Tissue Doppler, Speckle Tracking and Strain Imaging

Relationship between natriuretic peptides and left atrial mechanics and their relation to recurrence of atrial fibrillation following catheter ablation

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Background

The relationship between natriuretic peptides and atrial distension is not completely understood. Furthermore, how they can be used together clinically has not been fully explored.

Purpose

We sought to examine their interrelationship and how they relate to atrial fibrillation (AF) recurrence following catheter ablation.

Methods: Patients scheduled for catheter ablation as part of a randomized controlled clinical trial were included. Patients who underwent pre-operative echocardiography and had natriuretic peptide measurements performed, specifically mid-regional proANP (MR-proANP) and N-terminal proBNP (NT-proBNP), were included in this analysis. Echocardiography included assessment of atrial distension by left atrial strain.

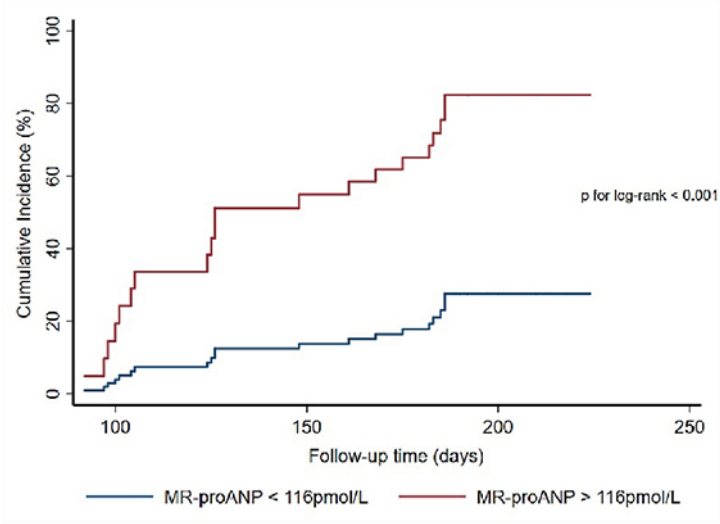
The outcome was AF recurrence at 6 months after a 3-month blanking period. Logistic regression was performed to assess the association between log-transformed natriuretic peptides and AF. Multivariable adjustments were made for age, gender, randomization, and LVEF.

Results: Out of 99 patients 44 developed AF. No differences in natriuretic peptides nor echocardiographic measures were observed between the outcome groups.

Neither MR-proANP nor NT-proBNP were univariable predictors of AF recurrence (MR-proANP: OR = 1.06 (0.99-1.14), p = 0.09, per 10% increase; NT-proBNP: OR = 1.01 (0.98-1.05), p = 0.38, per 10% increase). These findings were unchanged after multivariable adjustments. However, atrial strain significantly modified the association between MR-proANP and AF (p for interaction = 0.009) such that MR-proANP was a significant predictor of AF in patients with high atrial strain values (OR = 1.24 (1.06-1.46), p = 0.008, per 10% increase) but not in patients with low atrial strain values. Among patients with high atrial strain values, an MR-proANP > 116pmol/L was associated with a 10-fold increased risk of AF (OR = 9.78 (2.21-43.33), p = 0.003). figure.

Conclusion: Atrial natriuretic peptide predicts AF recurrence in patients with preserved atrial distension. Assessing atrial distension by echocardiography may assist the clinical interpretation of atrial natriuretic peptide concentration.

Abstract Figure.



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