

EVALUATION OF CELLULOSE AND POLYHEXAMETHYLENE BIGUANIDE* IN THERAPY OF INFECTED WOUNDS

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Introduction: Wound exudate management and control of bacterial colonisation are two main aims in modern wound treatment. The efficiency of a new wound dressing containing cellulose and polyhexamethylene biguanide (polihexanide, PHMB) are evaluated in this descriptive study.

Material and Methods: The dressing consists of biocellulose which is synthesized by *Acetobacter xylinum*. The special prepared nanostructure allows biosynthesized cellulose to have a high-fluid capacity and formability. The product shows a good biocompatibility. Depending on the wound environment biocellulose can donate moisture or absorb excessive exudate. PHMB is integrated as a powerful antimicrobial agent. The study includes 40 patients, each suffering of delayed wound healing for at least 3 weeks, and signs of critical colonisation /infection. The progress of wound healing was evaluated by a colorimetric wound healing analyzing tool (WHAT). Furthermore the quality of life was evaluated during application and dressing changes.

Results: In 32 out of 40 patients the share of granulation tissue was increased, as a result of sufficient reduction of bacterial colonization (granulation tissue start point 12% (+/- 18%), end point 79% (+/- 24%) in 27 days (+/- 25; n= 40). In 5 patients no progress was measured. All of these were infected with *Pseudomonas aeruginosa* with signs of biofilm formation. Due to systemic infection in 3 patients, antibiotic treatment had to be started. The pain while application was according to Visual Analogue Scale VAS 0, whereas during the treatment pain was ranging from 1 to 3.

Conclusion: The right choice of a secondary bandage was essential for the success of the therapy (preventing cellulose from running dry). A real start of wound healing was seen (increase of granulation tissue in 3,1% per day and the reduction of clinical signs of local infection disappeared after 3,4 (+/- 10,5) days. Cytotoxicity and allergies were not noticed. Hydrobalance wound dressing with PHMB is an effective exudate managing dressing with antimicrobial power, a significant reduction of pain during the period of treatment as well as a very good tolerance.

* Suprasorb X+PHMB