Lupus and the blood

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What is lupus?

- Lupus is an autoimmune disease.
- It causes chronic inflammation in the body.
- It can affect any organ of the body such as the kidneys, gastrointestinal tract, lungs, heart, and joints.
What happens in the body?

- In normal people, the immune system forms antibodies to fight against infections.

- In people with lupus, the immune system becomes overactive (like a bad allergic reaction) and produces a different types of antibodies.

- These antibodies attack the person’s own organs causing organ damage.
Labs drawn at first visit

1. Complete blood counts
2. Comprehensive metabolic panel
3. Urinalysis
4. Urine protein/creatinine ratio
5. Autoimmune disease panel
6. Other tests, depend on the situation
1. Complete Blood Counts

- Includes:
  - White blood cells
  - Hemoglobin
  - Hematocrit
  - Platelet count
Counts abnormalities in lupus

- Low hemoglobin: anemia
  1. Autoimmune anemia
  2. Anemia of chronic disease
- Low white blood cells: can cause infections
- Low platelets: can cause bleeding
What’s anemia?

- Anemia is the medical term for when a person has less red blood cells than normal.
- Red blood cells are the cells in your blood that carry oxygen.
- Less red blood cells → the body does not get enough oxygen
- In people in lupus; anemia is usually due to 2 causes:
  1. Anemia of chronic disease: as the body reaction to chronic inflammation, usually asymptomatic
  2. Hemolysis: when the body is attacking the red blood cells and destroying them, usually symptomatic
  3. Anemia can also be due to lack of iron or bleeding but not specific to lupus
- Symptoms of anemia can be: fatigue, esp with exercising, headache, shortness of breath, chest pain or fainting.
2. Comprehensive metabolic panel

- Includes:
  - Sodium
  - Potassium
  - Glucose
  - BUN
  - Creatinine
  - Albumin
  - AST/ALT
3. Urinalysis

- Protein
- Urine glucose
- Blood in the urine
- Leuko-esterase
- Nitrates
- Casts
4. Protein/creatinine ratio

- Used to monitor kidney function and can detect early kidney involvement.

- If the ratio is elevated, it can suggest that the kidneys are spilling protein and could be inflamed (lupus nephritis).

- Infection should be ruled out before considering the diagnosis of lupus nephritis.

- If there is a concern for lupus nephritis, a kidney biopsy is usually indicated to confirm and classify the diagnosis.
5. Autoimmune disease panel

- Antinuclear antibodies (ANA)
- Anti-double stranded DNA (Ds-DNA)
- Anti Smith antibody
- SSA antibody
- SSB antibody
- RNP antibody
- Anti S170 antibody
- Anti-histone antibody
- Anti Jo1 antibody
- Anticardiolipin antibody
- Lupus anticoagulant
- Beta2glycoprotein antibody
- Complement C3 and C4
If your doctor suspects you have lupus from your symptoms, you will need a series of blood tests to confirm that you do have the disease.

The most important blood screening test measures ANA, but you can have ANA and not have lupus.
Anti-nuclear antibody (ANA)

- Positive antinuclear antibodies (ANA) result: antibodies that can cause the body to begin attacking itself, they are present in nearly all lupus patients.

- If your doctor suspects you have lupus from your symptoms, you will need a series of blood tests to confirm that you do have the disease.

- Therefore, if you have positive ANA, you may need more specific tests to prove the diagnosis.
Anti-nuclear antibodies (ANA)

False positive ANA:
- If the person has another autoimmune disease
- If a relative has an autoimmune disease
- Medications
- Age
- Viral infections

ANA is positive in 99% of patients with systemic lupus.
→ If someone has a negative ANA, he/she is unlikely to have lupus.
Ds-DNA antibody

- Specific to lupus.
- Usually elevated when the disease is active.
- Can be a measure of disease activity.
- Should be negative or low titer when the disease is controlled and not active.
Complements C3 and C4

- Usually low when the disease is active (consumed during the immune/inflammatory process).

- Can be a measure for disease activity.
Clotting antibodies

- Systemic lupus can sometimes be associated with a clotting disorder called antiphospholipid syndrome or APS.

- APS is defined by the presence of positive antibodies and history of blood clots or miscarriages.

- These antibodies signal a raised risk of certain complications such as miscarriage, difficulties with memory, or blood clots that may lead to stroke or lung injury.
Clotting antibodies

- There are 3 types of clotting:
  1. Lupus anticoagulant
  2. Anticardiolipin antibody
  3. Beta2glycoprotein 1
Other tests:

Depend on the clinical scenario:

- Vitamin D level
- Thyroid hormones
- Muscle enzymes
- Inflammatory markers (ESR/CRP)
- Immunoglobulins
- Others ....
How often should my blood work be done?

- Usually blood work is checked every 3 months to assure that all parameters are within normal limits.
  - Complete blood count
  - Comprehensive metabolic panel
  - Urinalysis
  - Protein/creatinine ratio
  - DsDNA
  - Complement

- If patients are in flare and feel sick or if there is a concern that a medication is causing a side effect, the blood work monitoring might need to be done more frequently.
Thank You!