Are plasma natriuretic peptide levels influenced by automatic pacemaker algorithms for ventricular pacing minimization?

Abstract:

Automatic atrioventricular search hysteresis (AVSH) is designed to reduce the cumulative percentage of potentially deleterious right ventricular apical pacing (VP%) in dual-chamber pacemakers. We investigated whether minimizing VP% by AVSH can, in turn, reduce ventricular wall stretching/stress, as assessed by plasma concentrations of the amino-terminal fragment of the pro-B-type natriuretic peptide (NT-proBNP). After dual-chamber pacemaker implantation in 81 patients (age: 69 ± 11 years; males: 55.6%), the fixed atrioventricular delay of 225 ms was programmed and AVSH was turned off for 1 month. The patients were thereafter randomly assigned to standard AVSH for 1 month, followed by an enhanced AVSH for another month, or vice versa. At the 1-, 2-, and 3-month follow-ups, VP% values were retrieved from the pacemaker memory, and venous blood samples were taken for NT-proBNP measurements. Both standard and enhanced AVSH reduced the median VP% value from 38.5% (for the fixed atrioventricular delay) to 2.1% (P < 0.001). However, plasma NT-proBNP concentrations for the fixed atrioventricular delay (median, 253 pg/mL), standard AVSH (225 pg/mL), and enhanced AVSH (276 pg/mL) did not differ significantly on the intrapatient basis (paired Wilcoxon test).
tests) between any pair of these modalities. Minimizing ventricular pacing by AVSH during 1 month
had no influence on plasma NT-proBNP levels (i.e., ventricular wall stretching/stress) compared with
a constant, moderately prolonged atrioventricular delay.

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