stress, illness), excessive use of tyrosine can cause depressed thyroid hormone production and cause mild subclinical hypothyroidism
T4: inadequate supply of tyrosine and iodine (loses iodine in its conversion to T3 with selenium being the coenzyme driving the reaction)
T3: selenium deficiency, adrenal stress, liver dysfunction (essential to the production of adequate T3)
Signs and Symptoms: fatigue, slow metabolism, mental dullness, physical slowness, dry skin and hair (beta carotene cannot be converted to Vitamin A), inability to tolerate the cold, muscle weakness and cramps, orange colouration of the skin and especially the palms, yellow bumps on the eyelids due to fat deposition, recurrent infection and depression
Pathophysiology: hypochlorhydria (low Hcl), unable to convert beta carotene to Vit. A, iron deficiency, mineral deficiencies (calcium, magnesium, zinc, copper), B12 deficiency, risk for osteoporosis, prone to insulin resistance, at risk for diabetes, high cholesterol (thyroid hormone is required to remove cholesterol from the blood), constipation, carpal tunnel syndrome, deafness, slurred hoarse voice, weight gain, constipation, cold extremities, raised cholesterol due to reduced excretion, low libido, excessive menstrual flow, failure to ovulate, eventual coma with profound hypothermia
Recommendations: text p.271-273
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 **Stress and the Adrenal Glands**
Stress weakens the adrenal glands.
Etiology: stress, stimulants (caffeine, high sugar diets, chronic alcohol all leading to insulin resistance and thus to unstable blood sugar with hypoglycemia), chronic inflammation, cigarette smoking, drugs, working long hours under fluorescent lights, excessive exercise or physical demands and a sedentary lifestyle.
Signs and Symptoms: inability to concentrate, excessive fatigue, salt craving, waking up at 2am in the morning and not being able to get back to sleep, nervousness, irritability, depression, dry and scaly skin, skin pigmentation of the temples, exaggerated reflexes, swollen neck glands, allergies, cold hands and feet (shunting of blood), digestive problems, tension headaches, low blood pressure on changing from a lying to a standing position (epinephrine causes a reflex vasoconstriction that reduces venous return ensuring blood pressure remains unaltered), light headedness and dizziness, unstable blood sugar
Plus see signs of exhausted adrenal glands include p. 280
Pathophysiology: shut down digestive secretions and shut blood away from the gut, suppresses the immune system, increased demand for nutrients, tension headaches and migraines, depression and sugar cravings, redistribute fat onto the trunk, causes difficult transition into menopause,
Recommendations: p. 281-284
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**Cushing’s Syndrome**Condition of excess cortisol.
Etiology: commonly due to an adrenal tumour secreting cortisol or a pituitary tumour secreting increased ACTH, can also be induced by long term administration of high doses of cortisol as an anti-inflammatory.
Signs and Symptoms: obesity of the trunk, a moon face and thin limbs
Pathophysiology: thinning skin, osteoporosis, muscles are wasted and weak, basal metabolic rate drops, prolonged insulin insensitivity which can progress to Type 2 diabetes, increased yeast overgrowth, suppressed immune system leading to bacterial infections, damage to blood vessels (leading to artherosclerosis and hypertension), masculinization
Recommendations: text p.276
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**Addison`s Disease**Disease of chronic adrenal cortical insufficiency- chronic failure to secrete aldosterone, the adrenal hormone involved in sodium and water reabsorption in the kidneys (sodium and water are therefore lost in large amounts in the urine)
Etiology: autoimmune disease (antibodies to adrenal cortex),
Signs and Symptoms: tiredness, weight loss, low blood pressure, mineral imbalances, dehydration, raised blood potassium (excreted in exchange for sodium reabsorption)
Pathophysiology: kidneys cannot compensate for metabolic acidosis, hypoglycemia, poor reaction to stress, wasting of heart muscle, minor infection can lead to a health crises even death,
Recommendations: p.281-282
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**Pancreatitis**
Inflammation of the pancreas
Etiology: can be secondary problem (to cystic fibrosis, systemic lupus, slowly growing cancer in the pancreas, diabetes
 or an infection), bile duct congestion due to blockage of a bile stone or susceptibility to inflammation due to alcohol, as a side effect of medication (diuretics, tetracycline, acetaminophen, cortisol and contraceptive pills, Signs and Symptoms: severe pain in the upper abdominal quadrants radiating to the back, pain made worse by movement, nausea, vomiting, upper abdominal distention, gas, fever, sweating, increased blood pressure, muscle aches, can lead to massive bleeding and shock, malabsorption, weight loss, unstable blood sugar, abnormal stool (undigested food particles and fat in stool)
Pathophysiology: chronic inflammation and autodigestive damage, abscess can be a complication, and rarely shock and death result.
Recommendations: p. 196-197
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**Hypoglycemia**Occurs when the level of glucose in the blood falls below the normal fasting range.
Etiology: high levels of insulin (insulin resistance) preventing the release of glucagon during fasting states, problems with gluconeogenesis (synthesizing glucose from stored fuels) resulting from deficiencies or enzyme defects, insulinomas or tumours producing huge amounts of insulin, when a type 1 diabetic has administered too much insulin, high sugar-low protein-low fibre diet, stress, premature gastric emptying, cigarette smoking, stimulants like caffeine, surgeries like gastrectomy or vagotomy, in some types of PMS increased salt retention and magnesium deficiency results in higher than normal insulin responses to increased glucose, subclinical hypothyroidism may slow down the metabolism including the response of the liver to pancreatic hormones causing the body to lose control of the blood glucose in response to meals
Signs and Symptoms: sudden drops in blood glucose to below fasting levels (reactive hypoglycemia), gradual decline in blood glucose not related to meals which can occur in people with Type 1 diabetes
Pathophysiology: can lead to Type 2 diabetes if not resolved
Recommendations: p. 201-203
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**Metabolic Syndrome**
A combination of disorders leading to increased risk of cardiovascular disease and diabetes including: central obesity, hypertension, insulin resistance, hyperglycemia/glucose intolerance, decreased HDL levels and elevated triglycerides
Etiology: excessive intake of carbohydrates, insufficient fibre, fat and protein & weight gain
Signs and Symptoms: central obesity, elevated triglycerides, hypertension, hyperglycemia, abnormal body fat distribution, atherogenic dyslipidemia, dysglycemia, insulin resistance, vascular dysregulation, pro inflammatory state, prothrombotic state and hormonal factors
Pathophysiology: inability to maintain normal blood glucose, glucose spontaneously oxidizes and spins off many free radicals resulting in lots of free radical damage, excess glucose also binds to LDL making them unable to bind to their receptor sites to be taken up by cells for internal use to limit cholesterol production and as a result LDL levels rise in the blood and cholesterol synthesis is increased, excess glucose is converted into saturated fats and cholesterol by the liver. Increased cholesterol also overtaxes the lipoproteins which take cholesterol back to the liver and so HDL levels drop.
Recommendations: p. 205-206
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**Diabetes Mellitus**As state of hyperglycemia
Etiology:
Type 1: caused by autoimmune destruction of the insulin – secreting beta cells of the pancreas
Type 2: decreased sensitivity of body cells to insulin, usually due to a diet high in glycemic foods and low in fibre and protein
Signs and Symptoms: hyperglycemia, polyuria, polydipsia blurred vision, increased food consumption and generalized weakness
Pathophysiology: glucose binds to proteins causing high cholesterol, low energy, degeneration of the nervous system (loss of touch and position sense) and also affect gait, normal digestion and urination. Can contribute to impotence and ejaculation. Formation of cataracts, slow nerve transmission, slow wound healing, free radical damage.
Recommendations: p.210-217
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