

Immune Suppressants and Related Drugs Used for Lupus



Lupus Society of Illinois

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Immunosuppressive Drugs

Although drugs that suppress the immune system (the human body's natural defense system against infections and certain cancers) these drugs, called immunosuppressives, can be of great value in the treatment of systemic lupus erythematosus (SLE). Immunosuppressive drugs may help preserve kidney function, lessen the severity of symptoms, and sometimes even put the disease in remission. These drugs also help reduce damage to vital organs.

Steroids (cortisone derivatives, such as prednisone) used to treat major organ involvement in people with lupus must sometimes be given in high doses. Such high doses increase the risk of short-term and long-term side effects that can sometimes be worse than the disease itself. Immunosuppressive drugs can be used either in addition to or instead of steroids to spare the patient some of the undesirable side effects of steroid therapy.

Immunosuppressive drugs including cytotoxic (*cyto* = cell, *toxic* = damage) drugs are used to treat SLE for two major reasons: these are potent drugs that help control disease activity in major organs including the kidneys, brain, cardiovascular system and lungs and, these drugs may reduce or eliminate the need for steroids.

How Do Immunosuppressive Drugs Work?

Cytotoxic drugs work by targeting cells that grow at a rapid rate. Cells in the body divide and grow at varying rates, and some grow very rapidly. Examples of rapidly growing cells include the antibody-producing cells of the immune system, the blood cells, the hair cells, and the gonadal (sex) cells. Antibodies are proteins produced by the immune system to do away with foreign proteins that enter the body. Other types of immunosuppressive medications are not cytotoxic but work through other mechanisms to reduce the autoimmune response in lupus.

In people with lupus, the immune system produces autoantibodies (antibodies formed against the body's own tissues) at a rapid rate. Cytotoxic and other immunosuppressive drugs can suppress or inactivate the cells, antibodies, and chemical messengers involved in the overactive immune response.



There are risks associated with the use of immunosuppressive and cytotoxic drugs. The immune system may be suppressed too much, causing an increased susceptibility to infection, particularly shingles (a painful, blistering skin condition) and pneumonia. Bone marrow can be suppressed as well, resulting in reductions in red blood cells, or clot-forming platelet cells. Suppression of hair-cell growth may lead to an overall loss of hair. The cytotoxic effects on gonadal cells can cause sterility.

Immunosuppressive Drugs Used for Lupus

CellCept (GENERIC NAME: MYCOPHENOLATE MOFETIL)

CellCept suppresses the immune system, which is overactive and misdirected in lupus. This medication is also used to prevent the rejection of donated organs, kidney, liver, heart, and lung transplants. CellCept tends to be less toxic than Cytoxan, and less likely than Cytoxan to cause sterility. Its side effects include nausea and diarrhea. It may take several months for CellCept to become effective.

Methotrexate

Methotrexate is usually taken once a week orally. It may also be given by injection. It is generally well tolerated, but liver enzyme blood tests need to be monitored, as well as blood counts. Liver irritation and lung reactions can occur with methotrexate. It's also commonly given for rheumatoid arthritis. It cannot be used during pregnancy.

Imuran (GENERIC NAME: AZATHIOPRINE)

Imuran is generally well tolerated, but blood count tests are needed to monitor the medication. White blood cell count can be reduced by the medication. There is an ongoing question whether Imuran increases the risk of developing lymphoma, but aside from nausea which occurs occasionally, Imuran is generally well tolerated. It helps in controlling lupus disease activity.



Cytoxan

(GENERIC NAME: CYCLOPHOSPHAMIDE)

Cytoxan is commonly given intravenously but can also be given orally. Though it is generally well tolerated, it can cause nausea, hair loss, a reduction of white blood cells, platelets, or red blood cells. Longer-term use of Cytoxan increases the risk of developing cancers, including leukemia and bladder cancer. Cytoxan may cause sterility, preventing patients from having children. It can also damage the developing fetus if a woman gets pregnant while taking the drug. Cytoxan can cause bleeding from the bladder, and large amounts of fluid help to prevent this side effect. Like the other immunosuppressant drugs, Cytoxan may predispose an individual to developing infections, particularly when given with higher doses of steroids. Cytoxan can be quite effective in controlling active kidney and lung disease and very active lupus in general.

Rituxan

(GENERIC NAME: RITUXIMAB)

Rituxan produces antibodies against B-lymphocyte white blood cells. These cells are responsible for making antibodies, including autoimmune antibodies such as anti-DNA antibodies that play a role in lupus. The medicine is given intravenously and although infections can occur, it is generally well tolerated.

Benlysta

(GENERIC NAME: BELIMUMAB)

Benlysta was recently approved for the treatment of systemic lupus. It is given intravenously once a month. It is actually antibodies against B-lymphocyte white blood cells. It reduces these cells, which make antibodies, including autoimmune antibodies present in systemic lupus.

Leflunomide

(BRAND NAME: ARAVA)

Leflunomide can also help control lupus. It is given daily in pill form. It is also an immunosuppressant drug, infection and abnormal liver tests are possible side effects.



Cyclosporine

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Tacrolimus

Cyclosporine and Tacrolimus primarily affect T-lymphocyte white blood cells. T-cells manufacture chemical messengers called cytokines that can initiate and increase inflammation and tissue damage in people with lupus. These medications are also used to prevent organ rejection in kidney, heart, liver, and other organ transplant recipients. These drugs can elevate blood pressure and reduce kidney function.

Conclusion

While people with mild cases of lupus do not need immunosuppressive drugs, these medications can be very helpful and even life-saving when the disease affects major organs or when it is quite active and causes many symptoms. Sometimes a patient must undergo a kidney biopsy or other tissue biopsy before a physician decides whether to prescribe these drugs. Even in more serious cases or major organ involvement, cytotoxic drugs should not be taken indefinitely without good reason.

It is important to weigh the beneficial effects against the risks involved in immune suppressant drug therapy. Physicians use the term “risk-benefit ratio” to describe the comparison of side effects to beneficial effects of medications.

While cytotoxic drugs are not approved by the Food and Drug Administration for use in treating SLE, they are commonly prescribed and accepted as standard therapy. In addition, all of these agents are steroid-sparing, meaning that the patient is able to take smaller doses of steroid medications.

Benlysta (belimumab) has been approved by the FDA for treatment of lupus. It is given intravenously monthly and may take months to work against lupus. It has few side effects other than possible infection, but hasn’t been tested in sicker patients, including those with active kidney and central nervous system involvement.



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.



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