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BACTERIOPHAGES AS A SOLUTION TO THE PROBLEM OF ANTIBIOTIC RESISTANCE IN BACTERIAL INFECTIONS

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ABSTRACT: From year to year, the problem of multi-resistance of microorganisms against antibacterial drugs is becoming more acute, which in turn prompts pharmaceutical companies to search for new compounds that are a temporary delay in the approaching crisis, as evidenced by a large multi-center study [1]. Bacteriophages are a promising tool in the fight against multi-resistant infections, although the assertion of the powerful antibacterial properties of bacteriophages causes controversy among the medical community, which prompted the interest of the authors of this article in an in-depth study of this issue.

KEYWORDS: Bacteriophages, multidrug resistance, antibiotics, infectious complications.

INTRODUCTION

Aim: Review of experiences in the use of bacteriophages with determination of the likelihood of adaptation and implementation in Uzbekistan.

Materials and methods: The analysis of scientific literature related to the use of bacteriophages was carried out using Google Scholar and installing filters by year (from 2018).

Results: In a multicenter study conducted by D.S. Parshin and co-authors (2019-2022) aimed at determining the effectiveness of the use of bacteriophages for infectious complications after emergency intra-abdominal operations noted a 2-fold reduction in mortality and a significant reduction in the duration of treatment in this group of patients [2].

When using bacteriophages in cardiothoracic surgery, Rubalsky E. and co-authors achieved complete recovery of patients against the background of immunosuppression [3].

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Also, Jault P. et al., in a large randomized trial (PhagoBurn), used phage cocktails for infections of burn wounds, after which a significant superiority of treatment results was noted in the comparison group [4].

At the Novosibirsk Research Institute of Traumatology and Orthopedics E.A. Fedorov. et al., in the treatment of periprosthetic infection, bacteriophages were used in combination with antibacterial drugs, followed by comparison with a group of patients where bacteriophages were not additionally used. The authors concluded that a significant reduction in relapse rates was achieved (from 31% to 4.5%) [5].

The use of bacteriophages for pancreatitis complicated by pancreatic necrosis was crowned with success according to a study conducted by T.A. Batileuov. and co-authors [6]. The study achieved a reduction in mortality, a reduction in the duration of treatment and the number of program endoscopic sanitation.

Clinical cases observed in patients with long-term non-healing infected wounds of the extremities associated with multiresistance to antibiotics were described by Salamina T.A. and co-authors. The treatment was carried out using bacteriophages, which resulted in complete recovery of the patients [7].

CONCLUSION

Considering the above, the authors of this article are interested in continuing research in this direction, in view of the worsening susceptibility of microorganisms to antibacterial drugs in the Republic of Uzbekistan [8,9], in order to improve the situation in this region.

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