TITLE: Staphylococcus aureus AND Pseudomonas aeruginosa IN CHRONIC WOUNDS TREATED WITH EPIDERMAL GROWTH FACTOR AND PLATELET-RICH PLASMA

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Abstract
Chronic wounds are a challenge for patients, professionals and health care system. Depending on the injury, ulcers can cause difficulties on mobility and absenteeism to work and social activities. Bacterial colonization is frequent on these wounds and, most of the time, can delay wound healing. Identification of species present in the wound is of great importance to favor the process of tissue repair, allowing for appropriate and specific treatment according to the susceptibility of the microorganism found. The objective of this study was to evaluate the presence of Staphylococcus aureus and Pseudomonas aeruginosa colonization in wounds treated with recombinant epidermal growth factor (EGF) and platelet-rich plasma (PRP), and the presence of virulence genes on isolated strains. Experimental analysis was performed using clinical specimens collected with swabs from patients treated with PRP and EGF in the outpatient clinic of a university hospital. Swabs were then transferred to sterile saline, vortexed, and the resulting suspension was used to inoculate selective media for S. aureus (mannitol salt agar) or P. aeruginosa (cetrimide agar). After 24 hours of incubation at 37 ºC, colonies were selected for species identification by MALDI-TOF or PCR using 16S primers. In addition, presence of exoU and exoS gene for P. aeruginosa and luk-PV for S. aureus was evaluated by PCR. Forty-three isolates were obtained from 31 patients, 41.9% (13/31) of whom had been treated with EGF and 58.0% (18/31) with PRP. Ten of the 43 isolates were identified as S. aureus: 60.0% (6/10) of which were isolated from PRP-treated wounds and 40.0% (4/10), were isolated from EGF-treated wounds. Among the 33 P. aeruginosa isolates, 66.6% (22/33) were isolated from PRP-treated wounds and 33.3% (11/33) were isolated from EGF-treated wounds. The 33 P. aeruginosa isolates, 66.6% (22/33) were isolated from PRP-treated wounds and 33.3% (11/33) were isolated from EGF-treated wounds. Among the 33 P. aeruginosa isolates, 66.6% (22/33) were isolated from PRP-treated wounds and 33.3% (11/33) were isolated from EGF-treated wounds. Virulence gene analysis showed that, among the 22 P. aeruginosa identified in the PRP group, 15 (68.2%) strains were positive for exoU and one (4.5%) for exoS. In the EGF group, among the 11 P. aeruginosa strains, 4 (36.4%) were positive for exoU and 4 (36.4%) were positive for exoS. None of the S. aureus strains isolated on this study harbored luk-PV. We conclude that wounds treated with protein products are more commonly colonized by P. aeruginosa than by S. aureus and that exoU gene is more prevalent in P. aeruginosa than exoS gene.

Keywords: Staphylococcus aureus; Pseudomonas aeruginosa; Platelet-Rich Plasma; Epidermal Growth Factor; Chronic wounds.

Development Agencies: CAPES, FAPERJ, CNPq.