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O.A. Gizinger[1*], V.N. Egorova [2], V.I. Trofimov [3]

[*1]Peoples' Friendship University of Russia, Moscow, Russia
[2]Research and Production Company Biotech, LLC, Saint-Petersburg, Russia
[3]First State Medical University of St. Petersburg named after academician I.P.Pavlov, Saint-Petersburg, Russia
*e-mail: OGizinger@gmail.com

RECOMBINANT CYTOKINES IN THE TREATMENT OF PNEUMONIA. CLINICAL EXPERIENCE

Antimicrobial chemotherapy is a keystone of the treatment of pneumonia. Prescription of antibacterial drugs does not always ensure the success of treatment due to the secondary immune deficiency developing in the process of the disease and the rapid growthof acquired antibiotic resistance.

The article presents experience and clinical and immunological effectiveness of the use of recombinant interleukin-2 (rIL-2) in the treatment and prevention of pneumonia in order to reduce the risk of pneumonia in cerebral strokes and severe exogenous poisoning.

In our study, we analyzed two clinical cases with of pneumonia

In patients with severe forms of pneumonia using complex therapy with recombinant interleukin-2, the time to achieve clinical and laboratory remission is reduced, the manifestations of respiratory failure and intoxication syndrome are stopped

Thus, accumulated clinical experience the administration of the recombinant drug interleukin-2 in combination with antimicrobial drugs in basic therapy showed positive effectiveness, validity and expediency, in order to improve the clinical course, normalize immunological parameters, as well as for the rapid and complete treatment of the inflammatory process in patients of different ages with severe pneumonia.

Key words: pneumonia, interleukin-2 (IL-2), immunity.

Introduction

Respiratory pathology covers all countries of the world, leads to long-term disability, to a decrease in the quality of life, which indicates the great social and economic significance of this pathology. Pneumonia remains one of the most common respiratory diseases in the structure of respiratory diseases and mortality from these diseases. Oneof the most urgent problems in pulmonology isthe treatment of pneumonia. The characteristic of nosocomial pneumonia are:

- The proportion of severe and prolonged diseases in the elderly, young and middle-aged without concurrent pathology is increased.
- Higher pulmonary complication frequency [1,2, 3].

Various disorders of immunological reactivity are revealed during clinical and immunological examination of patients with pneumonia of varying severity. The imbalance of cytokines, the development of a systemic inflammatory response and changes in the systems of cellular and humoral immunity are characteristic of the complicated form of community- and hospital-acquired pneumonia that develops in presence of systemic bacterial invasion. The period of transition of microbial aggressionto the stage of the beginning of stabilization ofthe inflammation process is characterized by a decrease in the absolute number of lymphocytes andfunctional activity of cells with the CD3 + CD4 + phenotype in severe forms of community-acquired pneumonia with leukopenic syndrome [1,4,5].

Antimicrobial chemotherapy is a keystone of the treatment of pneumonia. Prescription of antibacterial drugs does not always ensure the success of treatment due to the secondary immune deficiency developing in the process of the disease and the rapid growth of acquired antibiotic resistance[6]. These facts show that the treatment regimes for pneumonia are necessary with the aim of activating the organism's protective and adaptive reactions and also significantly restricting the selection of microorganism resistant strains.

Inclusion in the system of complicated therapy for the treatment of serious forms of pneumonia and their complications of cytokine imbalance and incomplete phagocytosis will be pathogenetically justified. The quick and full resolution of

inflammatory syndromes and lung tissue damage are facilitated using recombinant cytokines that are known as recombinant interleukine-2. Recombinant interleukin-2 has been used in clinical practise for the treatment of pyo-inflammatory, infectious and oncological diseases since 1995.

Pharmacodynamic effects of IL-2 are associated with activation of clonal proliferation of T-lymphocytes, with the stimulation of cell differentiation of cytotoxic T lymphocytes, with the stimulation of clonal proliferation of b-lymphocytes, with increased synthesis of immuneglobulins by plasma cells of all classes, an increase in the functional activity of mononuclear phagocytes, a decrease in the level of spontaneous apoptosis of T-helper cells, increasing the synthesis of specific immunoglobulin isotypes of the majorityof plasma cells. [7].

The experience of using recombinant interleukin-2 in complex therapy in pulmonology and phthisiology began in 1995 [8,9], it was prescribed to patients with severe community-acquired and hospital-acquired pneumonia of various etiologies, in the postoperative period and in wound sepsis, including in elderly patients [10], atypical pneumonia of chlamydia and mycoplasma etiology [11, 12].

In the literature, there is information about the use of recombinant interleukin-2 in the prevention of pneumonia, acute poisoning [2, 3] and cerebral strokes [13], and also showed good preventive results [2,3,13].

Materials and Methods

Clinical studies of the effectiveness of recombinant interleukin-2 were carried out in medical centers in Moscow [2, 3], St. Petersburg [14, 15], Saratov [4], Znamensk, Astrakhan region [5], Blagoveshchensk [11], etc.

The aim of the study was to evaluate the effectiveness of the use of recombinant interleukin-2 in the complex therapy of pneumonia of various etiology.

Results and Discussion

The after effects of a clinical report assessing the utilization of recombinant interleukin-2 for the treatment of serious acute pneumonia were gotten at S.M. Kirov Military State Academy in St. Petersburg [16]. They proved the efficacy of use of intravenous infusion of 0.25 mg of recombinant interleukin-2 for the treatment of pneumonia developed in wound sepsis. The course of treatment of patients included 2-4 daily intravenous infusions of recombinant interleukin-2 at dose 0.125-0.25 mg. Surgicalcleaning of primary and secondary metastatic seats of infection is a necessary condition for starting the treatment with recombin int interleukin-2

On days first third of the treatment with recombinant interleukin-2 there were a declinein manifestations of intoxication, of internal body temperature and shortness of breath. It was noticed a positive dynamic of indications of respiratory distress syndrome (by X-ray) on third to fifth day of treatment.

In addition, a positive dynamics of laboratory parameters was observed: a decrease in the white blood cells index of intoxication, an increase in the absolute number of lymphocytes in the peripheral blood along with clinical improvement of the condition of patients. On average, the duration of antibiotic therapy decreased by 7 days, the recovery process was accelerated by 14 days, and the mortality rate decreased by 28% when using recombinant interleukin-2 (Table 1) [17, 18].

Table 1 – Laboratory results Clinical efficacy of Roncoleukin® in the treatment of acute pneumonia developed in wound sepsis

Indicators	The value of indicators by groups	
	Treatment with recombinant interleukin-2 (n = 47)	Treatment without recombinant interleukin-2 (n = 30)
Duration of antibiotic therapy	Reduction by 7 days compared to control	
General mortality, %	8.55	36.78*
Recovery, day	15.05 ± 2.85	29.2 9± *5.27**

*p<0,05

Conclusion

1. In patients with severe forms of pneumonia using complex therapy with recombinant interleukin-2, the time to achieve clinical and laboratory remission is reduced, the manifestations of respiratory failure and intoxication syndrome are stopped, the duration of the febrile period is reduced, there is a clear positive X-ray and laboratory improvement in most patients.

2. The immunological results showed that the normalization of inflammatory changes in the clinical and biochemical analysis of blood and the restoration of previously reduced parameters of the cellular link of immunity correlates with the clinical effects of immunocorrection.

3. Clinical experience with the use of recombinant interleukin-2hasproventheeffectivenessofintravenous, subcutaneous and inhalation administration of the drug in patients of different age groups.

4. When the drug is administered in the phase of stabilization of infiltration, the effects of immunotherapy with recombinant interleukin-2 are most pronounced.

5. The accumulated clinical experience the administration of the recombinant drug interleukin-2 in combination with antimicrobial drugs in basic therapy showed positive effectiveness, validity and expediency, in order to improve the clinical course, normalize immunological parameters, as well as for the rapid and complete treatment of the inflammatory process in patients of different ages with severe pneumonia.

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