CORTICOSTEROID THERAPY

Corticosteroids are a class of natural and synthetic analogues of the hormones secreted by the adrenal gland. Corticosteroids include:

1) the anti-inflammatory glucocorticoid compounds
2) the mineralocorticoids, which control water and salt balance through their effects on corticotropin cells in the kidneys, which control the secretion of hormones by the pituitary gland.

Synthetic Corticosteroids

Synthetic corticosteroid preparations, such as prednisone and prednisolone, mimic the effects of the natural hormones cortisone and hydrocortisone, which have both glucocorticoid and mineralocorticoid properties.

Glucocorticoids

Glucocorticoids have a number of different effects that make them suitable drugs for many different conditions. Besides reducing inflammation, itching, and redness, they affect glucose utilization, fat metabolism, and bone development and are commonly used in arthritis, asthma, joint pain, brain tumors, inflammatory bowel disease, allergic reactions, arteritis, idiopathic thrombocytopenic purpura (ITP), dermatitis, hepatitis, uveitis, adrenal insufficiency, Addison’s disease, systemic lupus erythematosus (SLE) and other inflammatory disorders.

Corticosteroid Medications

Corticosteroids are available in injections, oral medications, topical medications, nasal medications, rectal foams, and ear and eye drops. Corticosteroids suppress the body’s natural production of corticosteroids by inhibiting the release of adrenocorticotropic hormone. Corticosteroid products include:

- Dexamethasone, which is exclusively a glucocorticoid in its actions
- Fludrocortisone (Florinef), which is a mineralocorticoid available only in oral form
- Prednisone, which is primarily a glucocorticoid with mild mineralocorticoid effects
- Prednisolone, which is primarily a glucocorticoid with mild mineralocorticoid effects
- Betamethasone, which is primarily a glucocorticoid with mild mineralocorticoid effects
- Trimacinolone, which is primarily a glucocorticoid with mild mineralocorticoid effects

Side effects of Corticosteroids

Chronic high doses of glucocorticoids leads to adrenal excess or Cushing’s syndrome. Symptoms vary, but most people have upper body obesity, a round face, increased fat
around the neck, and thinning of the arms and legs. In its later stages, this condition can cause weakening of bones and muscles with rib and spinal column fractures.

Short-term effects of corticosteroids are usually mild and include indigestion, increased eye pressure that can lead to glaucoma, fluid retention, increased blood pressure, increased blood sugar, menstrual irregularities, mood swings, weight gain, stomach pain, increased appetite, insomnia and nervousness. Infrequent adverse reactions include drug-induced paranoia, delirium, depression, and increased facial hair growth. Topical corticosteroids can lead to thin skin, red lesions and acne. Injected corticosteroids can cause irritation near the site of injection.

Long-term use of corticosteroids can cause thinning of the skin, bone loss, glaucoma, liver disease, and susceptibility to infection. Allergies to corticosteroids can develop, causing rash, itching, hives, and respiratory problems. Any adverse effects that develop after starting corticosteroids should be reported to one’s healthcare provider as soon as possible.

**Reducing Corticosteroids**

To minimize effects, a different corticosteroid-sparing immunosuppressant drug such as cyclosporine may be added, and the dose of corticosteroid tapered. Because corticosteroids inhibit the body’s ability to produce natural corticosteroids, the dose of corticosteroids should be reduced slowly over a period of weeks or even months. If the dose is reduced too quickly, side effects of fatigue, body aches, lightheadedness and difficulty recovering from minor illnesses, may occur.

**Corticotropin**

Corticotropin or adrenocorticotropic hormone (ACTH) stimulates the adrenal gland to release cortisone. A deficiency of ACTH causes the same effects as a deficiency of cortisone. Used as the medication Acthar and Actrel, corticotropin is administered in diagnostic tests to help diagnose adrenal insufficiency.

**Resources:**

Prednisone and other corticosteroids: Balance the risks and benefits, Rheumatoid arthritis division of MayoClinic.com, June 7, 2006.