# LABORATORY SIGNIFICANCE OF BRUCELLOSIS AND OPTIMIZATION OF TREATMENT

***Azimova Dildora Erkinovna***

*dildra426@gmail.com*

**Relevance of topic**

Brucellosis is characterized by a polymorphic clinical course and a wide spectrum of manifestations, ranging from acute febrile illness to chronic debilitating forms with multisystem involvement. The causative agents, bacteria of the genus Brucella, are facultative intracellular pathogens capable of long-term persistence within macrophages and other cells of the reticuloendothelial system. This intracellular localization allows the pathogen to evade immune surveillance and contributes to chronic inflammation, relapses, and resistance to therapy. One of the key pathogenetic mechanisms of brucellosis is the development of a systemic inflammatory response. Activation of innate and adaptive immunity leads to excessive production of pro-inflammatory cytokines, acute-phase proteins, and other inflammatory mediators. These processes play a dual role: on the one hand, they are necessary for controlling infection, while on the other hand, their persistence contributes to tissue damage, clinical severity, and chronicity of the disease.

However, standardized criteria for evaluating inflammatory activity and guiding individualized treatment strategies remain insufficiently developed. Improving therapeutic approaches based on the assessment of systemic inflammatory markers may help optimize antibacterial therapy, reduce the duration of treatment, prevent complications, and improve long-term prognosis.

In this context, the present article aims to analyze the clinical and laboratory significance of systemic inflammatory markers in various forms of brucellosis and to explore possibilities for improving treatment strategies through a more personalized, pathogenetically justified approach.

Identification and interpretation of systemic inflammatory markers are

essential for understanding disease activity and guiding therapeutic decisions. Therefore, studying their clinical and laboratory significance is of high relevance.

**Material and methods**

This study was conducted as a prospective observational clinical and laboratory investigation aimed at evaluating the clinical and laboratory significance of systemic inflammatory markers in patients with various forms of brucellosis. The research was carried out at a specialized infectious diseases hospital and outpatient departments over the period from 2022 to 2024. The study included 120 patients with confirmed brucellosis aged between 18 and 65 years. The diagnosis of brucellosis was established based on clinical presentation, epidemiological history, and laboratory confirmation. Patients were classified into clinical forms of brucellosis according to disease duration and manifestations: acute, subacute, chronic, and focal (localized) forms.

**Conclusion**

Systemic inflammatory markers play a crucial role in the clinical and laboratory assessment of brucellosis. Their evaluation provides valuable information on disease activity, severity, and response to therapy. Incorporation of inflammatory biomarker monitoring into clinical practice contributes to optimization of treatment strategies, reduction of complications, and prevention of chronic disease forms. Further studies are needed to establish standardized biomarker-based algorithms for the management of brucellosis patients.

**References:**

1. World Health Organization. Brucellosis in humans and animals. WHO Press; Geneva, 2006.

2. Pappas G, Papadimitriou P, Akritidis N, Christou L, Tsianos EV. The new global map of human brucellosis. *Lancet Infect Dis*. 2006;6(2):91–99.

3. Franco MP, Mulder M, Gilman RH, Smits HL. Human brucellosis. *Lancet Infect Dis*. 2007;7(12):775–786.

4. Corbel MJ. Brucellosis: an overview. *Emerg Infect Dis*. 1997;3(2):213–221.

5. Seleem MN, Boyle SM, Sriranganathan N. Brucellosis: a re-emerging zoonosis. *Vet Microbiol*. 2010;140(3–4):392–398.

6. Skalsky K, Yahav D, Bishara J, et al. Treatment of human brucellosis: systematic review and meta-analysis of randomised controlled trials. *BMJ*. 2008;336(7646):701–704.

7. Young EJ. An overview of human brucellosis. *Clin Infect Dis*. 1995;21(2):283–289.

8. Navarro-Martínez A, Solera J, Corredoira J, et al. Serum cytokine profile in patients with acute and chronic brucellosis. *Clin Exp Immunol*. 2005;141(3):476–482.

9. Kazak E, Akalın H, Yılmaz E, et al. Evaluation of inflammatory markers in brucellosis. *Infection*. 2016;44(4):453–460.

10. Mantur BG, Amarnath SK, Shinde RS. Review of clinical and laboratory features of human brucellosis. *Indian J Med Microbiol*. 2007;25(3):188–202.