Editorial

International Journal of Clinical Rheumatology

Erythrocyte Sedimentation Rate (ESR): Clinical Utility and Interpretation in Inflammatory Diseases

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Received: 02-Feb-2025, Manuscript No. fmijcr-26-185410; **Editor assigned:** 04- Feb-2025, Pre-QC fmijcr-26-185410 (PQ); **Reviewed:** 17-Feb-2025, QC No. fmijcr-26-185410; **Revised:** 22-Feb-2025, Manuscript No. fmijcr-26-185410 (R); **Published:** 27-Feb-2025, **DOI:** 10.37532/1758-4272.2025.20(2).421-421

Introduction

The erythrocyte sedimentation rate (ESR) is a widely used laboratory test that measures the rate at which red blood cells settle in a vertical tube over a specified period, usually one hour. As a nonspecific marker of inflammation, ESR has long been employed in diagnosing, monitoring, and managing a variety of conditions, including autoimmune diseases, infections, and malignancies. Despite the emergence of more specific biomarkers, ESR remains a valuable tool in clinical practice due to its simplicity, cost-effectiveness, and reproducibility.

Mechanism and Factors Influencing ESR

ESR reflects the aggregation of red blood cells, primarily influenced by plasma proteins such as fibrinogen and immunoglobulins. Increased concentrations of these acute-phase reactants promote rouleaux formation, causing red blood cells to settle more rapidly.

Clinical Applications

ESR is extensively used in the evaluation and management of rheumatic and autoimmune disorders, including rheumatoid arthritis, systemic lupus erythematosus, and giant cell arteritis. It aids in assessing disease activity, detecting flares, and monitoring therapeutic response. In combination with CRP, ESR provides complementary information about the inflammatory state.

Limitations and Considerations

Although ESR is a sensitive marker of inflammation, it is nonspecific and cannot identify the underlying cause. False-positive results may occur in anemia, pregnancy, or advanced age, while false negatives may be seen in polycythemia or certain protein deficiencies. Therefore, ESR should not be used in isolation but interpreted in the context of clinical evaluation and other diagnostic tests.

Conclusion

The erythrocyte sedimentation rate remains a valuable, low-cost, and accessible tool for assessing systemic inflammation in various medical conditions. While it lacks specificity, ESR provides important insights into disease activity, progression, and response to therapy, particularly in chronic inflammatory and autoimmune disorders. Proper interpretation, combined with complementary laboratory and clinical data, ensures its continued relevance in modern medical practice.