European Journal of Internal Medicine 64 (2019) e9–e10

Contents lists available at ScienceDirect

European Journal of Internal Medicine

journal homepage: www.elsevier.com/locate/ejim

Letter to the editor

Interleukin 10 related to lymphopenia in lupus

ARTICLE INFO

Keywords:
Systemic lupus erythematosus
Interleukin 10
Lymphopenia
Disease activity

Dear Editor,

Systemic lupus erythematosus (SLE) is a heterogeneous autoimmune condition characterized by a wide range of cytokines and antibodies production. The interleukin 10 (IL-10) is one of the most studied cytokines, with pleiomorphic functions, also involved in lymphocytes cell growth and differentiation. Most studies identified higher IL-10 levels in lupus patients when compared to control subjects and also significant correlations of serum IL-10 with lupus disease activity and anti-DNA titers (revised by Peng et al) [1]. However, treatments targeting interleukins have failed to be successful in lupus patients, therefore there is need to identify the relation of certain cytokines with particular lupus organ impairments [2].

The research aim was to find the relation of serum IL-10 with specific lupus clinical involvements (cutaneous, oral or nasal ulcers, alopecia, arthritis, serositis, renal, hematologic, and neurologic). IL-10 was assessed by sandwich method (DRG International, Inc. USA). The study was approved by the hospital ethics committee.

Serum IL-10 was determined in 41 SLE patients (90.2% female gender, 43.8 ± 13.7 years). Active lupus clinical involvements at inclusion were defined according to the classification criteria 2012 Systemic Lupus International Collaborating Clinic. Data was expressed as median (q1; q3) or mean ± SD according to their distribution. Mann-Whitney test was used to assess differences between two groups. SPSS 16.0 software was used.

The med (q1; q3) IL-10 levels were 5.7 (1.8; 10.5) pg/mL. IL-10 values were higher in positives when compared to negatives anti-DNA samples: 7.1 (5.1; 10.9) versus 3.7 (1.2; 9.6) pg/mL, $p = .04$.

Regarding the lupus organ impairments, the highest aria under curve (AUC) was obtained for the hematological one, AUC (95%CI) 0.695 (0.528–0.862). Further, IL-10 levels in patients with/ without hematologic involvements were: 8.8 (3.9; 11.7) versus 4.5 (1.4; 6.5) pg/mL, $p = .03$. There were not registered significant differences for IL-10 levels in regard to other active clinical lupus impairments analyzed, namely cutaneous, oral or nasal ulcers, alopecia, arthritis, serositis, renal, and neurologic.

Among the hematological parameters (hemolytic anemia, leucopenia, thrombocytopenia), the lymphocyte and leucocyte count was significantly lower in patients with high IL-10 (median used as cut-off): 1295.9 ± 758.9 versus 1903.6 ± 672.4 /μL, $p = .03$ and 6330.8 ± 2941.3 versus 8370.0 ± 3165.7 /μL, $p = .01$, respectively.

In sepsis, severe lymphopenia was associated with enhanced serum IL-6, IL-8, and IL-10 levels [3]. It was suggested that elevated IL-10 levels observed in sepsis are due to selective T helper 1 cell apoptosis, with subsequently T helper 2 predominance [4]. Moreover, in patients with cardiopulmonary by-pass, increased IL-10 determined a significant decreased of the mononuclear cells proliferation [5].

Even if a clear correlation with disease activity was not proved [6], the lymphocyte apoptosis is increased in patients with SLE [7]. IL-10 overproduction in lupus determine activation of caspase pathway via Fas with lymphocyte apoptosis [8] and/or subsequently IL-10 release [7]. Increased lymphocyte apoptosis further contributes to autoantibodies outturn [9] and disease progression.

In sum up, high serum IL-10 levels might be related to lymphopenia occurrence in lupus patients. There were not found here IL-10 associations with other active lupus involvements. Further larger studies are needed to confirm the IL-10 relation with specific lupus impairments.

Potential conflicts of interest

None of the authors received any fees, honoraria, grants or consultancies that would constitute a conflict of interest with the current study.

Author contributions

All authors have accepted their responsibility for the entire content of this manuscript and approved submission.

Funding

No specific grant from any public or commercial agency was received for this study. AD received a posdru scholarship.

Acknowledgement

Nothing to declare.

https://doi.org/10.1016/j.ejim.2019.04.012
Received 25 October 2018; Received in revised form 16 January 2019; Accepted 22 April 2019
Available online 26 April 2019

References

[1] Peng H, Wang W, Zhou M, Li R, Pan HF, Ye DQ. Role of interleukin-10 and interleukin-10 receptor in systemic lupus erythematosus. Clin Rheumatol 2013;32(9):1255–66.

[2] Dima A, Jurcut C, Balanescu P, Balanescu E, Badea C, Caraiola S, et al. Clinical significance of serum and urinary interleukin-6 in systemic lupus erythematosus patients. Egypt Rheumatol 2017;39:1–6.

[3] Chung K-P, Chang H-T, Lo S-C, Chang L-Y, Lin S-Y, Cheng A, et al. Severe lymphopenia is associated with elevated plasma interleukin-15 levels and increased mortality during severe sepsis. Shock 2015;43(6):569–75.

[4] Roth G, Moser B, Krenn C, Brunner M, Haisjackl M, Almer G, et al. Susceptibility to programmed cell death in T-lymphocytes from septic patients: a mechanism for lymphopenia and Th2 predominance. Biochem Biophys Res Commun 2003;308(4):840–6.

[5] Naldini A, Borrelli E, Carraro F, Giomarelli P, Toscano M. Interleukin 10 production in patients undergoing cardiopulmonary bypass: evidence of inhibition of Th-1-type responses. Cytokine 1999;11(1):74–9.

[6] Gröndal G, Gunnarsson I, Rönnelid J, Rogberg S, Klareskog L, Lundberg I. Cytokine production, serum levels and disease activity in systemic lupus erythematosus. Clin Exp Rheumatol. 18(5):565–70.

[7] Dhir V, Singh AP, Aggarwal A, Naik S, Misra R. Increased T-lymphocyte apoptosis in lupus correlates with disease activity and may be responsible for reduced T-cell frequency: a cross-sectional and longitudinal study. Lupus 2009;18(9):785–91.

[8] Yang X, Sun B, Wang H, Yin C, Wang X, Ji X. Increased serum IL-10 in lupus patients promotes apoptosis of T cell subsets via the caspase 8 pathway initiated by Fas signaling. J Biomed Res 2015;29(3):232–40.

[9] Su Y-J, Cheng T-T, Chen C-J, Chiu W-C, Hsu C-Y, Chang W-N, et al. The association among leukocyte apoptosis, autoantibodies and disease severity in systemic lupus erythematosus. J Transl Med 2013;11(1):261.

Dima A.[a,b,*], Pricopi I.[a], Balanescu E.[b], Balanescu P.[a,b], Baicus C.[a,b]

[a] *Department of Internal Medicine, Carol Davila University of Medicine and Pharmacy, Romania*

[b] *Department of Internal Medicine, Colentina Research Center, Colentina Clinical Hospital, Romania*

E-mail address: alina_dima@outlook.com (A. Dima).

[*] Corresponding author at: Carol Davila UMF, Dionisie Lupu Street 37, RO-020022 Bucharest S2, Romania.