could be effective. Previously we obtained mouse monoclonal antibodies (mAbs) to the III and IV domain of the protective antigen (PA) and the I domain of the lethal factor (LF) of *Bacillus anthracis*, which promise to be effective as anti-LT drugs as was shown in the toxin neutralization experiment *in vitro*.

The aim of the study was to determine the ability of mAbs to Id LF (6G9), IIId PA (1D6) and IVd PA (1E10) to neutralize the LT of *B. anthracis* in a mouse model.

To determine the LD50 of LT in BALb/c mice, we injected the toxin into the retroorbital sinus from 50 μg/mouse to 6.25 μg per mouse using the double dilution. To determine the therapeutic effect of the mAbs in mice (9 animals per group) we injected mAbs to Id LF (6G9), IIId PA (1D6) or IVd PA (1E10) intraperitoneally at the following doses: 10, 25, 50, 75, 100 and 200 μg/mouse. After 24 hours of mAbs injection, the mice were immunized with LT retroorbitally at a dose of 4-fold increasing LD_{50}, and the animals were monitored for 7 days.

LD_{50} of LT for BALb/c mice was identified at 12.5 μg/mouse. The analysis of the mAbs against PA and LF with different domain specificity showed that the preliminary injection of all the analyzed mAbs protected the animals from LT. The most effective toxin-neutralizing effect was shown by mAbs against Id LF (6G9) and against IIId PA (1D6), which in dose 25 μg/mouse protected mice against death from LT. The mAb against IVd PA (1E10) also protected mice from the action of LT, but this one required a larger dose: of 100 μg/mouse.

The work was supported by the Sectoral Scientific Program of the Russian Federal Service for Surveillance on Consumer Rights Protection and Human Wellbeing.

8.9 doi: 10.15789/2220-7619-2018-4-8.9

THE CLINICAL, IMMUNOLOGICAL AND LABORATORY PARAMETERS IN PATIENTS WITH LEPTOSPIROSIS IN ST. PETERSBURG

O.A. Petrova[1,3], N.A. Stoyanova[1], V.V. Basina[2], D.V. Kulakova[2], N.E. Lubimova[1], N.A. Arsentieva[1], N.K. Tokarevich[1], A.V. Semenov[1,3], A.A. Totolian[1,3]

[1]St. Petersburg Pasteur Institute, St. Petersburg, Russia; [2]St. Petersburg State Pediatric Medical University, St. Petersburg, Russia; [3]Pavlov First St. Petersburg State Medical University, St. Petersburg, Russia

Leptospirosis — infection, characterized by multiorgan failure. Despite the long-term study of leptospirosis, the immunopathogenesis of this disease remains insufficiently covered. It is assumed that the severity and outcome of leptospirosis infection depend on the type and concentration of cytokines produced.

The aim was to Study and generalization of data on the course, clinical and immunological parameters in leptospirosis.

The study included 102 patients with a confirmed diagnosis of leptospirosis. The control group consisted of 39 practically healthy people. Static data processing was performed using software package STATISTICA.

With the diagnosis of "leptospirosis" the hospital received only 11.8% of patients. Late treatment of patients for medical care was noted — 6.5±1.2 days from the onset of clinical manifestations, with the period of stay in hospital treatment averaged 20.6±2.8 days.

During the study period, kidney damage was characteristic of leptospirosis (78.4% of cases), with a decrease in diuresis in the early stages of development of the disease was noted 38.2% of cases, acute renal failure in 19.6% of cases.

Liver lesions were observed in 94.1% of cases. The activity of enzymes ALT and AST exceeded the norm by 2–3.5 times. The level of bilirubin was exceeded by 8.9–12.3 times, which was clinically manifested by jaundice of the skin and icteric sclera.

The levels of cytokines IL-8, MCP-1, TNFα, IL-10 in patients with leptospirosis was significantly higher than in the control group ($p < 0.05$). In dynamics, attention is drawn to the increase in the level of proinflammatory cytokines MCP-1, TNFα on the background of a decrease in IL-10, which may indicate the incompleteness of the inflammatory process. During the study, we noted that high levels of MSR-1 were found in individuals with icterohemorrhagic leptospirosis during the severe course of the infectious process.

Due to the complexity of the diagnosis of leptospirosis, there is a need to create mathematical models for predicting the course of the disease, based on objective laboratory data and clinical manifestations. The prognostic value of such models can be increased due to the knowledge of immunopathogenesis of the disease, and the inclusion of such an important factor as the production of pro- and anti-inflammatory cytokines in these patients.

8.10 doi: 10.15789/2220-7619-2018-4-8.10

CYTOPROTECTIVE POTENTIAL OF MONOCLONAL ANTIBODIES AGAINST *BURKHOLDERIA PSEUDOMALLEI*

E.V. Pimenova[1,2], N.P. Khrapova[1,2]

[1]Volgograd Plague Control Research Institute, Volgograd, Russia; [2]Volgograd State Medical University, Volgograd, Russia

Melioidosis is a disease caused by *B. pseudomallei*, belongs to the group of particularly dangerous bacterial infections. No specific preventive treatment of melioidosis has been developed. The aim of the study was evaluate the effectiveness of Mabs as cytoprotectors from the *B. pseudomallei* toxic effects. We used the panel of Mabs against melioidosis (PpmI, 3C6, 6A11, 6E7, PpmII, 2A6, 2H7, 2F11) and some melioidosis antigens with confirmed toxicity (*B. pseudomallei* 100, 57576, 51274, 59361). The experiments were carried out in L-929, CHO-K1 cell cultures lines, obtained from Institute of Cytology, St. Petersburg, Russia. We injected into the well with the formed monolayer a mixture of the antigen (40 μg/μl) and monoclonal antibody at three different doses (1 μg/μl, 0.5 μg/μl, 0.25 μg/μl). A comparative study of *three different doses* were performed during 3 days. The results of the study were identical on both cell lines. We established that each monoclonal antibody has different cytoprotective properties. It was shown that 2F11 (0.5 μg/μl) neutralized the *B. pseudomallei* 100 toxic effect throughout the all period of observation. Mabs PpmI, 6A11, 2A6, 2F11 at a dose of 0.5 μg/μl provided a cytoprotective effect to *B. pseudomallei* 57576 after 3 days and we observed an increase in the number of cells. Mabs PpmI, PpmII, 3C6, 2F11 gave protection even at a dose of 0.25 by day 3. We indicate that Mab PpmI protected cell lines at a dose of 1 μg/ml during exposure *B. pseudomallei* 59361 during the all period of observation. While Mabs 3C6, 6A11 provided protective properties at a dosage of 0.5 μg/ml only by day 2. The toxic effect of *B. pseudomallei* 51274 antigen on cell lines was neutralized by Mabs 3C6, 2H7, 2F11 at a dose of 1 μg/ml during the all period of observation. Thus, the protective properties of melioidosis Mabs prove the possibility of their use as components of experimental vaccines.