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Paper Poster Session IV

Healthcare-associated infection epidemiology and control

Risk factors for cardiac implantable electronic device infection: a systematic review and meta-analysis

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Objectives Infectious complications after cardiac implantable electronic device (CIED) implantation are increasing over time and are associated with substantial mortality and healthcare costs. The aim of this study was to systematically summarize the literature on risk factors for infection after pacemaker, implantable cardioverter-defibrillator (ICD), and cardiac resynchronization therapy (CRT) device implantation.

Methods Electronic searches (up to January 2014) were performed in PubMed, Scopus, and Web of Science databases. Risk factors identified in univariate and multivariate analyses of individual studies were summarized in a descriptive data synthesis. Quantitative meta-analyses were also performed, followed by sensitivity analyses on the basis of study definition, design, and potential publication bias.

Results Sixty studies (21 prospective, 9 case-control and 30 retrospective cohort studies) met the inclusion criteria. The average device infection rate was 1-1.3%. In the quantitative analysis, significant host-related risk factors for infection included diabetes mellitus, end-stage renal disease, renal insufficiency, history of previous device infection, chronic obstructive pulmonary disease, heart failure, malignancy, corticosteroid and anticoagulant drug use. Regarding procedure-related factors, lack of antibiotic prophylaxis, device replacement/revision, lead dislodgement, hematoma, temporary pacing, procedure duration, and inexperienced operator were all predictors of CIED infection. Among device-related characteristics, abdominal pocket, dual-chamber system, positioning of two or more leads and presence of epicardial leads predisposed to device infection. **Conclusion** Awareness of the increased risk associated with specific host-, procedure-, and device-related characteristics will make operators take additional measures to prevent infection and may help risk assessment in the management of device revisions.