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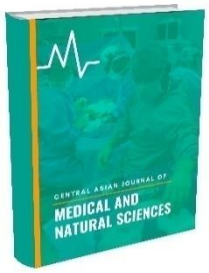

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# Erythrocyte Sedimentation Rate Test

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**Abstract:** The ESR examination is one of the laboratory blood tests that the doctor often resorts to to detect some inflammatory conditions in the body, as inflammation may cause red blood cells to clump together, causing them to quickly settle at the bottom of a tube test, [1].

## Introduction

ESR test: It is defined as the rate of sedimentation of red blood cells, and it is the time that the red blood cells need to settle at the bottom of the test tube that contains the blood sample. If in the normal state, red blood cells sediment in the tube, the presence of an inflammatory state in the body, and the more inflammation increases, the sedimentation rate rises, whether it is the result of infection, an immune disorder, or the cause of a chronic disease [2][3].

Reasons to perform an ESR analysis

The doctor requests an ESR analysis in the event of any of the following symptoms: Some headaches. The presence of stiffness, pain, or swelling in the joints. Pain in the shoulders, neck, or pelvis. Anorexia. Unintentional weight loss. Fever of unknown cause. ESR analysis may be used to determine the severity of the body's immune response, monitor the effect of treatment, and as part of the process of detecting the presence of certain diseases, including the following: Infection, including bone infection. cancer. Inflammation of the arteries such as giant cell arteritis or temporal arteritis Lupus is an autoimmune disease that causes damage to the skin, joints and other parts of the body. Polymyalgia rheumatic, which causes pain and stiffness in the muscles. Some types of arthritis such as rheumatoid arthritis, which is an autoimmune disease in which the body's joints are attacked by the immune system Systemic vasculitis [5] [4].

## Method

How to perform a sedimentation rate test

The erythrocyte sedimentation rate test is a simple test. The sedimentation rate analysis involves drawing blood from the patient's vein, then placing the uncoagulated blood in a special test tube and leaving it for one hour. Meanwhile, red cells sink toward the bottom of the tube, and other blood components rise to the top. After 60 minutes, the distance traveled by the blood cells to the bottom of the tube is measured. Usually, red cells, not red, stagnate towards the bottom of the tube unless there is

a pathological cause such as inflammation. Results are usually available the same day or so The next day. [6]

Normal sedimentation rate The normal sedimentation rate for adults is as follows: Men over 50 years of age are less than 20 millimeters per hour. The normal sedimentation rate for children is as follows: Newborns are less than 2 millimeters per hour. Women over 50 years of age have less than 30 millimeters per hour Women under 50 years of age have less than 20 millimeters per hour Men under the age of 50 have less than 15 mm/hr

Children under adolescence are between 3-13 millimeters per hour [7]

Reasons for high sedimentation velocity

- Anemia
- kidney
- Lymphoma
- Multiple myeloma
- disease, temporal arteritis
- Thyroid diseases
- some types of arthritis
- Autoimmune diseases
- rheumatic fever [8]

**Treatment of high sedimentation rate in the blood**

Treatment of rapid sedimentation in children and adults on the cause, and it is treated in the following ways

If the cause of the elevated sedimentation rate is a chronic disease, the patient is referred to a specialist for diagnosis and treatment of the disease.

If the cause of the elevated sedimentation rate is inflammation in the body, the doctor prescribes non-steroidal anti-inflammatory drugs, such as ibuprofen or steroids, to reduce cortical inflammation.

If the cause of the elevated sedimentation rate is a bacterial infection, the doctor will prescribe an antibiotic to treat the sedimentation rate sedimentation.

Rapid deposition can be treated with herbs or at home by eating foods that reduce inflammation, such as olive oil and foods rich in omega-3. You can also eat foods rich in antioxidants that help prevent cancer, such as fruits and vegetables, especially avocados, carrots, peppers, berries, citrus fruits, grapes, turnips, mushrooms and tomatoes. Other foods that may help fight cancer include soy products, sweet potatoes, nuts, figs, flax, and herbs such as rosemary, garlic, and turmeric [9].

Reasons for low sedimentation rate

A decrease in the ESR reading may occur, despite the presence of inflammation in the body, if the individual also suffers from heart failure, red blood cell disease, or certain kidney diseases. [10]

Or other diseases

Sickle cell anemia

Excessive red blood cell–

increase in the number of white blood cells

**Factors affecting the accuracy of the results of the ESR**

examination A group of factors affect the rate of sedimentation rate, some treatments may reduce the result of the ESR examination, such as taking nonsteroidal anti-inflammatory drugs and cortisone treatments, and some of them increase the rate of sedimentation rate.[11]

pregnancies.

diabetic.

Obesity.

High levels of fat in the blood.

liver organisms.

Drinking alcoholic beverages.

Crohn's disease and ulcerative colitis. Medications Medications, such as dextran (Dextran).

Eat ginger in large quantities.

Contraceptive pills.

smoking.

Receive by age.

menstrual periods

**How to read the analysis:**

Although some problems, such as giant cell arteritis, almost always cause a high erythrocyte sedimentation rate, the test by itself cannot be used to identify a specific disease (ie it is not a diagnostic tool) but is used in conjunction with certain symptoms. Other disease and also some medical tests to diagnose the disease.

Some diseases that cause inflammation do not increase the ESR, so a normal ESR does not always rule out disease.

Some doctors use a C-reactive protein test instead of an ESR test to help identify inflammatory conditions.

**ESR analysis and cancer**

When there is a cancerous tumor or infections related to cancer, the body produces certain substances that affect the properties of the blood and make the red blood cells aggregate more slowly than normal. This leads to an increased erythrocyte sedimentation rate (ESR) in the assay.

However, you should be aware that a high ESR level does not necessarily mean that cancer is present. Elevated ESR may be due to other normal factors such as viral or bacterial infections, chronic infections, rheumatoid diseases, or other diseases.

Generally, the ESR test is used as an additional tool in medical diagnosis and not as an accurate way to detect cancer on its own. If cancer is suspected, the doctor will order other tests designed to detect cancer and ensure an accurate diagnosis

**Disadvantages of ESR analysis that many people don't know**

An ESR test is a simple and inexpensive test used to assess the presence of inflammation in the body. However, it may have some disadvantages and considerations that need to be taken into account when interpreting test results:

1. Limited number of diagnoses: An elevated ESR may be caused by various infections and various diseases in the body, and is not necessarily an accurate indication of a specific condition. The ESR test is more specific when used in combination with other tests and clinical symptom assessment.
2. Personal influences: Some personal factors such as gender, age, and nationality may affect the results of the ESR test. The doctor should take these factors into account when interpreting the results.
3. Medical Influences: Some other diseases and health conditions may affect the results of the ESR test, such as pregnancy, chronic diseases, thyroid disorders, rheumatoid infections, hepatitis, and others.
4. Time period: The body needs time to react and be affected by health changes, so the results of the ESR test may not be accurate in the early stages of infection or disease.
5. Medications may affect the results: Some medications can affect the erythrocyte sedimentation rate, so the doctor must be informed of the medications being taken to obtain a more accurate interpretation of the results.
6. Abnormal values: Abnormal ESR values may suggest an infection or a health condition, but this does not necessarily mean a serious health problem. Results may be abnormal for simple and harmless reasons.

In general, the ESR test is a nonspecific test that can indicate the presence of infections and health problems, but it is not sufficient on its own to establish a definitive diagnosis. It should be used in conjunction with other tests and evaluation of clinical symptoms by a physician to obtain an accurate and appropriate diagnosis.

ESR analysis is widely used in medicine to detect various infections and to follow the evolution of patients' conditions over time. It is mentioned that a specialist doctor should be consulted to interpret the results and make the right decisions based on the patient's condition.[12]

**Conclusion**

There are no major risks when conducting a blood sedimentation rate analysis, but there are some minor risks when drawing a blood sample, as the individual may feel a slight tingling and pain when the needle is inserted, and the individual may suffer from minor bleeding or bruising at the site of the puncture, which can fade quickly ESR analysis is one of the important analyzes for humans to measure blood speed and determine inflammation in the body.

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