FRI0259

THE CLINICAL VALUE OF GDF-15 IN ASSESSING MYOCARDIAL INVOLVEMENT OF IDIOPATHIC INFLAMMATORY MYOPATHY

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Background: Cardiac involvement is a serious complication of idiopathic inflammatory myopathy (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, 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 57.96 ± 52.673 U/L, $p = 0.005$) was statistically different between the two groups. 3. GDF-15 ≥ 1005.365 pg/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 AUC 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 = 1.003, 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:

- [1] Sultan SM, Ioannou Y, Moss K, Isenberg DA. Outcome in patients with idiopathic inflammatory myositis: morbidity and mortality. *Rheumatology* (Oxford) 2002;41:22-6.
- [2] Lundberg IE, de Visser M, Werth VP. Classification of myositis. *Nat Rev Rheumatol*. 2018 May;14(5):269-278.
- [3] Zhang L, Wang GC, Ma L, Zu N (2012) Cardiac involvement in adult polymyositis or dermatomyositis: a systematic review. *Clin Cardiol* 35(11):686-691.
- [4] Chen F, Peng Y, Chen M. Diagnostic approach to cardiac involvement in idiopathic inflammatory myopathies. A strategy combining cardiac troponin I but not T assay with other methods [J]. *Int Heart J*, 2018;59:256-262

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FRI0260

NAIFOLD VIDEOCAPILLAROSCOPY IS A USEFUL TOOL TO RECOGNIZE SYSTEMIC SCLEROSIS AND IDIOPATHIC INFLAMMATORY MYOPATHIES IN INTERSTITIAL LUNG DISEASE PATIENTS

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Background: Nailfold Videocapillaroscopy (NVC) is an essential tool for the assessment of Raynaud's Phenomenon (RP) among the Scleroderma Spectrum Disorders (SSDs). Recently, NVC abnormalities have been associated with a diagnosis of Idiopathic Inflammatory Myopathies (IIMs), independently of the

presence of RP (1). Moreover, both SSDs and IIMs are commonly associated with Interstitial Lung Disease (ILD), which is the main cause of mortality in these conditions.

Objectives: To verify whether NVC may allow a better diagnostic classification in a cohort of patients with ILD followed by pulmonologists.

Methods: 361 patients affected by ILD were prospectively enrolled in a 30-months observational study. All these patients were clinically evaluated by rheumatologists and pulmonologists together and performed general blood tests, autoantibody research, chest High-Resolution Computed Tomography and NVC. The latter was considered positive in the presence of avascular areas or giant capillaries, and also the presence of Bushy Capillaries (BCs) was recorded.

Results: NVC was positive in 17.7% of ILD patients, and a third of these patients did not present RP. Patients with NVC abnormalities had a diagnosis of definite Connective Tissue Disease in 78.1% of cases. NVC resulted decisive in 25% of patients with a final diagnosis of Systemic Sclerosis according to the ACR/EULAR 2013 criteria. The presence of BCs and/or NVC+ in ILD patients with normal serum levels of muscular enzymes was associated with amyopathic IIM (BCs= OR 3.9, 95CI 1.05-14.38, $p=0.04$; NVC+= OR 5, 95CI 1.29-19.3 $p=0.02$; BCs and/or NVC+= OR 5.41 95CI 1.24-23.48 $p=0.02$), regardless the presence of RP.

Conclusion: NVC proved to be a valid tool in the correct assessment of ILD patients secondary to SSDs and amyopathic IIMs. Therefore, it could be considered in the diagnostic evaluation of patients affected by ILD, regardless of the presence of RP.

References:

- [1] Sebastiani M et al. Nailfold Capillaroscopy Characteristics of Antisynthetase Syndrome and possible clinical associations: results of a multicenter International Study. *J Rheumatol* 2019; 46: 279-284

Table 1. Comparison between ILD patients with and without NVC positivity.

Items	NVC+ patients	NVC- patients	p
Number	64	297	
Mean Age ($\pm$ SD)	61.4 $\pm$ 13.3	67.8 $\pm$ 9.8	0.001
Female%	65.6	49.1	0.01
RP%	68.7	17.1	<0.0001
HRCT patterns%			
NSIP	51.5	36.8	0.02
OP	3.1	8	n.s.
UIP-like	31.15	44.8	n.s.
DIP	1.5	3.4	n.s.
LIP	1.5	0.4	n.s.
Indeterminate	10.9	6.7	n.s.
Final Diagnosis%			
SSDs	45.3	1	<0.0001
IIMs	25	6.4	<0.0001
Other CTDs	6.2	13.5	n.s.
IPAF	10.9	19.5	n.s.
IPF	7.8	27.9	0.0007

Legend: DIP: Desquamative Interstitial Pneumonia; HRCT: High Resolution Computed Tomography; IIMs: Idiopathic Inflammatory Myopathies; Poly/dermatomyositis, antisynthetase syndrome; IPAF: Interstitial Pneumonia with Autoimmune Features; IPF: Idiopathic Pulmonary Fibrosis; LIP: Lymphocytic Interstitial Pneumonia; NSIP: Nonspecific Interstitial Pneumonia; OP: Organising Pneumonia; RP: Raynaud's Phenomenon; SSDs: Scleroderma Spectrum Disorders, Systemic Sclerosis + Mixed Connective Tissue Disease; UIP: Usual Interstitial Pneumonia.

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FRI0261

DIFFERENTIAL EXPRESSION OF PERIPHERAL CD4+ T CELLS IN PATIENTS WITH SYSTEMIC SCLEROSIS AND MIXED CONNECTIVE TISSUE DISEASE

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Background: The CD4⁺ T cell subsets plays an important role in its pathogenesis, and its new research are constantly being published, but its specific changes between SSc and MCTD are still unclear.

Objectives: The aim of the present study was to explore the absolute numbers of CD4⁺ T subsets in peripheral blood(PB) of patients with SSc and MCTD using our modified flow cryometric method and investigate the role in the pathogenesis of both.

Methods: The PB samples from 54 patients with SSc, 51 patients with MCTD as well as 30 healthy control subjects were analyzed for lymphocyte subsets using flow cytometry. Of these patients, 19 had pulmonary involvement, including 9 patients with SSc and 10 patients with MCTD. Using directly the percentages from flow cytometry combined with internal standard beads calculated absolute number of peripheral lymphocyte subsets from the subjects in each group.

Results: Although there were some changes among CD4⁺ T cell subsets in PB from these SSc patients and MCTD patients, the major alteration was the reductions of Treg cells. Compared with the normal controls, the absolute number of CD4⁺CD25⁺FOXP3⁺Treg cells were significantly decreased in SSc patients and MCTD patients, and the absolute number of Th1 cells in MCTD patients is also significantly reduced. Notably, the absolute numbers of Th17 and Th2 cells were not different from those of normal controls, but the ratios of Th17/Treg in SSc patients and MCTD patients were significantly higher, causing by insufficient number of Treg cells (Fig 1). In addition, in patients with pulmonary involvement, we found that the absolute number of Treg cells was significantly reduced in patients with MCTD, while the absolute number of Th2 cells and Th17 cells was significantly reduced in patients with SSc(Fig 2).

Fig 1. Comparison of the levels of CD4⁺ T lymphocyte subsets in SSc patients, MCTD patients and healthy controls: (A) The absolute number of peripheral Th1 cells in patients with MCTD was significantly reduced; (B and C) There was no significant difference in the absolute number of Th2 cells in peripheral blood of different subjects; (D and E) The ratio of Th17/Treg cells in PB of patients with SSc and MCTD were significantly higher.**P* < 0.05; ***P* < 0.01; ****P* < 0.001.

Conclusion: The number of peripheral Treg cells in patients with SSc and MCTD was significantly reduced, suggesting that that SSc and MCTD progression is associated with the imbalances between pro-inflammation cells to anti-inflammation Treg cells. In addition, we also found that the decrease in peripheral numbers of Treg cells may contribute to the development of MCTD-associated lung disease, whereas in SSc patients who had lung involvement, the reduce in peripheral number of Th17 cells may result in a severe imbalance of Th17/Treg cells, thereby promoting disease progression.

Fig 2. Comparison of the levels of CD4⁺ T lymphocyte subsets in patients who had pulmonary involvement and healthy controls: (A) There was no significant difference in the absolute number of Th1 cells in peripheral blood of different subjects; (B and C) The absolute number of peripheral Th2 cells and Th17 cells in patients with SSc were significantly reduced; (D and E) The ratio of Th17/Treg cells in PB of patients with MCTD were higher.**P* < 0.05; ***P* < 0.01; ****P* < 0.001.

References:

- [1] Liu M, Wu W, Sun X, et al. New insights into CD4(+) T cell abnormalities in systemic sclerosis. *Cytokine Growth Factor Rev.* 2016 Apr; 28:31-6. doi: 10.1016/j.cytogfr.2015.12.002.

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FRI0262 INCREASED PLASMA LEVELS OF HSP90 ARE ASSOCIATED WITH MORE SEVERE LUNG AND SKIN INVOLVEMENT IN PATIENTS WITH SYSTEMIC SCLEROSIS

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Background: Our previous study demonstrated that Hsp90 is overexpressed in the skin of patients with systemic sclerosis (SSc), in cultured SSc fibroblasts and preclinical models of SSc in a TGF-β dependent manner. We showed that Hsp90 is a new regulator of canonical TGF-β signaling and its inhibition prevents the stimulatory effects of TGF-β on collagen synthesis and dermal fibrosis¹.

Objectives: The aim of this study was to evaluate plasma Hsp90 of SSc patients and characterize its potential association with skin changes and SSc-related features.

Methods: A total of 92 patients (79 females; mean age 52.7; disease duration 6.0 years; diffuse cutaneous (dc)SSc / limited cutaneous (lc)SSc = 38/54) and 92 age- and sex- matched healthy individuals were included. Plasma Hsp90 levels were measured by ELISA (eBioscience, Vienna, Austria). Data are presented as median (IQR).

Results: Plasma Hsp90 levels were increased in SSc patients compared to healthy controls [12.5 (9.6–17.9) vs. 9.8 (7.7–12.4) ng/mL, *p*=0.0001]. Hsp90