CYTOKINES AS POTENTIAL BIOMARKERS OF ATHEROSCLEROTIC VASCULAR LESIONS IN RHEUMATOID ARTHRITIS

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Relevance:
Clinical and experimental data support the role of both systemic and arterial inflammation in potentiating atherosclerosis and increasing cardiovascular risk in patients with rheumatoid arthritis (RA).

Objective: to evaluate the role of tissue cytokines in the development of atherosclerotic lesions of the brachiocephalic arteries (BCA) in RA.

Materials and Methods. We examined 57 patients with a reliable diagnosis of RA (mean age 50.45 ± 10.12 years old; mean duration of disease 9.2 ± 6.8 years). Ultrasound measurements of BCA were performed in B-mode (Accuvix V10, Samsung Medison) with determining the thickness of arterial intima-media complex (IMC).

The following criteria were used to assess the severity of atherosclerotic changes in the vessels: A0 - no atherosclerosis (n=32), AI - isolated thickening of intima-media complex (n=19), AII - presence of atherosclerotic plaques and stenosis of BCA arteries (n=6) *(picture 1)*.

Laboratory examination included determination (ELISA) of a number of tissue cytokines in serum: nesphatin-1, visfatin, angiopoietin-like proteins of types 2, 3, 4 and 6.


Picture 1. Stenosis of BCA arteries

Results.
Signs of atherosclerosis (groups AI and AII) were detected in 43.8% of RA patients.
Data from analysis of variance showed intergroup differences in angiopoietin-like protein (ANGPTL) type 2 (p=0.002), ANGPTL type 4 (p=0.0037) and nesphatin-1 (p=0.0011) *(picture 2)*. There were no differences in the severity of atherosclerotic changes in the BCA for visfatin, ANGPTL types 3 and 6 (p>0.05). There was a negative association of IMC with nesphatin-1 level (p=0.012) and a positive association with ANGPTL2 (p=0.031) and ANGPTL4 level (p=0.048).
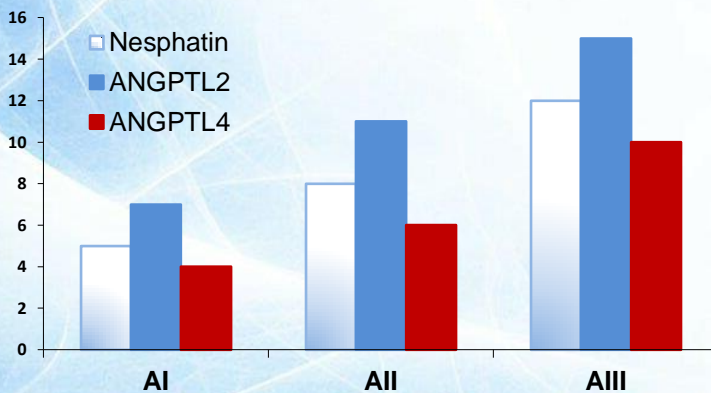
Picture 2. Biomarker levels for BCA changes

In the group of RA patients with pronounced clinical and laboratory activity of the disease (n=19) the processes of atherosclerotic lesions of the BCA prevailed (IMC≥1.2mm; n=11) (p=0.044). This may indicate the role of arterial inflammation in the pathogenesis of vascular complications in this category of patients. Moreover, ANGPTL 4 may have a greater effect on IMC than on the development of plaques, which represent a later stage of atherogenesis.

Conclusions.
Vascular ultrasound should be performed as a routine examination for adequate stratification of cardiovascular risk in patients with RA, especially in the presence of potential biomarkers of atherosclerotic lesions of the BCA in the serum.