Big endothelin-1 as a clinical marker for ventricular tachyarrhythmias in post-infarction left ventricular aneurysm patients

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Introduction: Ventricular tachyarrhythmia is the leading cause of death in post-infarction patients. Big endothelin-1 (ET-1) is a potent vasoconstrictor peptide and plays a role in ventricular tachyarrhythmia development. The aim of this study was to investigate the association between big ET-1 concentrations and prevalent ventricular tachyarrhythmia in post-infarction left ventricular aneurysm (PI-LVA) patients.

Methods: A total of 222 consecutive PI-LVA patients who received medical therapy were enrolled. There were 43 (19%) patients who had ventricular tachycardia/ventricular fibrillation (VT/VF) at admission. The clinical characteristics were collected, and the plasma big ET-1 level was measured. Associations between big ET-1 and the presence of VT/VF were assessed. Patients were followed up for outcomes including cardiovascular mortality, VT/VF attack and all-cause mortality.

Result: The median concentration of big ET-1 was 0.635 pg/ml. Patients with big ET-1 concentrations above the median were more likely to have higher-risk clinical features. There was a positive correlation of the big ET-1 level with VT/VF ($r = 0.354$, $P<0.001$). In the multivariate logistic regression analysis, big ET-1 (OR=4.06, 95% CI 1.77–9.28, $P<0.001$) appeared as an independent predictive factor of the presence of VT/VF. Multivariate Cox regression analysis suggested that big ET-1 concentration was independently predictive of VT/VF attack (OR=2.5, 95% CI 1.4–4.5, $P<0.001$). NT-proBNP and LVEF≤35% were demonstrated to be independently predictive of cardiovascular mortality and all-cause mortality.

Conclusion: Increased big ET-1 concentration in PI-LVA patients was a valuable independent predictor for the presence of ventricular tachyarrhythmia and VT/VF attack during follow-up.