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TECHNOLOGICAL
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IN VITRO ASSESMENT OF 0.2 % ZINC-HYALURONATE ACTIVITY AGAINST MICROORGANISMS ISOLATED FROM PATIENTS WITH DIFFICULT HEALING LEG ULCERS

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ABSTRACT

The development of wound infection and selection of resistant microorganisms is a significant problem in the process of granulation and epithelization of poorly healing leg ulcers. In a number of cases, the attempts for systemic treatment with some of the most potent antimicrobials, according to the susceptibility data, are unsuccessful. It is established that the local application of hyaluronic acid fosters the process of epithelization. In a complex with Zinc ions, hyaluronic acid possesses antiseptic effect. The aim of the study: To assess the in vitro activity of 0.2% Zinc-hyaluronate solution /Hyaluricht ®/ against the most common bacteria isolated from patients with poorly healing leg ulcers. Material and methods: A total of ten bacterial strains /Staphylococcus aureus, Pseudomonas aeruginosa, Escherichia coli, and Serratia marcescens/ isolated from ten patients with long-lasting chronic leg were tested. Antibiotic susceptibility testing was determined by standard disk diffusion method. All Escherichia coli and Serratia marcescens strains were screened for the production of extended-spectrum β -lactamases by using the double-disk test. An inoculum suspension from fresh 18-h culture of the tested strains on blood agar was prepared in 0.2% Zinc-hyaluronate solution. The time kill experiments were performed. Results: Time-kill experiments demonstrated fast bactericidal activity even against highly resistant to antimicrobials strains. In our experiments the time for killing depended on the species affiliation and the bacterial suspension density. As a conclusion, the results confirm the data given in the medical literature for the antimicrobial activity of the preparation Hialuricht® and support the approved position in the clinical practice for its favorable therapeutic effect in the local treatment of infected ulcers.

Introduction

The reasons leading to the formation of poorly healing leg ulcers are chronic diseases of the arterial and venous systems, as well as some connective tissue and autoimmune diseases (3). The process of healing of these ulcers is long lasting and complicated. Their treatment includes systemic vasoprotective, venous tonic and vasodilating remedies, and antibiotics but also preparations for local treatment as en-

zymes for cleaning and necrosis removal, antimicrobial, epithelizing and protective creams and ointments (2, 4). In spite of the usage of contemporary non-adherent and exudate absorbing polyurethane and hydrocolloid dressings, surgical treatment of the ulcer bottom and edges is often necessary, followed by the application of skin autografts (10).

The development of wound infection and selection of resistant microorganisms