# Addison's disease and Cushing's syndrome

## Addison's disease:

Impaired secretion of adrenocortical hormones occurs in Addison's disease. Destruction of the adrenal cortex can result from autoimmune disease, tuberculosis, or cancer. These processes usually are gradual, leading to a progressive reduction in glucocorticoid and mineralocorticoid function. As a result of the decreased cortisol secretion, there is a compensatory increase in ACTH secretion, which produces hyperpigmentation. **Symptoms of Addison's disease include** the following:

**Mineralocorticoid Deficiency** • Excessive loss of sodium, hypovolemia, hypotension, and increased plasma renin activity

• Excessive potassium retention and hyperkalemia

• Mild acidosis.

**Glucocorticoid Deficiency** • Abnormal carbohydrate, fat, and protein metabolism resulting in muscle weakness, fasting hypoglycemia, and impaired utilization of fats for energy.

• Loss of appetite and weight loss.

• Poor tolerance to stress. The inability to secrete increased amounts of cortisol during stress leads to an Addisonian crisis that may culminate in death if supplemental doses of adrenocortical hormones are not administered.

## Cushing's Syndrome:

Increased Plasma Levels of Glucocorticoids (Cortisol) Produce Cushing's Syndrome. Excess cortisol secretion can be caused by an adrenal tumor, a pituitary tumor that is secreting large amounts of ACTH and causing bilateral adrenal hyperplasia (Cushing's disease), or a tumor of the lungs or other tissues (ectopic tumors) that is secreting large amounts of ACTH and causing bilateral adrenal hyperplasia. Cushing's syndrome may also be produced by the administration of large amounts of exogenous glucocorticoids**. Symptoms of Cushing's syndrome include** the following:

• Mobilization of fat from the extremities to the abdomen, face, and supraclavicular areas

• Hypertension and hypokalemia resulting from high plasma levels of cortisol and 11-deoxycorticosterone (when secreted in excess)

• Protein depletion resulting in muscle weakness, loss of connective tissue and thinning of the skin (leading to purple striae), and impaired growth in children

• Osteoporosis and vertebral fractures resulting from their direct effect on bone, decreased calcium absorption from the gut (antivitamin D action), and increased glomerular filtration rate and renal excretion of calcium

• Impaired response to infections resulting from a suppressed immune system

• Impaired carbohydrate metabolism, hyperglycemia, and even insulin-resistant diabetes mellitus

• Masculinizing effects when adrenal androgens are secreted in excess.