This editorial refers to ‘Conservative management of infected pacemaker and implantable defibrillator sites with a closed antimicrobial irrigation system’ by J.A. Lopez, on page 541

Cardiac implantable electronic device (CIED) infections are increasing in frequency, becoming a major problem in device management and imposing a large economic burden on health care systems due to long hospitalizations and major morbidities involved. In recent years, there has been a marked increase in device infections due to an increase in device use, including in sicker populations, and multiple replacement procedures that increase infection rates.

Complete implantable system removal including lead extraction has long been the standard of care of any CIED infection including pocket infections, based on unacceptably high failure rates and even increased mortality with local disinfec tion techniques without complete system removal. Consequently, several official consensus and scientific papers recommended complete system removal (including lead extraction) in all cases of any device infection.

Although complete removal of all hardware is certainly the best way to deal with device infections, lead extraction is a complex procedure that carries its own risks. Whereas its overall success in highly experienced hands is currently higher than 95% and major risk are <2%, real-life results may be less favourable, especially in frail elderly patients with multiple comorbidities. It is in this population that even experienced electrophysiologists sometimes look for alternatives to lead extraction, especially with low-grade infections (local pocket infections without systemic manifestations). Moreover, comorbidities that limit life expectancy in some of these patients make conservative treatment that may provide even temporary relief an interesting option.

In this issue of the journal, Lopez presented his approach to conservative treatment of pacemaker pocket infection with a closed antimicrobial irrigation system. All five patients had pocket infections without signs of systemic infection. They were all treated by extensive resection of infected and non-viable tissue as well as non-essential foreign materials, careful haemostasis, mechanical and chemical sterilization of all remaining hardware and a closed irrigation system with antibiotics for 72 h following the operation, and oral antibiotics upon discharge. They were all followed for at least 1 year without evidence of recurrence, but not uncommon in this population of extremely morbid patients, three of them died during the follow-up time due to comorbidities.

Although cases of local treatment of pocket infection often culminated in treatment failure and recurrence of infection, looking back into the early days of pacing, when lead extraction was not readily available, there have been several reports of success with local treatment of pocket infections. Closed irrigation of other prosthetic materials in plastic surgery and orthopedics has long been used with sporadic success.

Many years ago, Furman et al. has reported successful treatment of pocket infections without removal of the system. Back in 1986, at the dawn of extraction techniques, Hurst et al. published a series of 19 patients with pacemaker pocket infection that were successfully treated by debridement and local closed irrigation without hardware removal. There were no failures or recurrences of infection over a follow-up period that ranged between 3 and 70 months, and was more than 1 year in the majority of patients.

Dr Byrd, described an early experience with salvage of eroded/infected pockets without system removal in the early 80’s. Of 69 patients selected for the procedure, 39 (45%) were successfully salvaged with a follow-up of more than 1 year. Others had early recurrence of infection.

Over the years, even after extraction became routine, several other groups reported success with local treatment of carefully chosen patients with pocket infection without evidence of systemic infection, either as case reports or small series. Most of these techniques were based on combinations of local debridement and prolonged closed irrigation with antibiotic or antiseptic solutions. Recently, Topaz et al. presented the results of treatment of 21 consecutive patients with continuous ultra-high dose antibiotic irrigation under closed regulated negative pressure-assisted wound.
therapy and if indicated, with minimal surgical procedure. Local antibiotic levels were measured to be 2–3 orders of magnitude higher than serum levels. Therapy was delivered for 14 days and followed by several weeks of oral antibiotic therapy. In 18 of 21 patients systems were salvaged without recurrent infection over an average follow-up of 18 months. Having referred several patients whom I felt were too sick for extraction to this group I can attest their favourable results.

One must realize that despite relatively long follow-up in the majority of these series, late and very late recurrence may still occur, but it may be irrelevant to many patients who have limited life expectancy due to age and comorbidities.

Hence, is local treatment a viable option to treat pocket infections in the era of advanced lead extraction techniques? Probably yes, but in a very limited group of selected patients. I believe that this technique should be reserved for patients who are too frail or sick to undergo lead extraction when the risk of extraction outweighs the potential benefit. They will usually be patients with limited life expectancy due to comorbidities or very old age. These patients must have only local infection or pocket erosion, with exclusion of systemic infection by blood cultures and a transoesophageal echocardiogram. Whereas in some of them the procedure may fail and even cause acceleration of the infectious process necessitating extraction, the majority of carefully selected patients will benefit from the procedure. Although the durability of this almost palliative procedure may be limited, it may suffice for the majority of appropriately selected candidates for this mode of treatment.

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References