LABORATORY TESTS RELATED TO LUPUS

*Lupus can affect people of all genders. In this material, the terms “male” and “man” are used to refer to people assigned male at birth. The terms “female” and “woman” are used to refer to people assigned female at birth.

WHAT IS LUPUS?

Lupus is a chronic autoimmune condition that causes inflammation and pain in various parts of the body. With lupus, the immune system attacks healthy tissues and organs instead of fighting infections. Patients with lupus can have antibodies produced by their own immune system to specific parts of their normal cells (see below). Lupus can affect various parts of the body therefore there are a number of different signs and symptoms. Signs and symptoms vary and can be mild or severe. The most common signs and symptoms include joint pain and stiffness, skin lesions (sores), chest pain, headaches, a butterfly shaped rash that covers the cheeks and nose, rashes on the body and fatigue. Lupus is most common among those born with the female gender and certain ethnicities particularly with African, LatinX, Asian and Indigenous descent.

WHAT IS A LESION?

A lesion is an abnormal area of tissue and can occur both inside or outside the body on the skin. There are many different types of lesions. Some are caused by underlying diseases while other are harmless. They can also occur all over the body or just in one place. To find the cause of a lesion, doctors consider the size, color, texture, and the location of the lesions.

Lupus can cause lesions, especially to the areas that are exposed to the sun as ultraviolet light exposure (both from sunlight or from artificial light) can worsen lupus symptoms.

COMMON SIGNS AND SYMPTOMS OF LUPUS

- **Lungs**
  - inflammation of tissues that line the lungs (pleuritic)
  - inflammation of lung tissue (pneumonitis)
  - blood clots in an artery (pulmonary emboli)
  - acute bleeding from the lung (pulmonary hemorrhage)
- **Kidneys**
  - blood in the urine
- **Heart**
  - inflammation of the inner lining of the heart’s chambers and valves (endocarditis)
  - buildup of fats and cholesterol in the artery wall (atherosclerosis)
  - inflammation of the fibrous sac
- **Blood**
  - anemia
  - high blood pressure
- **Muscle and Joints**
  - pain and aches
  - arthritis
  - swollen joints
- **Skin**
  - butterfly rash
  - red patches
- **Severe abdominal pain**
- **Mouth and nose ulcers**

For more information and to get involved:
www.ascp.org/patients
TYPES OF LUPUS

There are several types of lupus that affect the body in different ways.

SYSTEMIC LUPUS ERYTHEMATOSUS (SLE)

Systemic lupus erythematosus (SLE) is the most common type and it accounts for about 70% of lupus cases. Symptoms can be mild or severe and affects many parts of the body, such as pain in the joints, low fevers and extreme fatigue.

CUTANEOUS LUPUS ERYTHEMATOSUS

The immune system only attacks the skin for this type of lupus. About 10% of all lupus cases are cutaneous lupus erythematosus, also known as skin lupus. There are three types of skin lupus which are;

   SUBACUTE CUTANEOUS LUPUS – this type of lupus appears on the skin as ring-shaped or raised red lesions. These lesions often appear on areas that are most exposed to the sun and artificial light such as the arms, neck, shoulders and body.

   CHRONIC CUTANEOUS (DISCOID) LUPUS – a chronic skin condition that results in inflammation and scarring on the face, ears and scalp. The lesions have a disk-shaped, crusty, scaly and red appearance.

   ACUTE CUTANEOUS LUPUS – this type of skin lupus appears as a red rash on the cheeks and the bridge of the nose, particularly after exposure to the sun. Based on the shape of the rash, it can be called malar rash or butterfly rash.

DRUG-INDUCED LUPUS (DILE)

This type of lupus is caused by certain prescription drugs such as isoniazid, procainamide and hydralazine. People who have been taking these drugs for one to two years have a higher of developing drug-induced lupus, approximately 20% for those who take procainamide and approximately 5% for people taking hydralazine. This type of lupus is more common in men.

NEONATAL LUPUS

This rare autoimmune disorder is not actually lupus that is present in infants at birth. It is called lupus, because the skin rash looks similar to the ones associated with lupus, but it is a separate disorder.
LABORATORY TESTS RELATED TO DIAGNOSING LUPUS

*Please note that reference ranges are set by individual laboratories for their specific populations so reference ranges might differ slightly.

ANTINUCLEAR ANTIBODY (ANA):
The test is used to help diagnose if a person is positive for an autoimmune disorder that affects many tissues and organs. It is important to note that a positive ANA test does not diagnose one particular disease, but it does indicate a potential autoimmune disorder. This test is important because it helps to narrow down to a specific autoimmune disease such as Lupus or Sjogren’s, affecting the liver. A positive ANA test means that autoantibodies are present.

COMPLETE BLOOD COUNT (CBC):
This test determines your overall health status by looking at your overall blood count levels, including your red and white blood cell count, your platelets, and lymphocytes. This test is important because low numbers for all the counts can be a sign of lupus.

LUPUS-SPECIFIC ENZYME-LINKED IMMUNOSORBENT ASSAYS (ELISA):
These test measures the presence of specific antibodies associated with lupus. ELISA can be used to test for the anti-double-stranded DNA antibody (anti-dsDNA) or Anti-Smith Antibody (anti-SM). Anti-dsDNA is important because it is found in about 65 - 85% of people with lupus and less than 1% of healthy individuals. The typical reference range* for anti-dsDNA in adults is less than 10 IU/mL. Anti-Sm is also important because it is found in 9% to 49% of patients with Lupus and rarely in healthy individuals. The typical reference range* for anti-Sm in adults is less than 7 U/mL.

LABORATORY TESTS RELATED TO MONITORING LUPUS

C3 COMPLEMENT BLOOD TEST:
This test measures the level of C3 proteins in the blood. C3 proteins help the body fight against infections. This test is important because when lupus patients have flare ups (i.e., increased inflammation), their C3 levels will drop to a low level. The typical reference range* for C3 proteins in adults is between 88-201 mg/dL.

QUESTIONS TO ASK YOUR DOCTOR

- What changes should I make to my lifestyle? Should I make any dietary changes?
- What is my prognosis?
- What are my treatment options?
- What are some signs and symptoms of a flare-up? How do I prevent a flare-up?
- Are there additional tests that could be used to understand my disease and prognosis better?
- What are the side effects of the medication?
- Should I get a bone density test?
- Does my diagnosis affect my fertility?
- What type of lupus do I have?

TYPICAL REFERENCE RANGES FOR WOMEN*:

<table>
<thead>
<tr>
<th>Complete Blood Count</th>
<th>Role in Health</th>
<th>Typical Reference Range*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hematocrit</td>
<td>Plasma in Red Blood Cells</td>
<td>35.5-44.9%</td>
</tr>
<tr>
<td>Hemoglobin</td>
<td>Oxygen-Carrying Protein</td>
<td>11.6-15 grams/dL</td>
</tr>
<tr>
<td>Platelet Count</td>
<td>Blood Clotting</td>
<td>157-371 x 10^3 /uL</td>
</tr>
<tr>
<td>Red Blood Cell Count</td>
<td>Carry Oxygen</td>
<td>Between 3.92-5.13 x 10^6 /uL</td>
</tr>
<tr>
<td>White Blood Cell Count</td>
<td>Fight Infections</td>
<td>3400-9600 cells/uL</td>
</tr>
</tbody>
</table>

TYPICAL REFERENCE RANGES FOR MEN*:

<table>
<thead>
<tr>
<th>Complete Blood Count</th>
<th>Role in Health</th>
<th>Typical Reference Range*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hematocrit</td>
<td>Plasma in Red Blood Cells</td>
<td>38.3-48.6%</td>
</tr>
<tr>
<td>Hemoglobin</td>
<td>Oxygen-Carrying Protein</td>
<td>13.2-16.6 grams/dL</td>
</tr>
<tr>
<td>Platelet Count</td>
<td>Blood Clotting</td>
<td>135-317 x 10^3 /uL</td>
</tr>
<tr>
<td>Red Blood Cell Count</td>
<td>Carry Oxygen</td>
<td>Between 4.35-5.65 x 10^6 /uL</td>
</tr>
<tr>
<td>White Blood Cell Count</td>
<td>Fight Infections</td>
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</table>
“Without lab results, I would not have the right diagnosis or an effective treatment plan. Lab results helped my doctor create an approach tailored to my needs. When my doctor was trying to find the right combination of medications to control my flares, it was the lab results that served as key indicators to whether or not she was on the right path. So in essence, the lab was like a GPS for my treatment.”

“I started feeling really old, there is no better way to describe it”, says Crystal. After the birth of her son Jonathan, she started experiencing symptoms, such as having difficulty getting up in the morning, fever, night sweats, painful spots on her legs, and her face swelling. She thought she had rheumatoid arthritis, but lab tests indicated that she had lupus. After the birth of her daughter, she went into full remission thanks to the lab tests that indicated which medication was working.

To learn more about Crystal, go to www.ascp.org/patients

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Scan the QR code to view and download our educational resources.

For more information and to get involved: www.ascp.org/patients