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Abstract (oral session)

High bacterial load in vacuum-assisted closure foams used for treatment of chronic wounds

E. Yusuf*, X. Jordan, M. Clauss, O. Borens, M. Mäder, A. Trampuz (Lausanne, Basel, CH)

Objectives. Vacuum-assisted closure (VAC) is frequently used to promote wound healing. Data on bacterial load in the wound after VAC treatment is limited and most studies used quantitative tissue cultures. We investigated the microbiology of the VAC foam by sonication and potential association with the VAC system characteristics. **Methods.** We included patients receiving VAC treatment for chronic wounds (which failed to heal within 3 months) between January and December 2010. Removed VAC foam was cut in aseptic conditions into standard size (4 cm²) and subjected to sonication. The resulted sonication fluid was cultured and bacteria were identified and enumerated. The association between the type of foam (polyurethane (PU) or polyvinylalcohol (PVA)) and applied pressure (125 mmHg vs. 100 mmHg), and the bacterial load were evaluated. **Results.** Sixty-eight foams from 17 consecutive patients (mean age 63 years, 71% males) were investigated. Foams originated from the wound of the sacrum (n=28), lower leg (n=16), heel (n=8), ischium (n=8), ankle (n=5) and abdomen (n=3). Mean foam indwelling time in the wound was 3 (range: 1 to 6) days. Data on foam's type was available from 57 foams: 49 (86%) was PU and 8 (14%) was PVA. 125 mmHg and 100 mmHg pressures were used in 42 (62%) and 26 (38%) foams, respectively. In 65 (97%) foams at least one type of bacteria was found; in 37 (54%) were polymicrobial. The typical bacteria load was 10⁶ (range: 10⁵ to 10⁷) CFU/ml sonication fluid. In polymicrobial VAC foams, the most common bacteria was Enterobacteriaceae in 41 and Staphylococcus aureus in 22 foams. In monomicrobial VAC, the most common bacteria was Escherichia coli in 12 foams. Changing foams did not reduce the bacterial load (Figure 1). The mean of log of sum of CFU/ml in PU (mean ± standard deviation: 5.5 ± 0.8) was lower than in PVA foam (6.1 ± 0.5). The mean of log of sum of CFU/ml in foam from 125 mmHg (5.5 ± 0.8) was lower than in foam from 100 mmHg pressure (5.9 ± 0.5), p < 0.05 **Conclusion.** The bacterial load in VAC foams used for treatment of chronic wounds was high, this refutes the assumption that VAC decreases bacterial burden. PU and higher pressure was associated with lower load compared to PVA foam and lower pressure.

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