

Steroids in the Treatment of Lupus

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Many of the symptoms of lupus result from inflammation in various tissues of the body. **Cortisone**, manufactured naturally by the body's adrenal glands and also made synthetically, has been found to have a marked anti-inflammatory effect.

Cortisone and its derivatives are among the most effective anti-inflammatory drugs known. Their use can substantially reduce the swelling, warmth, tenderness, and pain that are associated with inflammation.


While steroid dosage should be kept at the lowest effective level, steroids must not be stopped suddenly if they have been taken for more than four weeks. After that time, some shrinking of the adrenal glands will occur, and they may not produce enough cortisone if the synthetic steroids are discontinued abruptly. A slow reduction in the dosage of steroids allows the adrenal glands to regain their ability to manufacture natural cortisone.

Prednisone

Steroids produced by the outer part (cortex) of the adrenal gland are called **corticosteroids**. Corticosteroids are different from the "anabolic steroids" that weightlifters and other athletes sometimes take illegally to increase strength. **Prednisone** is the synthetic corticosteroid preparation most often used in the treatment of lupus. It comes in tablets of 1, 5, 10, and 20 milligrams (mg). It may be given as often as four times each day, as infrequently as once every other day, or at any frequency in between. Less than 10 mg per day is generally considered a low dose; 11 to 40 mg daily is a moderate dose; and 41 to 100 mg daily is a high dose.

Steroids may also be given by intra-muscular (IM) injection into the skin for discoid rashes, or may be injected directly into a joint. Occasionally, very large doses of steroids may be given for a short period of time. This treatment, referred to as **pulse steroids**, involves giving 1000 mg of methyl-prednisolone intravenously each day for three days.

Prednisone is an extremely effective drug and may be necessary to control active lupus. Those individuals with organ-threatening disease (i.e., heart, lung, kidney, liver) usually need steroids in order to prevent loss of function in the organ. People who tolerate steroids poorly or do not respond optimally often benefit from the addition of **steroid-sparing** or **immune suppressive** drugs.



Corticosteroid treatment usually relieves most symptoms promptly. When pleurisy (inflammation around the lung) or pericarditis (inflammation around the heart) occur, small or moderate doses of steroids are helpful. Steroids can often be avoided completely in mild cases of lupus (i.e., those involving only the joints and skin).

In addition to prednisone, some other cortisone derivatives include hydrocortisone, methylprednisolone (Medrol), and dexamethasone (Decadron). People with lupus should discuss the reasons for using steroids and other treatment alternatives which may be available with their physician.

Side Effects

Some of the more common side effects of steroids include changes in appearance such as acne, development of a round or moon-shaped face, and an increased appetite leading to weight gain. Steroids may also cause a redistribution of fat, leading to a swollen face and abdomen, but thin arms and legs. The skin becomes more fragile, which leads to easy bruising.

Psychological side effects of steroids include irritability, agitation, euphoria or depression. Insomnia can also be a side effect. These changes in appearance and mood are more apparent with high doses of steroids.

An increase in susceptibility to infections may occur with high doses of steroids. Prednisone may also aggravate diabetes, glaucoma, and high blood pressure, and often increases cholesterol and triglyceride levels in the blood. Steroids also can suppress growth in children. Steroids do not cause cancer.

Side Effects From Long-Term Use of Steroids

Side effects that may be caused by the long-term use of steroids include avascular necrosis of bone, osteoporosis, cataracts, and muscle weakness.

Avascular necrosis of bone, usually associated with high doses of prednisone taken over long periods of time, produces pain, an abnormal bone scan, and an atypical X-ray appearance. It occurs most often in the hip, but it can also affect the shoulders, knees, and other joints. Avascular necrosis of bone is quite painful. Relief from pain often requires either a core bone biopsy or total surgical joint replacement.



Steroids cause **osteoporosis**, or thinning of the bones. Osteoporosis can lead to bone fractures, especially compression fractures of the vertebrae with severe back pain. Calcium, hormones, calcitonin, nasal spray, bisphosphonates (Actonel, Fosamax) or other medications may help to prevent osteoporosis.

There is also a relationship between steroids and **premature arteriosclerosis**, which is a narrowing of the blood vessels by fat (cholesterol) deposits.

In general, there is a close relationship between the side effects of steroids and the dose and duration of their use. Thus, a high dose of steroids given over a long period of time is more likely to cause side effects than a lower dosage given over a shorter period of time.

Conclusion

Corticosteroids are extremely effective anti-inflammatory agents and can be very helpful in treating active lupus, despite their significant side effects. Treatment with steroids should always be kept at the lowest possible effective dose and should never be stopped suddenly. The hope is that effective alternative therapies will soon be developed which will not be as toxic as steroids. The history of most therapies shows, however, that those which are extremely effective often are associated with side effects. This is certainly the case with steroids.

Table 1. Principal drugs used in the management of systemic lupus erythematosus (SLE)

I. Non Major Organ Involvement (fever, arthritis, pleurisy/pericarditis, rash)

	Drug (Brand) Names	Major Side Effects
Non-Steroidal Anti-inflammatory Drugs (NSAIDs)	celecoxib (Celebrex) diclofenac (Cataflam, Voltaren) etodolac (Lodine) fenpropfen (Nalfon) flurbiprofen (Ansaid) ibuprofen (Motrin, Advil, Nuprin) ketoprofen (Orudis, Actron) mefclomate (Meclofen) meloxicam (Mobic) nabumetone (Relafen) naproxen (Naprosyn, Anaprox, Aleve) oxaprozin (Daypro) piroxicam (Feldene) rofecoxib (Vioxx) salicylates (Aspirin, Arthropan) sulindac (Clinoril) tolmetin (Tolectin)	Abdominal pain, heartburn, gastric ulcers and bleeding, fluid retention, rashes, kidney or liver damage, dizziness or confusion, headache
Anti-Malaria's	hydroxychloroquine (Plaquenil) chloroquine (Aralen) quinacrine (Atabrine)	Nausea, abdominal pain/cramps, rash, skin pigmentation, weakness, blurred vision, headache, eye damage
Corticosteroids	<i>Topical Creams/Ointments (for lupus rashes)</i> clobetasol (Temovate) halobetasol (Ultravate) hydrocortisone (Cortef, Cortaid) triamcinolone (Aristocort, Kenalog) betamethasone (Valisone, Diprosone) fluocinonide (Synalar) fluocinonide (Lidex)	Skin thinning and pigment changes, superficial blood vessel formation
	<i>Tablets</i> prednisone (Deltasone) prednisolone (Prelone) methylprednisolone (Medrol)	Weight gain, round or moon shaped face, mood changes, thin/fragile skin, acne, diabetes, facial hair, cataracts, osteoporosis, osteonecrosis, muscle weakness, hypertension, gastric ulcers, infections
	<i>Intravenous</i> methylprednisolone (Solu-Medrol) hydrocortisone (Solu-Cortef)	Metallic taste, infections, nervousness
Cytotoxics and immunosuppressives	methotrexate (Rheumatrex)	Nausea, abdominal pain, mouth ulcers, rashes, cough, shortness of breath, lung or bone marrow damage
	azathioprine (Imuran)	Nausea or vomiting, pancreatitis, infection, liver disease, cancer

II. Major Organ Involvement (nephritis, neurologic disease, etc.)

	Drug (Brand) Names	Major Side Effects
Corticosteroids	See above; typically used in higher doses or as intravenous infusion	See above
Cytotoxics	azathioprine (Imuran)	See above
	cyclophosphamide (Cytoxan)	Nausea or vomiting, rash, infection, hair loss, bladder damage, infertility, cancer
	chlorambucil (Leukeran)	Nausea or vomiting, rash, infection, hair loss, infertility, cancer
	cyclosporine (Sandimmune, Neoral)	Hypertension, hair growth, tremors, tender or enlarged gums, kidney damage
	mycophenolate mofetil (Cellcept)	Diarrhea, nausea



The Lupus Foundation of America

The Lupus Foundation of America (LFA) was established in 1977 to educate and support those affected by lupus and find the cure. The LFA supports research, education, awareness, patient services, and advocacy.

The Lupus Foundation of America is the only nationwide organization exclusively serving individuals, families and friends affected by lupus. The LFA has hundreds of local chapters and support groups throughout the United States, as well as international affiliates around the world.

The LFA is a grassroots, volunteer-driven organization. Contact the LFA or the chapter that serves your area to find out how you can become involved in our mission.

For information about lupus or to locate the chapter nearest you, visit our website at www.lupus.org or call toll-free 1-800-558-0121.

Become a Lupus E-Advocate and help pass federal legislation that will benefit people with lupus. Send an e-mail message to advocacy@lupus.org and enter SUBSCRIBE in the subject line. You'll receive periodic advocacy updates and other breaking lupus news and information.



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