Abstract: P3136

Percutaneous aspiration procedure as an adjunct to transvenous lead extraction procedures in patients with large lead vegetations

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Topic(s):
Device Complications and Lead Extraction

Citation:
Background: Patients with systemic CIED (Cardiac implantable electronic device) infection with large lead vegetations are a clinical challenge and carry a high operative risk. In three lead extraction centers a treatment strategy with minimal-invasive percutaneous aspiration of vegetations and subsequent transvenous lead extraction was established. The results of this concept were evaluated with regard to safety and efficacy in this retrospective multi-center study.

Methods: Between June 2015 and December 2018 we performed combined percutaneous aspiration procedures and transvenous lead extractions in 107 patients with 262 targeted leads (179 pacemaker leads, 83 ICD leads) for extraction. Mean lead vegetation size in preoperative echocardiography was 30.6 ± 13.3 mm. Mean lead implant duration were 82.8 (1-254) months. The aspiration system is based on a veno-venous extracorporeal circuit with an in-line filter and a specialized venous drainage cannula.

Results: Complete procedural success of the percutaneous aspiration procedure was 94.4% (n=101), partial success was achieved in 4.7% (n=5). Three complications (2.8%) related to the aspiration procedure were encountered. In the concomitantly performed transvenous lead extraction procedures complete procedural success per targeted lead was 99.2% (n=260). 30day mortality was 2.8% (n=3).

Conclusion: The minimal-invasive percutaneous aspiration procedure proved to be safe and effective. It facilitated the subsequent transvenous lead extraction procedure, avoids septic embolization into the pulmonary circulation and abolished the need for open surgical extraction in this high-risk patient group.