First in Asia case report and literature review on subcutaneous implantable cardiac defibrillator (S-ICD) related infection with extraction and reimplantation

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**Introduction:** More patients were receiving SICDs instead of conventional trans-venous ICDs for prevention of sudden cardiac death. Below is the first case report in Asia and literature review about S-ICD related infection and its management approach.

**Methods:** A 34-year-old man with history of recurrent syncope for 10 years was admitted to our unit in 2014 for Brugada syndrome presented with another episode of syncope precipitated by flu. His electrocardiogram showed transient type 2 brugada pattern. Flecainide challenge test and electrophysiological study were positive. Further investigations including transoesophageal echocardiogram, event recorder and coronary angiogram were all normal. SICD was implanted for prevention of sudden cardiac death via 3 incision technique. His postoperative followup course was uneventful. There was no ventricular arrhythmia detected and no shock therapy was required. The patient developed cellulitis over xiphoid region after a scratch injury 4 years after S-ICD implant. There was SICD pocket site abscess formation through the subcutaneous tunnel from xiphoid region despite prompt antibiotic therapy. His wound swab grew methicillin sensitive staphylococcus aureus. There was no positive blood culture. In view of the rapid progression of symptoms and abscess formation despite antibiotic therapy, early explanation of S-ICD. He was treated with 3 weeks of antibiotic therapy. SICD was reimplanted with subcutaneous approach at a deeper subcutaneous plane. Intraoperative defibrillation threshold test (DFT) was successful and postoperative follow up was uneventful.

**Result:** Previous studies showed S-ICD implantation related infection was 1.7-4.1%, while the rates of Trans-venous ICD (TV-ICD) infection was 0.6-1.7%. However, there was no head-to-head comparison. For superficial infection after S-ICD, conservative management without removal of device may be considered. However, S-ICD infection could progress to systemic infection. For deep seated S-ICD infection, device removal should be considered early. A recent published retrospective cohort study of 123 patients reported 5 patients (4.7%) had S-ICD infection at 2 year follow up. 4 patients had reimplantation by subcutaneous approach as the initial approach. 3 of them had uneventful follow up course 1 year after reimplantation. 1 of them required repositioning of pulse generator to sub-serratus anterior muscle at 34 days. This retrospective cohort showed that continuation of S-ICD therapy with subcutaneous approach was possible after early surgical intervention when compared to early study in which 4 out of 7 infected S-ICD cases were switched to TV-ICD.
Conclusion: S-ICD infection could progress to systemic infection. Early identification and treatment is important. Continuation of S-ICD therapy with subcutaneous approach is possible after early intervention.