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Effects of recombinant human brain natriuretic peptide on serum NPY and galectin-3 in patients with acute heart failure: A preliminary study

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Heart failure (HF) is the main cause of death in patients with cardiovascular diseases (CVDs), such as coronary atherosclerotic heart disease, and hypertension. It is prevalent (1.5-2.0%) in the global population, and in China it is 0.9%. Recombinant human brain natriuretic peptide (RH-BNP) is known to improve the clinical symptoms of HF patients. As the serum Neuropeptide-Y (NPY) is positively correlated with the development and improvement of HF, it is used to evaluate the prognosis of HF patients. As the biomarker of fibrosis and inflammation, Galectin-3, a multifunctional β-galactoside binding protein, has a considerable predictive effect on the development of HF and the occurrence of cardiovascular complications. Here, we investigated the therapeutic effect of RH-BNP on acute heart failure (AHF) and the effects on neuropeptide-Y (NPY) and Galectin-3. Sixty patients with AHF were selected and randomly rolled into an experimental group (Exp group, 30 cases, conventional treatment + RH-BNP treatment) and a control group (Ctrl group, 30 cases, conventional treatment). The functions of heart, lung, liver, and kidney of patients in different group were compared, and the changes in serum NPY and Galectin-3 in the Exp group were analysed. After 7 days of treatment, the level of amino terminal pre-B type natriuretic peptide (NT-proBNP) in the Exp group was significantly lower and the blood oxygen partial pressure (PaO_2) was much higher to those in the Ctrl group, showing great differences with P <0.05. The glomerular filtration rate (GFR) and urine volume (UV) of patients in the Exp group were obviously higher (P <0.05). 90% of the patients in the Exp group were effectively treated, which was more than 73.33% in the Ctrl group (P <0.05). The post-treatment NPY and Galectin-3 were down regulated compared with the levels in the first two tests (P <0.05). It has been found that compared with the conventional treatment, the application of RH-BNP effectively improved the heart and lung function of patients, reduced the liver and kidney toxicity, showed the diuretic effect, and enhanced the treatment efficiency. In addition, it promoted the decrease of serum NPY and Galectin-3 levels in patients, which was beneficial to better the prognosis of patients.

Keywords: Cardiovascular diseases (CVDs), Diastolic dysfunction, Glomerular filtration rate