The study involved 35 patients with autoimmune thyroiditis and osteoarthritis. It is one of the key cytokines in the congenital and acquired immune response formation. Interleukin-18 takes part in the activation of cytotoxic T-lymphocytes, NK cells, macrophages, dendritic cells, thereby «providing» an autoimmune response of the organism. Currently, a cartilage oligomeric matrix protein (COMP) is considered as a marker of cartilage damage. It is a non-collagen matrix protein. Its entry into the blood is correlated with the exchange in the tissue of the cartilage. Objective: to study the content and role of oligomeric matrix protein of cartilage and interleukin-18 in patients with autoimmune thyroiditis and osteoarthritis.

Materials and Methods. The study involved 35 patients with autoimmune thyroiditis and osteoarthritis (main group) and 18 patients isolated from autoimmune thyroiditis (comparison group) aged 23 to 65 years; women predominated (85.7% and 83.3%, respectively).

Results. The duration of the anamnesis with autoimmune thyroiditis varied within 3-18 years, with joint damage 2-19 years. Estimation of hormonal status of the thyroid gland showed that individuals with euthyroid status accounted for 22.9% of the main group and 27.8% of the comparison group. Decrease in thyroid function of easy or moderate severity was determined in 77.1% and 72.2% of patients, respectively. The diagnosis of osteoarthritis was established on the basis of patient complaints, objective and radiological examination data. The pain syndrome and the expressiveness of morning stiffness in osteoarthritis were determined with the Huskison scale and the Lickert scale. Interleukin-18 in serum was tested by ELISA - a set of reagents «Protein contour»; COMR is a set of COMP ELISA.

Conclusions. An active inflammatory process that occurs in osteoarthritis and autoimmune thyroiditis in the joints is accompanied not only by quantitative, but also qualitative changes in the immune system parameters and their mutual relations. This «ensures» the activation of autoimmune mechanisms of the disease. At the same time, the content of interleukin-18 did not depend on the localization of the processes in the joints, the duration of the diseases and the osteoarthritis x-ray stage and the thyroid gland functional state. Study of the COMP level in patients with autoimmune thyroiditis and osteoarthritis has shown an increase of this index was found (21.9 ± 1.2 U/l) at the control - 9.2 ± 0.7 U/l. In patients with a third X-ray stage of joint damage (9 people), this parameter was higher than in the whole group (26.7 ± 1.1 U/l). That is, the direct dependence of the COMP content from the severity of morphological changes in the joint was determined. It should be noted that the severity of inflammatory changes in the joint and its derivatives did not correlate with the size of the COMP. Also, there was no correlation between the value of COMP, the content of interleukin-18 and the stage of functional activity of the thyroid gland.

References:
1. Fallahi P, Ferrari SM, Ruffilli I, et al.: The association of other autoimmune diseases in patients with autoimmune thyroiditis: Review of the literature and report of a large series of patients. Autoimmun Rev. 2016;15(12):1125–8. 10.1016/j.autrev.2016.09.009 [PubMed] [Cross Ref] F1000 Recommendation.
2. Kluzek S, Bay-Jensen A-C, Judge A, Karsdal MA, Shorthose M, Spector T, et al. Serum cartilage oligomeric matrix protein and development of radiographic and painful knee osteoarthritis. A community-based cohort of middle-aged women. Biomarkers 2015; 20(8): 557–564. doi: 10.3109/1354750X.2015.1105498 [PMC free article] [PubMed]

3. Mabey T, Honsawek S, Tanavalee A, Yuktanondana P, Wilairatana V, Poovorawan Y. Plasma and synovial fluid inflammatory cytokine profiles in primary knee osteoarthritis. Biomarkers 2016; 21(7): 639–644. doi: 10.3109/1354750X.2016.1171907 [PubMed]

4. Sofie Bliddal, Claus Henrik Nielsen, Ulla Feldt-Rasmussen Recent advances in understanding autoimmune thyroid disease: the tallest tree in the forest of polyautoimmunity 2017; 6: 1776. 10.12688/f1000research.11535.1

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FLOW CYTOMETRIC ANALYSIS OF THE INTEGRITY OF SPERM DNA AND INTRACELLULAR LEVELS OF HYDROGEN PEROXIDE AND SUPEROXIDE ANION IN HUMAN SPERMATOZOA OF INFERTILE AND POTENTIALLY FERTILE MEN

Danail I. Martinov1,2, Nina P. Ayvazova1,3, Svetla O. Blazheva1,3, Sava V. Petrov1,3, Milena A. Atanasova1, Emiliana I. Konova1,2
1Medical Center Clinical Institute for Reproductive Medicine, Bulgaria
2Medical University Bulgaria
3Medical University Bulgaria

The aim of the study was to examine correlation between sperm integrity and intercellular levels of hydrogen peroxide (H$_2$O$_2$) and superoxide anion (O$_2^-$) in infertile and potentially fertile men.

Materials and Methods. 17 healthy human volunteers aged from 25 to 49 were examined. The semen analysis was performed according to the 5th edition of WHO guidelines from 2010. The sperm morphology is defined by the strict Kruger’s criteria. The Sperm DNA integrity (DFI) was determined by flow cytometry – Sperm DNA Integrity Test (SDI). Intercellular levels of H$_2$O$_2$ and O$_2^-$ were also evaluated by this method. Minimum 10 000 labeled sperm cells with sperm speed less than 100 cells per second were analyzed for each sample. The obtained data was processed with statistical package SPSS19 (IBM Corporation). Patients were divided into two groups: First group (control): potentially fertile men with. Second group (patients): infertile men. The comparison of the observed parameters between controls and patients was executed with non-parametric analysis because of inhomogeneous distribution of the data.

Results. Mean age of the control group (n=8) was 33.38 years (±2.17) and of the patient groups (n=9) is 35.67 years (±2.27). There is no statistically significant dependence of the age and days of abstinence between two groups. The analysis of the results discovered positive correlation between age of the patients and percentage of DFI (P<0.027). Also positive correlations between intercellular levels of superoxide anion (O$_2^-$) and percentage of DFI (P<0.001) and HDFI (P<0.006) were defined. Significantly higher levels of O$_2^-$ and DFI (P<0.05) were detected in the group of infertile volunteers. No correlations were found between levels of hydrogen peroxide (H$_2$O$_2$) and other cited parameters.

The obtained results confirm the observations of other researchers of the negative impact of the oxidative stress on the sperm fertility. Currently there is a lack of consensus when it comes to measuring the free radicals and antioxidative capacity, including a total antioxidative capacity, as part of the routine evaluation of the male factor. The reason for this is that there are no standard analytical methods.

Research shows that the flow cytometric analysis is a suitable evaluation method for assessment of sperm indicators and sperm cells, because apoptotic cells can be easily differentiated. This is an important advantage, since it becomes clear that the free radical levels are higher in apoptosis.

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ASSOCIATIONS OF VASCULAR ENDOTHELIAL GROWTH FACTOR-A WITH CARDIAC REMODELING IN PATIENTS AFTER ST-ELEVATION MYOCARDIAL INFARCTION

Petyunina O.V., Kopytsya M.P.,
GI “L.T. Malaya Therapy National Institute of the NAMS of Ukraine”, Ukraine

Vascular endothelial growth factor A (VEGF-A) influences positively on ischemic tissue revascularization with the help of endothelial cell proliferation, neovascularization of ischemic tissue, vessel permeability increase, coronary collaterals development which all protects cardiomyocytes from injury and pathological remodeling. The aim of research was to investigate associations between VEGF-A level and left ventricular remodeling after STEMI

Material and Methods. 62 patients with STEMI, 51 (82.3%) male and 11 (17.7%) female at average age 58.63±8.90 years were enrolled to the study since 2016 till 2017. Control group consisted of 20 healthy subjects.