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Oral Session
New transmission routes and genotypic diversity: are we looking at a new MRSA?

PERIOPERATIVE NASAL MUPIROCIN OINTMENT AND CHLORHEXIDINE BODY WASH PREVENT SUPERFICIAL SURGICAL SITE INFECTIONS IN CARDIAC SURGERY

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Introduction: Surgical site infections (SSI) after cardiac surgery are of major importance regarding postsurgical morbidity and mortality. Preoperative mupirocin nasal ointment has been shown to reduce SSI in cardiac surgery, especially in carriers of *Staphylococcus aureus*. We analyzed the impact of mupirocin and chlorhexidine body wash on the SSI rate and on the spectrum of pathogens in a cohort of cardiac surgery patients.

Methods: Prospective SSI surveillance was done in our tertiary care center for patients undergoing cardiac surgery before (control cohort; June 2009 to December 2010) and after implementation (intervention cohort; April 2011 to July 2012) of a perioperative 5-day regimen of mupirocin nasal ointment and chlorhexidine whole body wash. Data such as age, sex, body mass index (BMI), American Society of Anesthesiologists (ASA)-score and timing of preoperative antimicrobial prophylaxis (cefuroxime) of every patient undergoing surgery were recorded. In addition, the National Nosocomial Infections Surveillance (NNIS)-score, consisting of the ASA-score, the duration of the intervention and the class of wound contamination was calculated. For patients with SSI, the depth of the infection (superficial versus deep or organ/space) and the causing organisms were registered. SSI rates and characteristics were compared between the control and intervention cohort using univariable and multivariable logistic regression analysis.
Results: Of the 945 patients in the control cohort, 81 (8.6%) had an SSI compared to 58/842 (6.9%) in the intervention cohort (P=0.18). In the intervention cohort, SSI risk was significantly lower for superficial (adjusted odds ratio (OR) 0.41; 95% confidence interval (CI), 0.23-0.73; P=0.002), but not for deep incisional or organ/space SSI (adjusted OR 1.46; 95%-CI 0.90-2.38; P=0.12). A causative pathogen was identified in 70% and 79% of cases; coagulase-negative staphylococci (CoNS) were found in 37% and 48% (P=0.19), *S. aureus* in 16% and 12% (P=0.51) and others in 32% and 45% (P=0.13) in the control and the intervention cohort, respectively. For deep incisional or organ/space SSI, CoNS were methicillin-resistant in 36% and 45%, respectively.

Conclusion: Application of mupirocin ointment and chlorhexidin body wash significantly reduced the rate of superficial but not deep or organ/space SSI. In addition, given the high proportion of deep and organ/space SSI due to methicillin-resistant CoNS, perioperative antimicrobial prophylaxis should be reconsidered in cardiac surgery.

Table: Multivariable analysis regarding risk for deep incisional or organ/space SSI and for superficial SSI

	Risk for deep or organ/space SSI			**Risk for superficial SSI**		
	OR	**95%-CI**	**P-Value**	**OR**	**95%-CI**	**P-Value**
Intervention group	1.46	0.90-2.38	0.12	0.41	0.23-0.73	**0.002**
Age	1.01	0.99-1.03	0.07	0.99	0.98-1.01	0.87
NNIS-Score	1.32	0.85-2.05	0.22	1.25	0.78-1.99	0.35
Elective surgery	0.81	0.39-1.69	0.58	1.05	0.44-2.50	0.92
Antibiotic prophylaxis	1.67	0.23-12.43	0.61	0.48	1.67-1.41	0.18

SSI, surgical site infection; OR, Odds Ratio; CI, Confidence Interval; NNIS, National Nosocomial Infections Surveillance