

# Stem Cell Therapy for Lupus

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## Description

### Systemic lupus erythematosus

Also known as lupus, it is an autoimmune chronic inflammatory disease. Lupus can cause a variety of reactions, from cold-like symptoms to organ failure. These include: Swelling, inflammation, damage to the skin and important organs. Most commonly, it is associated with a butterfly-shaped rash that develops on a person's face. Lupus affects more than 5 million people worldwide and there is currently no cure.

### Causes for lupus

Lupus is usually caused by a genetic predisposition mixed with environmental conditions. People with the genetic makeup may be at increased risk of developing lupus when exposed to certain environmental components. Lupus is most commonly diagnosed in women between the ages of 15 and 45.

### Drug-Induced lupus

Certain prescription medications can also cause lupus symptoms.

The drugs commonly associated with this type of lupus are:

- Hydralazine, a drug for high blood pressure
- Procainamide, a drug used to treat arrhythmias
- Isoniazid, an antibiotic used to treat tuberculosis (TB)

Drug-induced lupus usually disappears when a person stops taking the drug. The immune system causes symptoms. Most commonly, the immune system is used to protect the body from bacteria, viruses, and other threats.

In patients with autoimmune diseases such as lupus, it is difficult for the immune system to distinguish between healthy cells in the body and foreign antigens. This immunodeficiency causes inflammation, pain and tissue damage.

### Symptoms of lupus

Some common symptoms of Lupus:

- Rash
- Chest pain

- Hair loss
- Inflammation
- Muscle & joint pain
- Sensitivity to sun
- Kidney issues
- Fever
- Fatigue
- Ulcer in the mouth

Symptoms can flare in response to sunlight, mild infections, and even prescribed medications. Like other autoimmune diseases, lupus induces cells in the body to attack the body itself. This autoimmune response causes a large amount of harmful inflammation in the body, which can quickly lead to more serious complications.

Common symptoms such as rashes and joint pain are mild and treatable, but severe lupus can lead to organ failure. Lupus shows the ability to cause kidney, central nervous system, circulatory system, lungs, and heart failure.

### Role of mesenchymal stem cells in lupus

Stem cells are naturally occurring immature cells that have the unique ability to "differentiate" or transform into many other cell types in the body. They usually find damaged cells and inflammation in their body and begin repairing and replacing these cells. Everyone has stem cells in their body. However, our stem cells age over time, and their number and effectiveness decline with age. Researchers have begun using mesenchymal stem cell transplantation to treat autoimmune disorders. It was thought that supplying the body with large amounts of new stem cells would increase the patient's ability to fight inflammation and reduce the symptoms caused by autoimmune diseases. Mesenchymal stem cells are obtained from the bone marrow, donated umbilical cord tissue, or other tissue in the body. The advantage of using these cells is that they are readily available, the body does not reject them (no donor pair required), and no chemotherapy is needed to receive treatment. In addition, MSC is one of the most powerful stem cells available for cell therapy.

Stem cell therapy may be one of the most promising new dimensions of medicine for the treatment of lupus, especially for

those who do not respond well to more traditional therapies. Doctors have treated lupus patients with mesenchymal stem cells for over 10 years. According to the meta-analysis, more than eight studies on the safety and efficacy of lupus cell therapy were conducted, with a total of more than 200 participants.

"There is evidence that mesenchymal stem cells (MSCs) can improve disease activity, proteinuria (a decrease in protein in the urine), and hypocomplementemia (a marker of disease activity) in patients with lupus erythematosus. The meta-analysis requires a large, high-quality, randomized controlled trial to validate the efficacy and safety of MSC treatment in -SLE

patients. Clinical studies have shown that allogeneic stem cell therapy significantly reduces disease activity in lupus patients.

## Conclusion

The study included 15 patients with persistently active systemic lupus erythematosus (SLE). Results are assessed based on changes in SLE disease activity index (SLEDAI), serological properties (antinuclear antibody and anti-double-stranded DNA (anti-dsDNA)), renal function, and percentage of peripheral blood regulatory T cells.