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Abstract (poster session)

Daptomycin-impregnated silicone prevents adherence of *Staphylococcus aureus* and *Staphylococcus epidermidis*

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Objectives: During the last decades, an exponential increase in the use of silicone implants has been observed. Bacterial colonization of the implant may result in capsular contracture and infection. The objective of this in vitro study was to investigate of antibacterial effect of daptomycin-impregnated silicone on staphylococcal adherence by microcalorimetry. **Methods:** Impregnated silicone was prepared by mixing 5 g Silibione A, 5 g Silibione B and different concentration of daptomycin (Table). After polymerization of the mixture through incubation at 80°C for 5 h, the silicone was cut in pads (1cm x 1cm). For evaluation of bacterial adherence the pads were incubated in Mueller-Hinton (MH) broth inoculated with 10⁵ cfu of *S. aureus* (ATCC 29213) or *S. epidermidis* (ATCC 35984) for 1 h at 37°C. Pads were then washed thrice with saline and inserted in microcalorimetry ampoules containing MH broth. Bacterial growth-related heat production was measured for 24 h. Detection limit was 20 microwatt. For investigation of daptomycin elution from the silicone, a bacterial suspension (10⁷ cfu/mL) was spread on a MH agar plate and a silicone pad was placed in the middle of the plate. Inhibition zone was measured after 24 h incubation. All media were supplemented with calcium. Experiments were performed in triplicate. **Results:** Table shows the median (range) time to detection of heat produced by bacteria adherent on the silicone. The detection time was delayed in a concentration-dependent manner in the presence of daptomycin for both *S. aureus* and *S. epidermidis*, in comparison with the unimpregnated silicone. At a daptomycin concentration of 75 mg/g of silicone, no heat was detected, indicating that the staphylococci were not able to adhere to the silicone surface. A concentration of 1 mg/g did not prevent bacterial adherence. Daptomycin eluted from the silicone demonstrated a concentration-dependent increase in inhibition zone against both staphylococcal strains. **Conclusions:** These results suggest that impregnation with daptomycin >75 mg/g prevented the adherence of staphylococci to silicone surface, the first step of biofilm formation. The use of antimicrobial-impregnated silicon may prevent development of capsular contracture, a common reason for exchange of breast implants. However, the release kinetics and the risk of emergence of resistant strains need to be evaluated before its use in the clinical setting.

	<i>S. aureus</i>						
Daptomycin [mg/g silicone]	0	1	10	25	50	75	100
Time to heat detection [h]	5.2 (4.9-5.4)	5.1 (4.7-5.1)	7.0 (6.5-8.2)	9.4 (8.2-9.5)	10 (9.5- >24)	>24	>24
Inhibition zone [mm]	0	0	4	4.1	5.3	6.7	6.7
	<i>S. epidermidis</i>						
Daptomycin [mg/g silicone]	0	1	10	25	50	75	100
Time to heat detection [h]	7.0 (6.8-7.1)	7.3 (7.3-8.8)	9.2 (8.9-10.8)	12.2 (11.3-12.4)	13.3 (12.9-14.8)	>24	>24
Inhibition zone [mm]	0	0	2.2	6.8	7.3	7.8	7.3