

KARAMAN PAGAVA, IRINE KORINTELI, IRMA KORINTELI

BACTERIOPHAGE – ALTERNATIVE TO ANTIBIOTICS?

Tbilisi State Medical University, Child and Adolescence Medicine Department, Givi Zhvania

Pediatric Academic Clinic, Tbilisi, Georgia

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ყარამან თაღავა, ირინე კორინთელი, ირმა კორინთელი

ბაქტერიოფაგი - ანტიბიოტიკის ალტერნატივა?

თბილისის სახელმწიფო სამედიცინო უნივერსიტეტი, ბავშვთა და მოზარდთა დეპარტამენტი, გივი ჯვანიას სახელობის პედიატრიის აკადემიური კლინიკა, თბილისი, საქართველო

რეზიუმე

ანტიმიკრობული რეზისტენტობის ზრდის ტენდენცია და ანტიბიოტიკოთერაპიის გვერდითი ეფექტები აქტუალური პრობლემაა პედიატრიაში. ბაქტერიოფაგები განიხილება, როგორც ანტიბიოტიკების ერთ-ერთი ყველაზე პერსპექტიული ალტერნატივა.

შრომის მიზანი იყო დიარეული დაავადებების მქონე ბავშვებში per os შეყვანილი ფაგების თერაპიული ეფექტის შეფასება. ჩატარდა ღია ობსერვაციული კონტროლირებადი კლინიკური კვლევა.

ჩვენი კლინიკური კვლევის შედეგების მიხედვით /წინასწარი შედეგები/ ბაქტერიოფაგით მკურნალობა/ SEPTAPHAGE/ აუმჯობესებს დიარეის კლინიკურ მიმდინარეობას 3-დან 15 წლამდე ასაკის ბავშვებში ამბულატორიულ პირობებში.

The emergence of antimicrobial resistance and increase in side effects of antibiotic therapy is actual problem in pediatrics. The optimization of antibiotic therapy is necessity, especially in children. Bacteriophages are one of the most promising alternatives to antibiotics for clinical use [1].

Bacteriophage therapy is considered as an effective tool to improve the treatment of bacterial infections and minimize its adverse consequences. This approach of “phage therapy” is an old idea that is recently regaining popularity [2].

Bacteriophage (bacterial viruses) were discovered independently by two scientists, Frederick Twort and Felix d’Herelle, in 1915 and 1917 [3].

Felix d’Herelle is considered as father of bacteriophage therapy Bacteriophage. The first clinical application of bacteriophages was by Felix d’Hérelle in 1919 [4]. The first publication on clinical usage of phages realized about 100 years ago by Felix d’Herelle was dedicated to the bacteriophage therapy of dysentery in infants. The earliest reported use of bacteriophages therapeutically in the United States was in 1922 [4].

The aim of the work was to define the therapy effect of phages administered per os in children with diarrheal diseases. An open observation controlled clinical trial was performed. 52 children aged from 3 to 15 years with diarrheal diseases of bacterial etiology were monitored, as outpatients.

The study population was represented by 52 children who were grouped into the following two subgroups:

Basic group - 26 children (female-12, male-14).

Control group- 26 children (female-13, male-13).

All 52 children had diarrhea, mild intoxication, fever 37.5-38°C, leukocytes were positive more than 20 in stool test sample of all 52 patients. Calprotectin was testing in 40 cases, 20 from control and 20 from basic groups. Calprotectin was positive more than 20 test sample in 8 cases from control and 11 from basic groups. bacteriological culture was negative all 52 cases. According clinical - paraclinical dates diagnosis all cases were Gastroenteritis and colitis of unspecified origin A09.9 [ICD-10 Version:2019].

Control group 26 of them received treatment according to guidelines [6] and other 26 (basic group) according to guidelines plus P/OS polyvalent bacteriophage Septaphage /manufactured by BIOCHIMPARM JSC/. Septaphage (20ml x 4) is BioChimPharm’s preparation used for treatment and

prevention of gastrointestinal, urogenital, respiratory tract and other bacterial diseases caused by the following bacteria *E. coli*, *Salmonella*, *Shigella*, *Enterococcus*, *Staphylococcus*, *Proteus*, *Pseudomonas* or their combinations [5].

Improvement of the clinical - paraclinical dates of severity in 48 hours after the beginning of bacteriophage/ without bacteriophage treatment were compared.

According to our clinical trial results (preliminary results) Bacteriophage therapy with SEPTAPHAGE improves clinical course of diarrhea in outpatients aged from 3 to 15 years.

Thus, Bacteriophage therapy seems to be effective and safe antimicrobial therapy. It seems clear that use bacteriophages need further evaluation in children.

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SUMMARY

The emergence of antimicrobial resistance and increase in side effects of antibiotic therapy is actual problem in pediatrics. Bacteriophages are one of the most promising alternatives to antibiotics for clinical use.

The aim of the work was to define the therapy effect of phages administered per os in children with diarrheal diseases. An open observation controlled clinical trial was performed. 52 children aged from 3 to 15 years with diarrheal diseases of bacterial etiology were monitored, as outpatients.

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Thus, Bacteriophage therapy seems to be effective and safe antimicrobial therapy.

Keywords: Bacteriophage, antibiotics, antimicrobial therapy

