Value of human brain natriuretic peptide in treatment of acute anterior myocardial infarction evaluated via three-dimensional speckle tracking imaging

Y. Zhang¹,², F. Gao¹,², X.-Y. Zhang¹,², Y.-M. Hou¹,², Y. Tang³, S.-L. Yang³, S.-H. Zhu³, R.-Y. Luo³ and S.-F. Lin³

¹The Third Clinical Medical College of Southern Medical University, Guangzhou, China
²Department of Cardiology, Affiliated Fengxian Hospital of Southern Medical University, Shanghai, China
³Department of Cardiology, Affiliated Ningde Hospital of Fujian Medical University Ningde, China

Corresponding author: Y.-M. Hou
E-mail: houym126vip@126.com

Received May 14, 2014
Accepted October 7, 2014
Published May 29, 2015
DOI http://dx.doi.org/10.4238/2015.May.29.2

ABSTRACT. Three-dimensional ultrasound speckle tracking imaging was used to evaluate the effects of recombinant human brain natriuretic peptide (rhBNP) in acute anterior and extensive anterior myocardial infarction. Ninety patients with acute anterior or extensive myocardial infarction were randomly divided into 3 groups: Group A [emergency percutaneous coronary intervention (PCI)], Group B (emergency PCI + rhBNP early treatment), and Group C (emergency PCI + late rhBNP treatment). Within 6 h of admission and at 1 week and 3 and 6 months after PCI, patients underwent routine transthoracic echocardiography and real-time three-dimensional echocardiography. At 1 week, 1 month, 3 months, 6 months, and 12 months, ejection fraction values in groups B and C were significantly greater than those in group A (P < 0.05), and
left ventricular end-diastolic volume and left ventricular end-systolic volume values in groups B and C were less than those in group A \((P < 0.05)\). Within 6 h of admission in each group, long-axis, radial, circumferential, and area variables corresponding to anterior descending artery segments showed no significant difference (all \(P > 0.05\)). However, at 1 week, 1 month, 3 months, 6 months, and 12 months, long-axis, radial, circumferential and area variables in groups B and C were significantly less than those in group A \((P < 0.05)\). Intervention with rhBNP can improve resilience of the local myocardium, left ventricular mechanical function, and cardiac remodeling. Within 6 h of admission or after PCI, rhBNP application showed no significant difference in heart function improvement or myocardial remodeling inhibition.

**Key words:** Myocardial infarction; Echocardiography; Three-dimensional speckle tracking imaging technology; Ventricular function; Recombinant human brain natriuretic peptide