

High Incidence of Atrial Fibrillation After Dual Chamber Pacemaker Implantation - Implication on the Use of Atrial Defibrillation Mode Pacemakers

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Background: Despite an atrial pacing mode, atrial fibrillation (AF) still occurs, and may necessitate either cardioversion or abandon of DDD pacing. The addition of atrial defibrillation capacity to DDD(R) pacing may allow active management of AF. We studied our patients who had DDD(R) implanted for the incidence of AF, and assess the need of subsequent treatment in follow up.

Results: A cohort of 123 patients (age = 70 ± 12 years, 49% male) patients were studied. Those with frequent AF done and atrioventricular (AV) nodal ablation performed were excluded as they were deceased conduction for atrial defibrillation. For the remaining patients, there was sick sinus syndrome in 57%, complete heart block in 36%, other high grade AV block in 6%, paroxysmal atrial fibrillation in 7% and carotid hypersensitivity in 2%. Within the 33.15 ± 24.33 months follow up, the prevalence of AF was 27% before and 34% after pacemaker implantation. Nine patients (7.3%) developed new onset AF (mean duration 414 ± 582 days, range 3-1550 days). From them, only one had underlie complete heart block and the other 8 had sick sinus syndrome. Therefore, 13.6% of patients with sick sinus syndrome subsequently developed AF, with a total prevalence of 56% in this disease entity. For those with new onset AF, 5 (56%) had persistent AF and 4 (44%) had paroxysmal AF. Among the 42 patients with AF, 16 (38%) had symptoms of palpitation, one had dyspnoea (2.4%) and one had both symptoms (2.4%). Two (5%) patients received external cardioversion. Three patients developed heart failure and one had transient ischemic attack and heart failure. Twenty (48%) patients were on some forms of medical therapy, namely digoxin in 12%, calcium antagonist in 19%, β -blocker in 10%, Class Ic agent in 10%, Class III agent in 14%, aspirin in 19% and warfarin in 17%.

Conclusion: AF is prevalent in patients with dual-chamber pacemaker insertion, especially those with underlie sick sinus syndrome. Patients with persistent AF will benefit from atrial defibrillation, and this option may be an alternative therapy for patients with paroxysmal AF.

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Plasma Adrenomedullin Level in Patients with Heart Failure is Related to Systolic but Not Diastolic Dysfunction

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Background: In patients with heart failure, plasma natriuretic peptides levels are elevated which was found to correlate with severity of systolic and diastolic dysfunction. Adrenomedullin (ADM) is a peptide with potent vasodilatory and natriuretic action and its plasma level was found to be elevated in heart failure patients. This study was to investigate whether plasma ADM level predicts the occurrence of diastolic function and severity of systolic failure.

Methods and Results: Twenty-two patients (mean age: 61 ± 13 years, 68% male) with symptomatic heart failure were studied. The mean left ventricular ejection fraction was $37.8 \pm 12.5\%$. There was a significant correlation between the plasma ADM level and the severity of systolic dysfunction as shown by the ejection fraction ($r = -0.65$, $p = 0.02$). In addition, the ADM level also correlated with a larger left atrial size ($r = 0.8$, $p = 0.03$). However, there was no significant correlation between ADM level and the severity of diastolic function, although there was a trend towards a higher ADM level in restrictive diastolic filling pattern (the more severe form of diastolic dysfunction) than a non-restrictive one (33.9 ± 43.2 Vs 21.3 ± 16.7 pmol/L, $p = \text{NS}$).

Conclusion: The elevation of plasma adrenomedullin level correlated with the severity of systolic dysfunction but not diastolic dysfunction in patients with heart failure. The increased in left atrial wall tension as reflected by the left atrial enlargement may be an important cause of stimulation of ADM secretion.