**Predictors of Atrial Fibrillation Free Survival in Patients with Implantable Cardiac Devices**

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**Background**:

Improvement of atrial fibrillation (AF) burden or complete elimination can be occasionally observed after pacemaker (PM) implant in patients with tachy-brady syndrome. On the other hand, patients may develop AF after the implant, even without prior history.

We studied whether pre-implant data can be used to identify patients who are at risk of death or AF for one year follow up.

**Methods**:

Data from one hundred patients who underwent Medtronic dual (DDD) or triple chamber (CRT) PM or ICD implants between 2019 and 2020 were analyzed. Clinical data included parameters available at the time of the pre-implant consult: demographics, vitals, medications, comorbidities, labs, EKG, characteristics of any prior AF, echocardiographic parameters, planned device type. Follow up duration was 12 months; post-implant survival and AF data were collected from the electronic medical record and device interrogation data. We defined AF recurrence as any AF episode lasting longer than 5 minutes. Kaplan-Meier, Mantel-Cox log rank survival analysis was performed with a combined outcome of death or first AF recurrence.

**Results**:

The patient population was 74.9±11.1 years old (39% female), BMI 30.5±7.2 kg/m2; 40% had prior history of AF, 58% CAD, 85% hypertension, 46% diabetes mellitus, 30% sleep apnea. ICD was implanted in 32%, PM in 68%. DDD device was used in 84%, CRT in 16%. During the pre-implant visit, 46% were hypertensive, 15% were in non-sinus rhythm, 43% had heart rate <60 bpm, 26% second/third grade AV block, 46% QRS >120 ms, 30% LVEF <50%.

Follow-up duration was 326±111 days, 58% of patients died or had AF recurrence. Pre-implant factors associated with worse outcome were history of AF (p<0.001), history of AF ablation (p<0.001), CKD stage 4-5 (p=0.012), CHF class 3-4 (p=0.039). Paradoxically, QRS <120 ms and LVEF ≥50% were associated with worse outcome (p=0.019 and p=0.046) - utilization of ICDs was higher in the low LVEF group vs. PMs, use of CRT vs. DDD was higher in both the wide QRS and low LVEF groups (p<0.05 for each comparison).

**Conclusion**:

Pre-implant clinical parameters can predict the composite of death or atrial-fibrillation free survival after the device implant. Further study may develop a risk analysis tool, used to refine the risk/benefit discussion prior to the device implant.

**References**:

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CHARACTER COUNT (w/ spaces, including everything but references): 2438 out of 2500