

Effect of the “Search AV” feature on left ventricular longitudinal deformation and ProBNP levels in patients with implanted dual-chamber pacemakers

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Introduction: Dual-chamber pacemaker implantation in patients with high grade AV block is a lifesaving intervention. Unfortunately, one of the most important drawbacks is its ventricular stimulation and the resultant LV systolic dysfunction due to left bundle branch block. In recent years, in order to avoid these drawbacks and to potentialize patients' own intrinsic conduction, novel algorithms have been developed by multiple pacemaker manufacturers. “Search AV” is one of the algorithms.¹⁻³ This study's objective is to evaluate whether LV longitudinal deformation (assessed with automated function imaging-AFI) will improve after engagement of the Search AV function. Secondary objective was comparison of serum ProBNP values levels.

Patients and Methods: It is a cross-over design study where patients remained on solely pacemaker stimulation for the first 30 days. During the second month, Search AV was engaged, and the above-mentioned parameters were evaluated. At zero-point, basic pacemaker and echocardiographic parameter were measured. After 30 days, patients are switched to the “Search AV” group. After 4 weeks, the second time battery control, Speckle Tracking Echocardiography (STE) based AFI with LV longitudinal strain analysis was performed and ProBNP were measured. Echopac were analyzed with the program again.

Results: In subgroup analysis, when the cut off value for RV pacing rate was considered to be %40, in the group of ventricular pacing rate %40 and below, the decrement of ProBNP was found to be more significant by comparing %40 and higher pacing rate group (p=0.001). The decrement of AFI values at the end of the 2nd month were not statistically significant (p=0.189). However, when the cut off value for RV pacing rate was considered to be %30 the AFI value which demonstrates the improvement of LV function showed significant increase (p=0.031) likewise statistically significant decrement of ProBNP values (p=0.027).

Conclusion: Search AV is one these algorithms which reduces ventricular artificial stimulation with compromising patients' lives. When adjusting these algorithms, target the RV pacing rate should be below % 30, not % 40 as mentioned in the previously published papers. Indeed, further long-term prospective studies with homogenous patients are needed to prove this argument.

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LITERATURE

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