Disclosure of Interests: None declared

AB0120 ENZYMATIC PATTERN OF CIRCULATING XANTHINE OXIDASE/DEHYDRASE ACTIVITY IN SYSTEMIC LUPUS ERYTHEMATOSUS PATIENTS

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Background: Generalized autoimmune inflammation underlies the pathogenesis of systemic lupus erythematosus (SLE). At the same time metabolic disorders at the cellular and subcellular levels are involved in the development of the disease. The literature contains data confirming the role of reactive oxygen species and oxidative stress in SLE multi-organ involvement [1,2].

Objectives: to evaluate the changes in XOR activities in plasma, lysed white blood cells (WBC), and lysed red blood cells (RBC) of SLE patients.

Methods: Diagnosis of SLE was verified using the SLICC criteria (2012). Activities of XOR interconvertible forms, xanthine oxidase (XO) and xanthine dehydrogenase (XDH), were measured in plasma, lysed WBC and lysed RBC by the spectrophotometric method [3]. The enzymatic activities were expressed as nmol/min/ml and normalized to 1×10^7 cells/ml in lysed WBC, and to 1×10^6 cells/ml in lysed RBC. The results were expressed as Me (3Q5). Statistical comparison tests were selected in accordance with the common guidelines. Differences were considered significant when p<0.05. Reference ranges were calculated as 95th percentile interval.

Results: 56 adult SLE patients (mean age 35 (31; 42) years; mean disease duration was 8 (5; 11) years) and 35 healthy individuals were enrolled in the study. Reference intervals of plasma XO and XDH activities were 2.29 – 4.31 and 5.97 – 14.55 nmol/min/ml, respectively. Reference intervals of XO and XDH activities in lysed WBC were 18.11 – 31.33 and 16.82 – 39.65 nmol/min/ml, respectively. Reference intervals of XO and XDH activities in lysed RBC were 20.62 – 25.46 and 41.85 – 55.04 nmol/min/ml, respectively. Enzymatic activities of SLE patients were significantly different from healthy controls. Increased XO activity and decreased XDH activity were observed in plasma of SLE patients (<0.001 for both enzymes). The activities of both XOR forms were decreased in lysed WBC (<0.001 for both enzymes). Lysed RBC were characterized by a decrease in XO activity (p<0.001).

Conclusion: Significant changes in the balance of XO and XDH activities were revealed in plasma of SLE patients (<0.001 for both enzymes). These changes may contribute to the development of oxidative stress in SLE patients. In addition, it should be noted that these changes have a pronounced effect on cellular structures, the processes of lipid peroxidation, participate in the stimulation of NF-kB, and contribute to the formation of neutrophil extracellular traps. It can be assumed that the imbalance of XOR enzymatic activities in WBC indicates the previous stages of purine metabolism disturbances, which leads to a change in functional state and death of these blood cells. Free radicals generated by the XOR may have a damaging effect on RBC.

REFERENCES:

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AB0122 DETECTION OF ANTINUCLEAR ANTIBODY AND ANTIBODIES TO EXTRACTABLE NUCLEAR ANTIGENS IN SERUM-DERIVED EXOSOMES

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Background: Antinuclear antibody (ANA) and antibodies to extractable nuclear antigens (anti-ENAs) are important diagnostic biomarkers for autoimmune disease. In direct immunofluorescence (IIF) and EUROLINE-Western Blot technology are used to detect ANA and anti-ENAs in serum respectively. However, the sensitivity of some anti-ENAs are not high, which often lead to the misdiagnosed or missed diagnosis of autoimmune disease. Much more methods are needed to increase the sensitivity of anti-ENAs. The protein of serum-derived exosomes have been used to explore the biomarker of many disease. As the level and significance of ANA and anti-ENAs in serum-derived exosomes, it has not been reported yet.

Objectives: Our study aims to detect the level of ANA and anti-ENA in serum-derived exosomes and compare the difference between serum and serum-derived exosomes.

Methods: Twenty-four patients with ANA positive in serum were enrolled into the study. Exosomes were separated from the serum by the ExoQuick™ kit combined with ExoQuick™ kit. ANA and anti-ENAs were further detected by IIF and EUROLINE-Western Blot technology in serum and serum-derived exosomes.

Results: The ANA levels in serum-derived exosomes were the same as serum. The anti-ENAs levels of serum-derived exosomes were 70% (16/23) patients were different from serum. Besides, anti-nRNP, anti-Sm, anti-SSA, anti-Ro/SSB, anti-Jo1, anti-CENP8, anti-dsDNA, anti-AHA, anti-ARPA levels of serum-derived exosomes in 11.11% (1/9), 33.30% (1/3), 46.15% (6/13), 54.55% (8/15), 50% (1/2), 100% (1/1), 66.67% (2/3), 73.66% (3/4), 66.67% (2/3), 40% (2/5) patients were different from that of serum.

Conclusion: The levels of most anti-ENAs in serum-derived exosomes are higher than that of serum, which may help to improve the sensitivity of diagnosis in autoimmune disease.

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