

Lupus

America's Least Known Major Disease

STERIODS AND LUPUS

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INTRODUCTION

Glucocorticoids are natural steroid hormones produced in the outer part (cortex) of the adrenal glands. They are also referred to as corticosteroids or just steroids. In this brochure, the word steroid refers to glucocorticoids and not to anabolic steroids such as testosterone, a different class of medications used to increase muscle mass. The major steroid produced in the human body is cortisol (also called cortisone). Since its discovery in the 1940s, this hormone has been used successfully to control inflammation in many diseases. Today, synthetic steroid medications (in pill, ointment cream and injectable form) are similar in structure and function to cortisol and are generally stronger. The most widely used steroids are Prednisone, Hydrocortisone, Methyl-prednisolone and Prednisolone.

STERIODS AND LUPUS

Lupus is a disease of the defense system of our body, which is called the immune system. This system is overactive in patients with lupus, leading to tissue and organ damage through inflammation. Another characteristic of lupus patients is that cells of their immune system, called lymphocytes, produce molecules that attack other parts of the body. These molecules are called autoantibodies.

The steroids are powerful anti-inflammatory medications. They directly stop the white cells, another part of our immune system, from exiting the blood vessels into areas of inflammation. Steroids also seal the walls of the vessels, further preventing the exit of harmful cells into the tissues.

Steroids influence the activity of the lymphocytes, a key component of our immune system. These cells are responsible for much of the damage to the tissues in lupus patients.

Finally steroids decrease the production of molecules such as prostaglandins that promote inflammation.

Steroids work fast and cause significant improvement in patients' symptoms.

WHEN SHOULD STEROIDS BE USED?

Steroids, especially in high doses, are generally used for severe forms of lupus. Patients with mild joint and skin disease should avoid steroid use, if possible.

Steroids are essential in the treatment of kidney and brain/spinal cord disease. Serositis (inflammation around the lung and heart) is also very responsive to these medications. Sometimes abnormal lab tests coupled with early symptoms of a lupus flare will make the physician start steroid therapy in a lupus patient. This has been shown to actually prevent the full blown flare.

Topical steroid applications are widely used for the treatment of skin rashes. If these rashes are deep, steroids are injected inside the rash. Inflammation in a joint such as the knee can be effectively treated with an injection into the joint.

Finally, management of the pregnant lupus patient is mainly with steroids, since most of the other medications used in lupus are potentially harmful to the developing baby.

HOW ARE STEROIDS USED?

Steroids come in different formulations, such as pills, solutions for injections and skin preparations. They also come in eye drops, nasal sprays and inhaled forms. The table on the back page summarizes some of the most commonly used steroids.

The steroid that is used most commonly in lupus is Prednisone.

- It comes in tablets of 1,5,10 and 20 milligrams (mg).
- It is given once or twice a day and sometimes as much as four times a day. In some patients that have stable disease, it is preferable to give Prednisone every other day. This regimen can decrease the chance of getting side effects from the long-term steroid use.
- Less than 10 mg a day is regarded low dose; 11 to 40 mg is medium; and more than 40 mg (up to 100 mg) is regarded as high dose.
- It is a very important medication to control active lupus and sometimes it is even used to prevent a flare as mentioned above.



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- Since prolonged use in moderate or high doses can cause many side effects, an addition of a "steroid sparing" immunosuppressive medication can help the physician lower the dose of Prednisone. These medications include azathioprine (Imuran), methotrexate, mycophenolate (Cellcept) among others.

The injectable forms of steroids can be used in very high doses for a few days for life or organ threatening disease. For example, acute brain disease can be treated with 1000 mg of Methyl-Prednisolone through the vein every day for three days.

These medications can prevent the body from producing cortisol, the natural steroid. When these medications are used for more than two weeks, the dose should be lowered slowly to give the body the chance to resume its normal production of cortisol. If the patient lowers the dose fast, or for any reason stops them, serious side effects, such as weakness, dizziness, muscle and abdominal cramps, low blood pressure, low blood sugar and low potassium may occur. If that happens the patient should be seen quickly by a physician and steroids given immediately.

SIDE EFFECTS

The steroids, although extremely important in the treatment of lupus, have numerous and potentially serious side effects. Most problems arise with long-term, high dose steroid use. Steroids can:

- Increase appetite and cause weight gain.
- Change the body shape (i.e. thin arms and legs but swollen face, upper back and abdomen). The face can take a more round, moon like shape.
- Cause psychological problems, especially difficulty sleeping, irritability, mood swings and even depression.
- Aggravate glaucoma; long-term use can cause cataracts.
- Cause easy bruising of the skin and/or acne.
- Cause muscle weakness and joint pains.
- Suppress growth in children.
- Increase the rate of infections,

especially with very high doses.

- Increase blood pressure, sugar, cholesterol and the lipids. This is particularly important in patients who also have high blood pressure and/or diabetes. These patients should be closely monitored while on steroids.
- Cause the body to retain water and salt leading to high blood pressure and leg swelling. It is advisable to decrease the amount of salt in the diet while on steroids.

Long-term steroid use, especially in high doses, can cause serious side effects, such as:

- Osteoporosis. This is a condition where the bones of the patient get thin, causing them to break. Osteoporosis is diagnosed by a bone mineral density scan or DXA scan, a form of x-ray that looks at the density of the hip and spine. To prevent osteoporosis, all patients on long term steroids should take 1500 mg of calcium and 400 IU of Vitamin D every day. These two supplements, although very important for protection of the bones of patients on steroids, oftentimes are not enough. If the DXA scan shows thinning of the bones, the patient should take medication to prevent further loss of bone mass, such as a biphosphonate (e.g. Fosamax or Actonel). Biphosphonates are often given to patients on steroids, especially older women and men, if they are going to be on moderate to high doses for long term to prevent

osteoporosis, even if the DXA scan shows no osteoporosis.

- Avascular necrosis (AVN) of the bone. Use of high dose steroids for a prolonged period of time in lupus patients is highly associated with AVN. When this happens the bone (more commonly the hip but also the knee, shoulder and other areas) is damaged and can cause significant pain. AVN is diagnosed through an x-ray or MRI of the affected area. Treatment is aimed at relieving the pain. Surgery is used in more severe cases.
- Premature narrowing of the blood vessels (atherosclerosis). This condition is caused by cholesterol deposition and can lead to premature heart disease and strokes. It is very important for patients with lupus to have the other risk factors for heart disease, like cholesterol, blood sugar, and blood pressure, under control.

CONCLUSION

Steroids are extremely important for the treatment of lupus and can be life saving medications. They can cause many side effects though, particularly if used over a prolonged period of time in moderate to high doses. Generally, steroid use should be minimal and patients should always be vigilant about side effects. All patients on steroids should be aware of the danger of abruptly stopping these medications after using them for a long time.

Patients should also try to protect their blood vessels and bones to avoid atherosclerosis and osteoporosis, two of the most serious long-term complications of steroids. Keeping the blood pressure, blood sugar and cholesterol under good control, avoiding smoking and taking daily Calcium, Vitamin D and a biphosphonate, are simple measures to avoid serious problems.

Commonly Used Steroids

Medication	Brand Name	Preparation	Comments
Prednisone	Deltasone	Pill	Most commonly used
Prednisolone	Orapred Pred-Forte	Pill, eye drops	Used locally for eye inflammation
Methyl-Prednisolone	Medrol Solu-Medrol	Pill, injectable	Most commonly used injectable form
Dexamethasone	Decadron	Pill, injectable	Very potent
Triamcinolone	Kenalog		Commonly used as an injection in joints, skin rashes and muscle
Hydrocortisone	Cortef Solu-Cortef	Pill, injectable Topical for skin	Least potent. Used locally for facial rashes
Clobetasol	Temovate	Topical for skin	
Fluocinonide	Lidex	Topical for skin	