Background: Cardiac involvement is a serious complication of idiopathic inflammatory myopathies (IIM). Early diagnosis and intervention can improve prognosis. At present, myocardial biopsy is the gold standard for its diagnosis, but it is not commonly used because of its invasiveness. Biomarkers can be invoked as a non-invasive and convenient choice. The traditional markers of myocardial injury, such as troponin and creatine kinase are lack specificity in inflammatory myopathy, so the novel biomarkers are getting attention. GDF-15 can predict the risk of cardiovascular disease and the prognosis of coronary atherosclerosis, heart failure and other diseases.

Objectives: This article was intended to investigate the diagnostic value of GDF-15 for myocardial involvement in inflammatory myopathy.

Methods: This retrospective study included 54 patients with inflammatory myopathy from May 2018 to October 2019. Of these, 30 patients underwent cardiac magnetic resonance examination due to increased myocardial markers, excluding 1 case of severe lung infection. 33 patients with systemic lupus erythematosus (SLE), 16 normal patients were used as the control group. The concentration of GDF-15 in the serum of all groups of patients was measured by ELISA.

Results: 1. There were significantly differences in GDF-15 levels in patients with inflammatory myopathy, systemic lupus erythematosus and normal subjects (H = 39.870, P < 0.001). 2. 29 patients with cardiac magnetic resonance on the basis of the delayed enhancement (LGE) and ECV results were divided into two groups, in which 19 patients with myocardial injury group and 10 patients without myocardial injury. The best cut-off value was calculated by ROC curve, and comparing GDF-15 and CKMB with the optimum cut-off values in predicting cardiac involvement in IIM. GDF-15 levels were statistically significant between the myocardial injury group (1765.868±1068.549 pg/ml) and the group without myocardial injury (689.967±458.12 pg/ml) (P > 0.001). At the same time, the creatine kinase isoenzyme (CKMB) (158.583 ±119.389 U/L vs 57.966±52.673 U/L, P < 0.05) was statistically different between the two groups. 3. GDF-15≥1005.365pg/ml (AUC = 0.853, 95% CI 0.694-1.000) predicted myocardial involvement in inflammatory diseases with a sensitivity of 0.765 and specificity of 0.900. The ROC of the ROC curve for the joint detection of GDF-15 and CKMB was 0.888, 95% CI 0.757-1.000, with the predicted probability cut-off value in 0.3895, the sensitivity 0.941 and the specificity 0.800. The combined detection of the two increased the sensitivity of myocardial damage detection in IIM patients. 5. After adjusted for age, renal function, the risk of myocardial injury in IIM patients increased by an average of 0.3% per unit of GDF-15 (OR = 0.003, 95% CI 1.000-1.005).

Conclusion: GDF-15 can predict myocardial injury in patients with inflammatory myopathy which have high specificity. The prediction sensitivity can be improved by combining with the traditional myocardial enzyme CKMB. More further studies are needed to confirm the specific mechanism of GDF-15 for myocardial involvement to assess the prognosis of such patients and guide further treatment.

References: