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The biomark of atrial fibrillation in patients with essential hypertension: Aldosterone

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Abstract

Background: Individual studies examining the effects of renin-angiotensin-aldosterone system (RAAS) inhibition on atrial fibrillation (AF) prevention have reported controversial results in hypertensive patients without concomitant structural heart disease. High plasma aldosterone level implicates the activation of RAAS. We used plasma aldosterone level as a biomarker of the occurrence of AF in hypertensive patients without concomitant structural heart disease, aiming to define which type of hypertensive patients is most effective by RAAS blockers treatment to reduce new-onset AF or recurrent AF after catheter ablation.

Methods and Results: We evaluated 396 hypertensive patients without concomitant structural heart disease, 140 with AF and 256 with sinus rhythm. There was significant difference between hypertensive patients with AF and with sinus rhythm in plasma aldosterone level (411.20 (IQR=258.28) pg/ml vs. 83.11 (IQR = 67.68) pg/ml, $P < 0.001$). The sensitivity and the specificity for plasma aldosterone level to detect AF in hypertensive patients were respectively 86.4% and 93.4% at the cut-off value of 173.9 pg / ml. AUC was 0.955 in differentiating AF patient from non-AF patient in hypertensive patients. In multivariable regression analysis, plasma aldosterone level showed significant predictors for AF recurrence after catheter ablation in hypertensive patients (OR = 1.006, 95% CI = 1.004 - 1.009, $P < 0.001$). 12-month recurrence-free rates of AF after catheter ablation were significantly higher in hypertensive patients with low plasma aldosterone level (< 446.06 pg/ml) compared to those with high plasma aldosterone level (> 446.06 pg/ml) (77.4% vs. 26.8%, $P < 0.001$). Cox proportional hazards regression model showed that plasma aldosterone level remained independently associated with 12-month recurrence rate (HR = 4.50, 95% CI = 2.60–7.81, $P < 0.001$) after adjusting for age, gender, BP, LAD, LVESD, LVEDD and LVEF, AF course, the type of AF and the method of catheter ablation.

Conclusion: Our results indicated that increased plasma aldosterone level was associated with new-onset AF and recurrent AF after catheter ablation in hypertensive patients without concomitant structural heart disease, which suggested that plasma aldosterone level could potentially be a guide in upstream treatments using RAAS system blockers in hypertensive patients without concomitant structural heart disease

Biography:

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