Incidence and Clinical Predictors of Implantation-Related Complications of Transvenous Cardiac Implantable Electronic Devices in a Tertiary Hospital in the Philippines

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Introduction: As the use of cardiac implantable electronic devices (CIEDs) which include pacemakers (PM), implantable cardioverter-defibrillators (ICD) and cardiac resynchronization therapy (CRT) is expanding exponentially worldwide, implantation-related complications are also increasing. Although the epidemiology of these complications has been described in developed regions, data is lacking in developing countries wherein inherent demographic and procedural factors may alter trends in outcome. We aim to assess the incidence and risks associated with CIEDs by a local database.

Methods: We analyzed the clinical data of 253 adult patients who underwent de novo implantation, replacement, and upgrade procedures of CIEDs in a single institution between May 2013 and May 2018. Analysis of the different clinical and procedure-related factors for complications were done using logistic regression. Statistical analysis was done using STATA version 12.

Result: Of the 253 subjects, 13 patients (5.1%) had complications which included pocket hematoma (n=1), pocket erosion/infection (n=3), lead dislodgement (n=10), and bacteremia (n=1). Predictors of overall complication included the use of dual-chamber ICDs (odds ratio [OR]=26.8, 95% CI:1.39–516.90; p=0.02), presence of moderate to severe tricuspid regurgitation (OR=4.57; 95% CI:1.85–24.56; p=0.04), and chronic kidney disease (OR=9.01; 95% CI:1.05–77.60; p=0.04). Predictors of lead dislodgement included obesity (OR=8.71; 95% CI:1.01–74.99; p=0.04), moderate to severe tricuspid regurgitation (OR=11.92; 95% CI:1.52–93.53; p=0.01), and low molecular weight heparin use (OR=7.38; 95% CI:1.05 – 52.05; p=0.04).

Conclusion: Despite the relatively lower patient- and procedure-volume, our local experience is comparable to the global data in terms of overall complication rates. Both patient- and procedure-related predictors identified patients with a particularly high risk of complications. The clinical utility of these findings includes the provision of measures for quality improvement and informed consent.