

Salvage of Infected Pacemakers and Implantable Cardioverter-Defibrillator by Selective, Insitu-Targeted Ultra-High Dose Antimicrobial Treatment

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Background: Infection of pocket and subcutaneous portion of lead from permanent pacemakers (PPM) and implantable cardioverter-defibrillators (ICD) comprise over 52% of infected devices. Exclusive systemic antibiotic treatment of infected PPM and ICD is relatively ineffective, often resulting in complicated, costly, and sometimes hazardous removal and replacement of device. Objectives: To demonstrate the efficiency of novel therapy method for infections of PPM and ICD limited to the pocket and proximal wiring by continuous insitu-targeted ultra-high dose antibiotic (CITUHDA).

Methods: 9 consecutive patients with infected PPM or ICD were treated by CITUHDA under Regulated Negative Pressure Assisted Wound Therapy (RNPT) system, and if indicated, minimal manipulation of hardware. CITUHDA treatment was provided 7-14 days followed by a course of 2-4 weeks of oral antibiotics as clinically indicated.

Results: All treated PPM and ICD were salvaged. All patients remained with no clinical manifestations of infection. The mean follow up was 13.4±11.6 months, (range 3-25 months). Pocket concentrations of antibiotics were up to 10³ higher than normal target therapeutic plasma levels. Plasma levels of antibiotics were within normal therapeutic range reflecting an apparent first-order pocket-to-plasma delivery. By controlling the antibiotic concentration in the pocket, the desired therapeutic or low-therapeutic plasma levels were achieved. Exposure of generator or wiring could be managed by either delayed direct closure or by coverage with local flaps.

Conclusions: Infection of implant pocket and/or of subcutaneous wiring can be efficiently managed by CITUHDA under RNPT system, diminishing the need for removal of device. Moreover, CITUHDA also provides concurrent controlled systemic antibiotic therapy, adjustable to the patient's clinical restrictions.