

AP08857386 «Immunological aspects of neonatal sepsis»

Relevance

About 3 million cases of sepsis among newborns and 1.2 million among children are detected annually in the world. The mortality rate from sepsis in children under one year in 2019 increased to 4.30 in Kazakhstan, and it was 8.68 per 1000 living children in the Karaganda region. Over the past three decades, little progress in treating sepsis has been made. There is still a strong unsolved medical need for the prevention, diagnosis and treatment of sepsis-related hyperinflammation in the newborns. For Kazakhstan, the task to reduce the mortality of children and patients in critical conditions is a priority.

Aim: improve understanding of the immunopathogenesis of sepsis in newborns with potential diagnostic strategies creation..

Expected Results

The results of the work will improve the understanding of the immunopathogenesis of sepsis, which may contribute to the diagnosis and treatment of critical conditions in children.

Research team

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Research group publications

1. L. L. Akhmaltdinova, M. A. Gazaliyeva, S. Akhmetova. Levels of cytokines in drug hypersensitivity// Centr Eur J Immunol 2017; 42 (4):354-357 doi: 10.5114/cej.2017.72809. Epub 2017 Dec 30. <https://www.termedia.pl/Levels-of-cytokines-in-drug-hypersensitivity,10,31517,0,1.html> (CiteScore 1.77. 33 перцентиль; Web of Science 1.29 -Q4)

2. Dmitriy Babenko, Anar Turmuhambetova, Tim Sandle, Sorina Anamaria Pestrea, Dan Moraru, Antonella Cheșcă. In silico comparison of different types of mlva with pfge based on pseudomonas aeruginosa genomes// ACTA MEDICA MEDITERRANEA Том 33 Выпуск 4 Страница 607-612, 2017 (CiteScore 1.2 процентиль 61%).

3. Ospanov O., Yeleuov G., Kadyrova I., Bekmurzinova F. The life expectancy of patients with metabolic syndrome after weight loss: study protocol for a randomized clinical trial. LIFEXPE-RT. Vol 20, Issue 1, 202, 2019. (CiteScore 3.0 процентиль 52%). DOI: 10.1186/s13063-019-3861-y.

4. Ospanov Oral, Ospanova Kadisha, Kadyrova Irina. Neuron-specific enolase level in patients with metabolic syndrome and its value forecasting acute stroke. AUSTRALASIAN MEDICAL JOURNAL. Vol 11, issue 3, P. 186-194

5. Sergey Yegorov, Dmitriy Babenko, Samat Kozhakhmetov, Lyudmila Akhmaltdinova, Irina Kadyrova, Ayaulym Nurgozhina, Madiyar Nurgaziyev, Sara Victoria Good, Gonzalo H. Hortelano, Bakytgul Yermekbayeva, Almagul Kushugulova Psoriasis is

Results achieved

A microbiological / proteomic blood test for sterility is carried out using MALDI-mass spectrometry. The main causative agents of sepsis in newborns are: *Staphylococcus haemolyticus*, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Streptococcus agalactiae*, *Enterococcus fecium*, *Enterococcus faecalis*, *Klebsiella pneumonia*, *Escherichia coli*, *Enterobacter cloacae*.

The level of expression of regulatory molecules TREM-1 and ligand PD-1 in peripheral blood and serum was determined. In all examined children, the basic immune status and activation markers are determined: PD-1 / PDL-1 on monocytes, CD4 and CD8 lymphocytes, TREM on neutrophils, CD25 on lymphocytes, HLADR on monocytes and lymphocytes.

The content of sCD40L, EGF, Eotaxin / CCL11, FGF-2, Flt-3 ligand, Fractalkine, G-CSF, GM-CSF, GRO, IFN- α 2, IFN- γ , IL-1 α , IL-1 β , IL-1ra, IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-12 (p40), IL-12 (p70), IL-13, IL-15, IL-17A, IP-10, MCP-1, MCP-3, MDC (CCL22), MIP-1 α , MIP-1 β , PDGF-AA, PDGF-AB / BB, RANTES, TGF- α , TNF- α , TNF- β , VEGF in patients were determined by immunofluorescence. Data analysis and correlation analysis with clinical data are performed.

Information for potential users

The results are intended for practical medicine and can be used in the field of neonatology.

Scientific publications by the project terms

1. Kolesnichenko S.I., Lavrinenko A.V., Akhmaltdinova L.L. Bloodstream Infection Etiology among Children and Adults// International Journal of Microbiology.- Tom 2021.- Номер статьи 6657134
2. Akhmaltdinova L.L., Kolesnichenko S.I., Lavrinenko A.V. Immune parameters in neonatal sepsis of different etiology // Clinical Microbiology and Antimicrobial Chemotherapy (CMAC). - 2021. - Volume 23.-Appendix 1. - P. 10.
3. S.Kolesnichenko, A. Lavrinenko, L. Akhmaltdinova, E.Kalmbach, I. Kadyrova Sepsis outcome in pediatric patients// Annual Conference Microbiology society, 26–30 April 2021, ABSTRACT BOOK. - P. 444.