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Immunological Changes in Acute Brucellosis

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Abstract: The article examines the clinical and immunological manifestations of acute brucellosis. The features of the course of acute brucellosis at the present stage are analyzed. In acute brucellosis, the febrile reaction is often wavy and febrile in nature.

Keywords: Brucellosis, immunity, temperature, sweating, lymphadenopathy, arthralgia, myalgia.

Relevance. Brucellosis remains one of the most common infections in the group of especially dangerous zoonoses, which have a significant share in human infectious pathology. The incidence of brucellosis in people in the Bukhara region is significantly higher than among the regions of Uzbekistan. Brucellosis is a systemic disease that can affect any organ or system . The clinical picture of the disease, especially in the acute period, is characterized by pronounced polymorphism. The emergence and development of the infectious brucellosis process, the formation of its pathogenetic phases, are accompanied by immunological restructuring of the body. The prognosis for brucellosis is determined primarily by the state of cellular immunity, since the infection often occurs against the background of a fairly high level of circulating antibodies, which do not provide protection for the macroorganism and do not prevent the formation of bacterial carriage

Purpose of work: Studying the clinical and immunological manifestations of acute brucellosis

Material and research methods: 40 patients aged from 18 to 58 years were examined. The diagnosis was based on the results of a comprehensive analysis of epidemiological and anamnestic data, clinical manifestations of the disease and laboratory tests (in all patients the diagnosis was established on the basis of serological data) . As a control, 20 practically healthy people of the same sex and age were examined.

Results and discussions : The most common sign of the disease and the main clinical syndromes were increased body temperature, which in more than 84% of patients exceeded 38.5°C.[1], arthritic vegetative, asthenic, lymphoproliferative, hepatomegaly, splenomegaly. Isolated forms were not found. Associated symptoms were weakness, malaise, sweating, headache, anorexia, myalgia, arthralgia, and back pain. 71% of patients had chills and weight loss.

Acute brucellosis in the examined patients was predominantly of moderate severity (73.8%). Studies have shown that in 81% of patients the prodromal period lasted from several days to two weeks. expressed as general malaise (89%), weakness (91%), decreased performance 51(%), headaches, chills, decreased appetite. In 84% of patients, the disease began acutely, with chills in 81 (%), high fever in 91 (%) and severe sweating in 89 (%). The body temperature of the patients increased to 38.5-39.8 °C over a period of 3-8 days. The temperature was especially prevalent at night and a wavy type of fever was more often observed (60(%), febrile 29(%) and subfebrile 11(%). At the same time, chills, temperature and sweating had different durations and severity, which determined the severity of the disease.

During the first 9-10 days of illness, patients complained of a feeling of general weakness, pain in the lower back, lumbosacral joint, neck muscles, and significant sweating, which was easily revealed during an objective examination of the patient.

In the acute form of the disease, any organ can be involved in the process, but most often (in almost half of the cases) damage to the joints is noted. At the height of the development of clinical symptoms

of acute brucellosis, patients presented many complaints of pain not only in the areas of the body described above, but also in various (mainly large) joints, neuromuscular pain (arthralgia, myalgia). Large joints were predominantly affected, with joint dysfunction of degrees I – II .

Due to disorders of the autonomic nervous system, especially the parasympathetic department in the form of hyperhidrosis (89%) and hypotension (86%), patients complained of sweating, irritability, sleep disturbance, and changes in the neuropsychic sphere. When examined at the height of fever , hyperemia of the face and neck (87%), pallor of the skin (13%), and wetness of the palms of the hands (89%) were noted. An early clinical sign of brucellosis is micropolyadenopathy - in 74% of patients, peripheral lymph nodes were enlarged - both submandibular 5%, axillary 59%, inguinal 70%, in sizes from 1 cm to 2.0-2.4 cm, which became slightly painful, elastic upon palpation, but did not adhere to each other and to the subcutaneous tissue.

Hepatitis O was detected in 31% of patients and splenomegaly in 9 (%) patients . From the cardiovascular system, muffled heart sounds and bradycardia were noted in 23%. In 69% of patients with acute brucellosis, leukopenia, relative lymphocytosis, a moderate increase in ESR were observed in the peripheral blood; the degree of leukopenia and relative lymphocytosis depended on the activity of the pathological process.

Studies of the immunological status have shown that in patients with acute brucellosis there was a significant decrease in the level of mature T-lymphocytes (CD3+), T-helper cells (CD4 +) in the peripheral blood. No quantitative changes in the level of T-cytotoxic (CD8+) were observed. Changes in the content of subpopulations of peripheral blood lymphocytes in patients during the period of antibodyogenesis and an increase in specific sensitization were identified.

These changes are associated with the redistribution of these cells from the peripheral blood into tissues and their participation in the process of sanitation, the development of focal inflammation. T-killers (cytotoxic T -l lymphocytes) and T-helpers migrated to the foci, where T-killers destroyed cells containing the pathogen. A significant increase in CD20+ cells (B-lymphocytes) was noted in all those examined, which is a natural reaction of the body to an acute infection and precedes antibodyogenesis .

Determination of the level of immunoglobulins in the venous blood serum of patients with brucellosis showed that the amount of total Ig A (1.72 ± 0.12 g/l) did not differ from those of healthy individuals (1.63 ± 0.03 g/l). The average IgG level is close to the upper limit of normal (17.5 ± 0.51 g/l). The maximum Ig M content was determined in acute brucellosis (1.93 ± 0.18 g/l). No correlation was found between the level of Ig M and IgG and the titers of specific antibodies.

Conclusions: Analysis of our observations indicates certain features of the course of acute brucellosis at the present stage:

In acute brucellosis, the febrile reaction is often wavy and febrile in nature;

Acute brucellosis was characterized by a more benign course. Focal lesions (arthritis, orchitis, sacroiliitis, endometritis) were observed much less frequently. Lesions of the osteoarticular system predominated in the form of reactive synovitis , slowly progressive bone-destructive changes.

In patients with acute brucellosis, the immunological status showed functional phenomena and secondary immunodeficiency due to T-lymphocytes (CD3+), T-helper cells (CD4 +) in the peripheral blood.

Thus, the presence of an imbalance in cellular immunity and a decrease in phagocytosis justifies the need to include in complex therapy in the acute period, effective etiotropic drugs in combination with immunomodulators aimed at increasing cellular immunity, as well as anti-inflammatory and symptomatic therapy.

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