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FRI0238 THE LEVEL OF LEPTIN IN PATIENTS WITH GOUT AND ITS ASSOCIATION WITH THE GOUT ACTIVITY SCORE

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Background: Leptin is a cytokine-like hormone mainly produced by adipose tissue. Its role in inflammation, obesity, diabetes mellitus, and cardiovascular pathology is well known.² Most of these pathological conditions usually accompany gout, but role of leptin in gout remains on the discussion.

Objectives: To determine the level of leptin in patients with gout and evaluate its association with the disease activity.

Methods: Study involved 151 patients with gout (100% men), aged (mean $\pm$ SD) 52.4 $\pm$ 9.2 years, with a disease duration 8.9 $\pm$ 6.6 years. In 51 (33.7%) was diagnosed tophaceous gout. Control group was represented by 31 healthy subjects. Diagnosis of gout was based on the ACR/EULAR 2015 criteria. The disease activity was determined by the Gout Activity Score (GAS),² the intensity of the pain – by the visual analogue scale (VAS_{pain}). Leptin in serum was determined by ELISA.

Results: The level of leptin in patients with gout was 2 times higher compare to those in the control group (6.6 $\pm$ 4.3 vs 3.0 $\pm$ 1.4 ng/ml). The number of attacks in the last year was 3.9 $\pm$ 2.7, number of affected joints was 8.1 $\pm$ 5.4, and uric acid in serum (sUA) was 8.1 $\pm$ 2.0 mg/dl. Mean value of VAS_{pain} in gout patients was 5.4 $\pm$ 2.4 cm, and disease activity by GAS – 5.9 $\pm$ 2.1. Regarding GAS we divided our patients in three groups: low activity (GAS <25 th percentile), moderate activity (between 25th and 75th percentile) and high activity (>75 th percentile). In 36 patients with high disease activity (GAS >7.4) the level of leptin was the highest (11.7 $\pm$ 4.7 ng/ml), whereas in patients with moderate activity (GAS 4.5–7.4; n=77) and in patients with low disease activity (GAS <4.5; n=38) it was 5.3 $\pm$ 2.6 ng/ml and 3.9 $\pm$ 1.4 ng/ml, respectively. The difference in leptin levels between all groups was significant (p<0.01). The level of leptin correlated with the number of gout attacks (r=0.41), number of affected joints (r=0.55), sUA (r=0.39), VAS_{pain} (r=0.35), and GAS (r=0.69).

Conclusions: Association of increased leptin level with high gout activity may indicate possible pathogenic role of leptin in gout. GAS is reliable and sensitive clinical tool for determining disease activity in patients with gout.

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FRI0239 ABSOLUTE NUMBERS OF PERIPHERAL TH17 AND TH2 CELLS INCREASED IN PATIENTS WITH GOUT

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Background: Gout is generally considered as an acute or chronic inflammatory disease of the joints due to deposition of crystals of monosodium urate (MSU). However, crystals of MSU do not always elicit inflammation in joints, suggesting that the immunological basis is required for the development of gouty arthritis. Although T helper 17 (Th17) and regulatory T cell subsets in CD4 + T cells have been reported to play a key role in autoimmune diseases, their status in peripheral blood of gout patients are rare studied.

Objectives: Our present study is to explore whether the absolute numbers of peripheral CD4 + T subsets, especially Th17 cells and CD4 + CD25+FOXP3T regulatory (Treg) cells, is abnormal in gout.

Methods: A total of 72 patients with gout (70 male/2 female) and 41 age-sexual-matched controls were recruited from the Second Hospital of Shanxi Medical University (from March 1 st in 2016 to July 30th in 2017). Of these, 72 patients were categorised as acute gout who had redness, swelling, warmth and pain at the same time (Group1; n=18) or as acute gout without redness and warmth (Group2; n=52). All patients fulfilled 2015 Gout classification criteria developed by the American College of Rheumatology (ACR) and the European League Against Rheumatism (EULAR). Patients with a history of other autoimmune diseases, nephropathy, cancer, infectious processes, or hematopathy were excluded. The detail medical histories were collected, comprehensive laboratory examinations were performed, and then the differences between the patients and controls were investigated. The concentrations of CD4 + T cell subsets (the absolute numbers of Th1, Th2, Th17 and Treg cells) in peripheral blood were measured by flow cytometry combined with internal standard beads and then the ratios of Th1/Th2 and Th17/Treg were calculated.

Results: The duration of their disease was 46.73 $\pm$ 54.92 (Group1), or 61.54 $\pm$ 70.51 (Group2) months. The white blood cells (WBCs) and neutrophils in gout blood were significantly higher than those in controls (P<0.01) and ESR in Group1 was obviously increased (p=0.033). Levels of Total T lymphocyte counts (CD3 + CD19-), Total B lymphocyte counts (CD3-CD19+) and Helper T cells (CD3 + CD4+) were increased in Group2 (all p<0.05). Nevertheless, there was no difference between Group1 and healthy controls. The absolute number of peripheral Th2 in gout (both Group1 and Group2) was higher than that in healthy controls (p=0.001). Most importantly, the absolute number of peripheral Th17 cells was significantly increased in gout patients in Group2 (p=0.006) while, in Group1, the absolute number of Treg cells decreased despite no statistical significance (P>0.05).

Abstract FRI0239 – Table 1. Lymphocyte subsets of Gout Patients & Normal Persons

	Group1	Group2	Normal	F	P-values
N	18	52	41		
Total T cells, CD3+CD19- (cell/μL)	1475.50(1234.50)	1538.43(894.50)	1360.59(488.84) ^a	4.954	0.084
Total B cells, CD3-CD19+ (cell/μL)	200.51(195.92) ^a	300.50(224.27)	191.04(103.48) ^a	13.610	0.001
Th cells, CD3+CD4+ (cell/μL)	783.34(527.75)	866.50(520.75)	625.84(187.63)	13.134	0.001
Ts cells, CD8+ T (cell/μL)	608.00(472.25)	600.83(336.00)	536.13(320.43)	1.220	0.543
Th/Ts, CD3+CD4+/CD8+ T	1.15(0.31)	1.50(0.91)	1.11(0.63) ^a	11.625	0.003
NK cells, CD3-CD16+CD56+ (cell/μL)	278.00(208.75)	311.70(187.58)	340.59(280.05)	2.780	0.249
T+B+NK cells, CD3+CD19-+CD3-CD19+ (cell/μL)	2148.00(1501.23)	2253.00(1006.00)	1918.47(739.66) ^a	6.093	0.048

a. Total B lymphocyte counts (CD3-CD19+) were increased in Group1 compared with Group2 (p=0.037);

c. Total T and B lymphocyte counts (CD3-CD19+) were increased in Group2 compared with healthy controls. (all p < 0.05)

Abstract FRI0239 – Table 2. CD4+ T cell subsets of Gout Patients & Normal Persons

	Group1	Group2	Normal	F	P-values
N	18	52	41		
Th1 cells, IFN-γ (cell/μL)	63.24(126.68)	115.03(183.53)	125.72(98.01)	1.610	0.447
Th2 cells, IL-4 (cell/μL)	12.92(16.62)	11.38(11.16) ^b	7.44(5.88) ^c	12.379	0.002
Th17 cells, IL-17 (cell/μL)	6.79(12.77)	11.07(9.37)	7.48(5.87) ^c	7.131	0.028
Treg cells, CD4+CD25+FoxP3+ (cell/μL)	23.62(28.06)	30.25(20.53)	30.22(16.72)	2.032	0.362
Th1/Th2, IFN-γ/IL-4	7.14(7.66)	8.95(14.49) ^b	16.17(20.13) ^c	16.288	0.000
Th17/Treg, IL-17/CD25+FoxP3	0.29(0.83)	0.40(0.43)	0.24(0.20) ^c	6.986	0.030

b. the absolute number of peripheral Th2 cells was significantly increased in gout patients in Group1 compared with healthy controls (p=0.012)

c. the absolute number of peripheral Th2 and Th17 cells was significantly increased in gout patients in Group2 compared with healthy controls (all p < 0.05)

Conclusions: The increase of peripheral Th2 and Th17 cells led to an imbalance of CD4 + T cell subsets may correlate with gouty inflammation in an undefined way. The elevation of Th2 and Th17 cells may serve as important reference indices for gout attack and a target of gout treatment. Moreover, Th17 may contribute to the persistence of the disease.

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