

Steroids in the Treatment of Lupus



Lupus Society of Illinois

525 W. Monroe Street, Suite 900
Chicago, IL 60661

ROBERT S. KATZ, M.D.
Professor of Medicine

Rush University Medical Center
Northwestern Memorial Hospital



Many of the symptoms of lupus result from inflammation in various tissues of the body.

Cortisone, a steroid manufactured naturally by the body's adrenal glands and also made synthetically, has been found to have a marked anti-inflammatory effect. **Prednisone** is the cortisone drug most frequently used.

Cortisone and its derivatives are among the most effective anti-inflammatory drugs known. Use of these drugs 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 should generally not be stopped suddenly if taken for more than four weeks. After that time, some shrinking of the adrenal glands will occur, so used 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. Ten mg or less each 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 and it may be injected directly or 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, brain, kidney, or 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 very helpful. Steroids can sometimes be avoided completely in mild cases of lupus (i.e., those same cases involving only the joints and skin).

In addition to prednisone, some other cortisone derivatives include **hydrocortisone**, **methylprednisolone** (Medrol), and **dexamethasone**. People with lupus should discuss the reasons for using steroids and other treatment alternatives 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 especially at high dosage.

An increase in susceptibility to infections may occur with high doses of steroids. Prednisone may aggravate diabetes, glaucoma, and high blood pressure, and increase 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 is usually associated with high doses of prednisone taken over long periods of time and 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 may require 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. There are options, including calcium, hormones, calcitonin, nasal spray, bisphosphonates (Actonel, Fosamax) or other medications that 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 the blood.

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 possible side effects. Treatment with steroids should always be kept at the lowest possible effective dose and should not be stopped suddenly.



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

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

Anti-Malarials	hydroxychloroquine (Plaquenil) chloroquine (Aralen) quinacrine (Atabrine)	Rash, skin pigmentation, weakness, blurred vision, eye damage.
Corticosteriods	<i>Topical Creams/Ointments</i> (for lupus rashes) clobetasol (Temovate) halobetasol (Ultravate) hydrocortisone (Cortef, Cortaid) triamcinolone (Aristocort, Kenalog) betamethasone (Valisone, Diprosone) fluocinolone (Synalar) fluocinonide (Lidex)	Skin thinning and pigment changes, superficial blood vessel formation
	<i>Tablets</i> prednisone 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)	Infections, nervousness
Cytotoxics and Immunosuppressives	methotrexate	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
	leflunomide (Arava)	

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

	Drug (Brand) Name	Major Side Effects
Corticosteroids	See above; typically used in higher doses or as intravenous infusion	See above
Cytotoxics and Immunosuppressives	cyclophosphamide (Cytoxan)	Nausea or vomiting, rash, infection, hair loss, bladder damage, infertility, cancer
	cyclosporine (Sandimmune, Neoral)	Hypertension, kidney damage
	mycophenolate mofetil (Cellcept)	Diarrhea, nausea

Chart courtesy of John H. Klippel, M.D. - Updated by Robert S. Katz, M.D.



Lupus Society of Illinois

The Lupus Society of Illinois (LSI), formed in 1973, is the Midwest's leading non-profit health organization dedicated to finding the causes and cure for lupus. The LSI's mission is to promote lupus awareness and complement the work of health care professionals by providing personalized resources for the lupus community while supporting research.

The LSI is the only organization in Illinois committed to assisting lupus patients and their families cope with this often devastating disease. Programs and services include:

- Patient education programs and materials
- Referrals to physicians, community services, resources, and assistance
- Health educators /navigators available to answer questions and provide medically sound information about lupus
- Information and updates from local and international lupus medical experts
- Local events and support groups
- Newsletters and alerts
- Living with Lupus grant provides financial assistance for a lupus-related expense to qualifying applicants

LSI's programs and services are accessible via phone, online, and in-person. The Lupus Society of Illinois is a non-profit, 501(c)3 organization. Our programs and services are funded through the generosity of individuals, corporations, foundations and special events.



Lupus Society of Illinois

525 W. Monroe Street, Suite 900
Chicago, IL 60661

312-542-0002

800-2-LUPUS-2 • 800-258-7872

www.lupusil.org • info@lupusil.org