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**CLINICAL AND EPIDEMIOLOGICAL FEATURES OF BOTULISM IN THE
REPUBLIC OF UZBEKISTAN**

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Abstract. Objectives. To study modern clinical and epidemiological features of the course of botulism. Materials and methods. 64 patients with botulism aged from 7 to 60 years, who were on in-patient treatment, were examined. The study was carried out on white mice, which were injected intraperitoneally with a mixture of centrifuged blood serum of the patient and botulism antitoxin of types A, B, E. Results. According to the results of the botulinum toxin neutralization reaction, type A was found in 53 (63.8%) patients, type B - in 15 (17.8%), type E - in 16 (18.3%); types B and E were registered in 17.8 and 18.3%, respectively. The mild form of the disease is characterized by mild symptoms. The medium-heavy form proceeds with clearly expressed neurologic symptoms and acute respiratory insufficiency, without signs of decompensation and complete preservation of swallowing. Severe form is characterized by pronounced manifestation of all the symptoms of the disease. Conclusion. Early signs in the beginning of the botulism clinic were mainly neurological and diarrheal symptoms.

Keywords: botulism, botulinum toxin, neurotoxin, motoneuron, botulism antitoxin, Clostridium Botulinum.

Background. Botulism is an acute potentially fatal infectious disease caused by botulinum toxin produced by the bacterium *Clostridium botulinum*. These bacteria can produce the toxin in food, wounds, and the intestines of infants. Botulinum toxins are one of the most lethal substances known. Botulism characterized by paresis and paralysis of the transverse striated and smooth muscles, sometimes combined with gastroenteritis syndrome in the initial period. Under anaerobic or near-anaerobic conditions, *Clostridium botulinum* pathogens produce a specific lethal neurotoxin, which is a single but exceptional pathogenic factor. Specially purified, crystallized botulinum toxin can contain millions of lethal doses. They are stable in an acidic environment, are not inactivated by enzymes of digestive tract, and the toxic properties of botulinum toxin E under the influence of trypsin can increase hundreds of times. Botulinum toxin affects moto-neurons of the anterior horns of the spinal cord, resulting in impaired muscle innervation and progressive acute respiratory failure. The presence of botulinum toxin in food does not change its organoleptic properties. Botulism is one of the most problematic diseases in the Republic of Uzbekistan, which has great economic and social significance. Botulism, which is part of a group of severe diseases in humans, is registered in many parts of the world, including our republic. The incidence of botulism in CIS countries has increased fivefold over the past few years compared to previous years [1, 3, 4]

At present, botulism often occurs when using home canned products, in rare cases - when using industrial products [2]. Due to the lack of proper heat treatment of canned cucumbers, tomatoes, and mushrooms prepared at home, these products, being infected, can cause the disease. Although botulism is much less common than other intestinal infections and poisonings, it remains a life-threatening disease [6].

Purpose of the study. To study the current clinical and epidemiological features of the course of botulism.

Materials and methods. During investigation were analyzed the medical histories of 64 patients with botulism where hospitalized in the clinic of the Research Institute of Epidemiology, Microbiology and Infectious Diseases of the Ministry of Health of the Republic of Uzbekistan for 2010-2015.

The diagnosis was made on the basis of clinical, epidemiological and laboratory data investigation. For laboratory diagnosis, a botulinum toxin neutralization reaction was performed. The study was performed on white mice intraperitoneally injected with a mixture of centrifuged patient's blood serum and botulism antitoxin - type A, B and E according to the Bezredka method, corticosteroids, antibiotics and antihistamines, as well as vitamins and detoxification therapy.

The results of the study were processed on a Pentium IV personal computer using Microsoft Office Excel 2007 software package, including the use of built-in statistical processing functions. The statistically significant changes were considered to be $p < 0.05$.

Results and discussion. We have examined 64 patients with botulism aged from 7 to 60 years. Adults were 58 (90.6%), children 6 (9.4%); including females 40 (61.5%), males 24 (37.5%). To confirm clinical diagnosis of botulism 84 samples of food and biological materials were taken, thereof: smoked fish - 5 (5,5%), home canned food - 21 (25,5%), mushrooms - 16 (18,9%), blood of patients - 23 (27,8%), vomit mass of patients- 19 (22,2%) (Fig. 1).

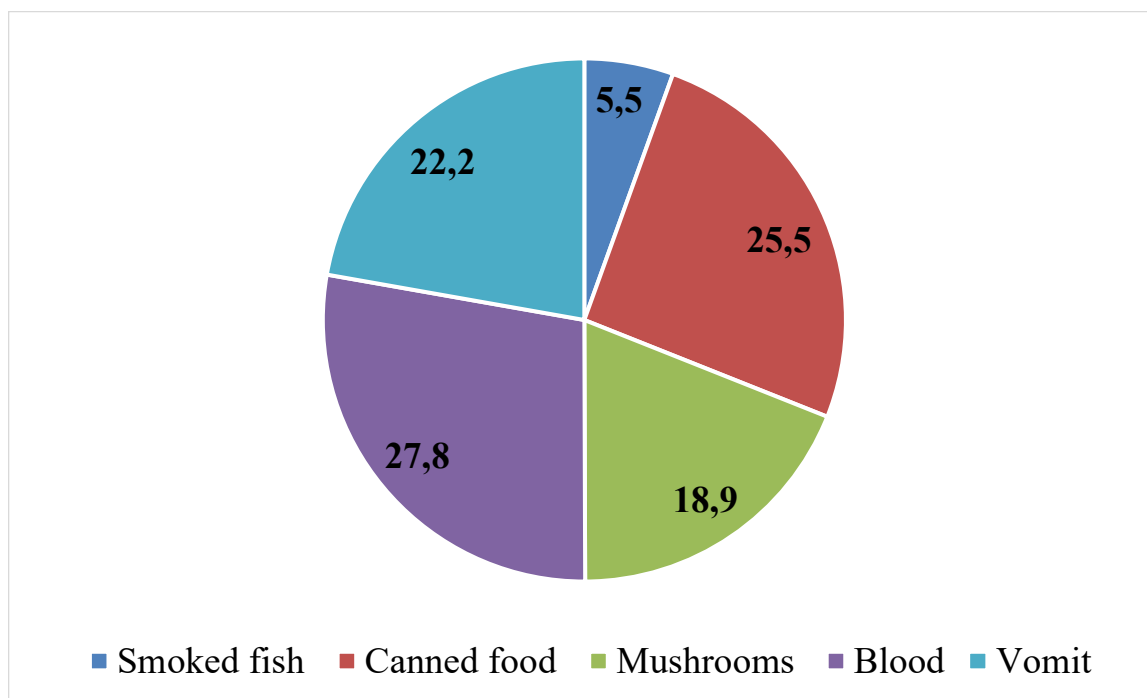


Figure 1. Type of samples of food and biological materials (%).

All samples were positive. Laboratory diagnosis was performed using the botulinum toxin neutralization reaction. Studies were performed on white mice injected intraperitoneally with a mixture of centrifuged blood serum from patients with botulism mixed with type A, B, and E botulism antitoxin. At the end of 4 th day of the experiment, the mice that were injected with the botulism antitoxin corresponding to the type of toxin circulating in the patient's blood remained alive. As can be seen from the results of the botulinum toxin neutralization reaction, 53 (63.8%) patients had type A, 15 (17.8%) - type B, 16 (18.3%) - type E ($p < 0.05$) (Fig. 2).

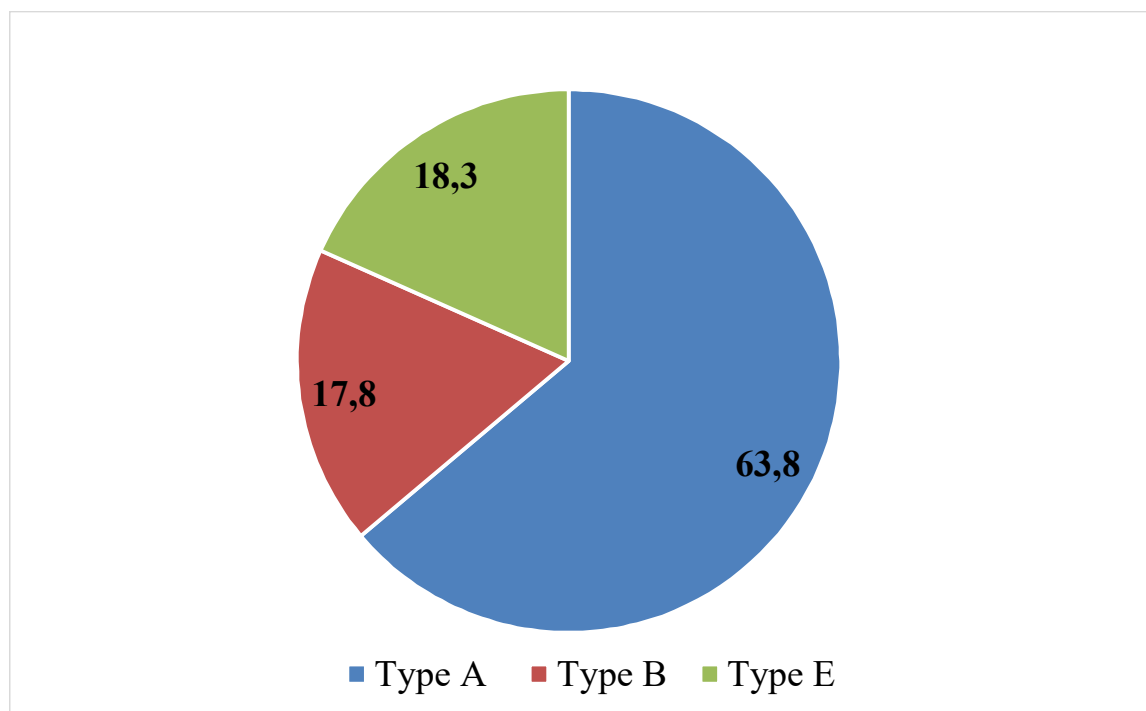


Figure 2. Results of the botulinum toxin neutralization reaction (%)

The mild form of botulism was diagnosed in 6 (9.4%) patients, moderate form - in 18 (28.1%), severe form - in 40 (62.5%). Thus, in the majority of patients clinically botulism had a severe form ($p < 0.05$). The mild form of the disease is characterized by mild symptoms. The moderate form proceeds with pronounced neurological symptoms and acute respiratory failure, without signs of decompensation and with complete preservation of swallowing. The severe form is characterized by a pronounced manifestation of all symptoms of the disease. The disease manifested itself by neurological signs in 21 (32.8%) patients, and a combination of neurological and dyspeptic signs occurred in 43 (67.2%). Myasthenia, bulbar, and ophthalmoplegic symptoms were observed in 9 (14.1%), 20 (31.2%), and 29 (45.3%) patients, respectively. The appearance of these symptoms in patients was associated with their age. In elderly patients and young children, the listed clinical signs were clearly pronounced and developed rapidly. All patients received intravenous polyvalent botulism antitoxin of type A, E by 10,000 IU, type B by 5,000 IU, depending on the severity degree. In mild course 1 dose of botulism antitoxin once a day was administered; in moderate course 2 doses of botulism antitoxin twice a day on day 1, and 2 doses once a day on second day; in severe course 2 doses of botulism antitoxin twice a day on 2 consecutive days, on day 3 about 2 doses of botulism antitoxin once a day were administered. All patients also received pathogenetic and symptomatic therapy. Severe patients with botulism were first admitted to the intensive care unit of the clinic, and when their condition improved, they were transferred to the department of acute intestinal infections.

According to the literature, without the use of modern methods of treatment, mortality in botulism can reach 30-65% [1, 5]. In spite of the emergency complex therapy, 7 (10.9%) patients died.

Thus, in the Republic of Uzbekistan, the incidence of botulism occurs in the form of sporadic cases. Most of them are diagnosed as a moderate and severe course of the diseases. In most patients with botulism, the onset of the disease is manifested by neurological and dyspeptic symptoms. When neutralizing of botulinum toxin, it was

found that the disease was mainly caused by botulinum toxin type A (63.8%).

Conclusions:

1. In patients with botulism in Uzbekistan, a moderate (28.0%) and severe clinical course (62.5%) prevailed.

2. Clinically, the onset of botulism is mainly represented by neurological and dyspeptic symptoms.

3. The disease was caused mainly by botulinum toxin type A (63.8%).

References.

1. Akhmedova M.D. et al. Botulism: current aspects of the clinical course, diagnosis, treatment and prevention. Method.rekomendatsii. - Tashkent, 2011. - 26 c. (Akhmedova M.D. et al. Botulism: current aspects of clinical course, diagnosis, treatment and prevention. Methodical recommendations. - Tashkent, 2011. - 26 p. (in Russian);

2. Mukhamedov I.B., Bektimirov A.M-T. Clinical characteristics of the current course of botulism // Vestn. med. - 2007. - №1. - C. 83-85. (Mukhamedov I.B., Bektimirov A.M-T. Clinical Characteristics of the Current Course of Botulism // Vestn. med. - 2007. - №1. - P. 83-85.) (in Russian);

3. Nikiforov V.N., Nikiforov V.V. Botulism. - M., 2009. - 123 c. (Nikiforov V.N., Nikiforov V.V. Botulism. - M., 2009. - 123 p.) (in Russian);

4. Nikiforov V.V. Botulism: clinical features and modern approaches to therapy // Ter. arkh. - 2001. - №1. - C. 97-100. (Nikiforov V.V. Botulism: clinical features and modern approaches to therapy // Ter. arch. - 2001. - №1. - P. 97-100.) (in Russian);

5. Hikmatova Z.S., Akhmedova M.D. Features of the course and clinical and laboratory characteristics of modern botulism (review) // Infection, immunity and pharmacology. - 2011. - №4-5. - C. 151-154. (Hikmatova Z.S., Akhmedova M.D. Peculiarities of the course and clinical and laboratory characteristics of modern botulism (review) // Infection, immunity and pharmacology. - 2011. - №4-5. - C. 151-154.) (in Russian);

6. Boud R., Graham K. Botulinum toxin A in the management of children with cerebral palsy: indications and outcome // Europ. J. Neurol. - 2011. - Vol. 4. - P. 15-22.