Table 1. Joint involvement associated with average grip force (% of expected value), multivariate linear regression

	Unstandardized β	95 % CI
Right hand		
Swollen Wrist	-11.0	-17.5 to -4.5
Tender MCP IV	-15.6	-25.2 to -6.0
Tender PIP V	-2.3	-12.0 to 7.3
Tender Elbow	-11.7	-22.1 to -1.3
Left hand		
Swollen Wrist	-14.3	-20.4 to -7.6
Swollen MCP I	-7.6	-14.6 to -0.6
Swollen MCP V	-11.7	-21.9 to -1.5
Swollen PIP I	-0.8	-9.2 to 7.5

MCP: Metacarpal phalangeal joint; PIP: Proximal interphalangeal joint

Conclusion: Involvement of several different joints in the upper extremity contributes to impaired hand function. Clinical synovitis of the wrist was associated with reduced grip force in both hands. In the left hand, arthritis of the thumb had a major impact on grip force. In general, MCP involvement was found to be more important for the grip than PIP involvement.

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POS0558 STATE OF ADIPOCYTOKINES IN PATIENTS WITH RHEUMATOID ARTHRITIS WITH SUBCLINICAL ATHEROSCLEROSIS

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Background: The causes of accelerated atherosclerosis in rheumatoid arthritis (RA) are not completely understood [1]. Therefore, there is a need to identify new biomarkers of increased cardiovascular risk in RA.

Objectives: To establish the relationship of adipocytokines (adiponectin and leptin) with metabolic and inflammatory markers of subclinical atherosclerosis in RA patients.

Methods: The study included 88 women with RA according to the ACR (American College of Rheumatology)/EULAR (European League Against Rheumatism) criteria, 2010 [2] who visited the adaptation therapy clinic of Orenburg State Medical University. The mean±SD age was 46.43±8.5 years and the mean±SD disease duration was 8.21±5.56 years.

We evaluated the following laboratory parameters in all patients: erythrocyte sedimentation rate (ESR), total cholesterol, triglycerides (TAG), high-density lipoproteins (HDL), low-density lipoproteins (LDL) and C-reactive protein (CRP). Serum concentrations of adiponectin, leptin, rheumatoid factor (RF), tumor necrosis factor- α (TNF- α), and interleukin-17 (IL-17) were determined by enzyme-linked immunosorbent assay (ELISA).

We carried out ultrasound (US) duplex scanning of the carotid arteries by the device "Philips Epiq 7" with linear transducer with frequency of 4-18 MHz with the division into 2 groups of patients: group I consisted of 44 women with US signs of subclinical atherosclerosis, group II – 44 women without these signs. The control group included 30 women without inflammatory joint diseases and US signs of subclinical atherosclerosis and similar in gender, age and body mass index (BMI) to RA patients.

The program STATISTICA, 12.0 was used for statistical analysis.

Results: The serum adiponectin level was significantly higher in RA patients compared to the control group ($p<0.0001$): 40.88±13.60 ng/ml versus 22.75±11.27 ng/ml. The level of leptin in the blood serum of women with RA and healthy individuals was approximately the same and amounted to 18.07±14.02 ng/ml and 16.60±11.45 ng/ml respectively. When comparing the levels of adipocytokines in RA patients, the predominance of concentrations of both adipocytokines in patients with paraclinical atherosclerosis were noted. The adiponectin concentration was 46.08±14.44 ng/ml versus 35.70±10.51 ng/ml ($p<0.001$). The leptin level was 26.40±20.06 ng/ml versus 14.96±16.62 ng/ml ($p<0.01$).

Correlation analysis showed a negative relationship between adiponectin levels and metabolic markers of atherosclerosis: BMI ($r=-0.52$; $p<0.05$), neck circumference (NC) ($r=-0.50$; $p<0.05$), levels of LDL ($r=-0.77$; $p<0.001$) and TAG ($r=-0.59$; $p<0.05$) as well as proinflammatory cytokines: TNF- α ($r=-0.48$; $p<0.05$), IL-17 ($r=-0.60$; $p<0.01$) in patients of both groups. The increase in adiponectin concentration in group II patients was associated with the duration of administration of methotrexate ($r=0.49$; $p<0.05$) and glucocorticosteroids ($r=0.71$; $p<0.001$). Direct correlations were found between the level of leptin and BMI ($r=0.48$; $p<0.05$), NC ($r=0.48$; $p<0.05$), LDL ($r=0.54$; $p<0.05$) and TAG ($r=0.45$; $p<0.05$), CRP ($r=0.49$; $p<0.05$) and IL-17 ($r=0.52$; $p<0.05$) in group I patients.

Conclusion: There is a significant increase in the production of adipocytokines in RA with subclinical atherosclerosis. Correlations of levels of adipocytokines with metabolic and inflammatory markers of atherosclerosis, on the one hand,

indicate the influence of adipose tissue on systemic inflammation and, on the other hand, confirm the involvement of proinflammatory cytokines in the development of atherosclerotic vascular damage in patients with RA.

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POS0559 SPECKLE TRACKING BETTER DETECTS SUBCLINICAL MYOCARDIAL DYSFUNCTION IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Background: The risk of developing cardiovascular complications and death in rheumatoid arthritis (RA) is 50% higher than in the total population. These clinical events depend from risk factors for cardiovascular diseases, chronic inflammation and inflammatory myocardial infiltration. A new method for detecting early myocardial dysfunction is echocardiography using speckle tracking echocardiography.

Objectives: to determine the frequency of myocardial dysfunction (lower global longitudinal epicardial strain of left ventricular (LV), diastolic dysfunction of left ventricle (LVDD)) using standard and novel echocardiographic methods in patients (pts) with RA prior to therapy with bDMARDs, examine its relationship with markers of inflammation.

Methods: a total of 28 pts with a valid diagnosis of RA (ACR/EULAR, 2010): 23 f (82%) / 5 m (18%) were included, median (Me) age - 56 [interquartile range (IR) 34;65] years, Me RA duration-14.5 [IR 7;87] months; all pts with RA demonstrated a high disease activity (Me DAS28 6.06, [IR 5.4;6.6]), seropositive for IgM RF (88%) and/or ACCP (84%) without any experience of administration of bDMARDs. The control group consisted of 10 healthy subjects, which were matched by sex and age. All pts were assessed for traditional risk factors for cardiovascular disease (ESC guidelines, 2011), echocardiography, tissue Doppler imaging, and the speckle tracking assessment of left ventricle longitudinal strain. DD was allocated according to the ESC guidelines for the diagnosis and treatment of heart failure (2018). Arterial hypertension was detected in 5 pts with RA.

Results: In pts with RA LVDD was more often detected (8 (31%) vs 0%, $p=0.05$) than in controls. The values of E LV (0.77 [0.62;0.94] ms vs 1.25 [1.03;1.51] ms, $p=0.0001$) were lower than in control group. Speckle-tracking method detected lower global longitudinal epicardial strain [-16.5 [-18.9; -13.6]° vs -21.58 [-22.1; -20.4]°, $p=0.0001$). 17(61%) RA pts showed a decrease global longitudinal epicardial strain. There were no between-group differences in left ventricular ejection fraction, LV sizes, LV myocardial mass index in RA pts with controls. There were correlations between the global longitudinal epicardial strain and DAS28 ($r=0.9$, $p<0.02$), tender joint score ($r=0.6$, $p<0.02$), radiological stage ($r=0.6$, $p<0.008$); the presence of systemic manifestations ($r=0.5$, $p<0.03$).

Conclusion: In pts with RA frequently (61%) were detected lower global longitudinal epicardial strain, which are associated with a high activity of the inflammatory process. Speckle-tracking echocardiography is better at detecting early myocardial dysfunction than tissue Doppler.

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POS0560 CO-MORBIDITIES MAY NOT CHANGE TREATMENT CHARACTERISTICS OF THE RHEUMATOID ARTHRITIS PATIENTS

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Background: Several co-morbidities may usually accompany rheumatoid arthritis (RA)(1). These can have direct or indirect implications for the severity of rheumatoid arthritis, the doctors' decision of disease-modifying treatment, and the functional disability of RA patients.

Objectives: It has been previously shown that various co-morbidities can have negative effects on the functional status, quality of life and life expectancy of RA patients individually (2). Here, we evaluated the effect of weight of all co-morbidities on treatment of RA patients and functional disability. Our hypothesis "The functional status of RA patients with moderate and severe co-morbidities is impaired compared to patients with mild co-morbidities, and the treatment characteristics of RA are different between these groups"

Methods: We included 246 RA patients who met the ACR / EULAR 2010 rheumatoid arthritis classification criteria. We divided the patients into two groups according to the Charlson comorbidity index (scores 0-2 mild, > 2 moderate and severe) (3). We compared the functional status of the two groups assessed by the health assessment questionnaire disability index (HAQ-DI). In addition, we compared disease-related characteristics between groups. We performed the Mann-Whitney U and chi-square tests where appropriate. Lastly, we also adjusted the age when comparing the continuous variables with ANCOVA.

Results: The patients with moderate and severe co-morbidities were older ($p < 0.001$). All other demographic features were similar between the groups. Extra-articular involvement was more frequent in moderate and severe co-morbidity group ($p = 0.03$). All other disease features and treatment modalities were similar between the groups. Additionally, after adjusting the age, none of the continuous features were different between the groups.

Table 1. Disease and demographic features and treatment characteristics of the patients.

	Mild co-morbidity group (n=180)	Moderate and severe co- morbidity group (n=66)	P	p** (age adjusted)
Age (year)	44.5±9.2	65.0±7.0	P<0.001	N/A
Gender (M/F)	34/146	16/50	0.5	
Smoking (%)	24 (13.3)	7 (10.6)	0.63	
Charlson co-morbidity index	1.38±0.48	3.3±0.6	p<0.001	p<0.001
Disease duration (month)	65.2±77.1	65.1±75.3	0.97	0.23
Swollen joint	0.3±1.5	0.2±0.6	0.92	0.86
Tender joint	0.6±1.6	0.3±1.0	0.38	0.50
ACPA positivity (%)	84 (46.6)	29 (43.9)	0.92	
RF positivity (%)	93 (51.6)	66 (58.3)	0.39	
DAS28-CRP	2.2±1.2	2.1±0.7	0.85	0.37
HAQ-DI	0.16±0.20	0.27±0.39	0.05	0.64
Extra-articular involvement (%)	3 (1.6)	5 (7.5)	0.03	
Joint deformity (%)	21 (11.6)	7 (10.6)	0.77	
Number of received DMARD	1.3±0.5	1.3±0.4	0.55	0.48
Steroid dosage (mg)	1.7±2.4	1.4±1.9	0.73	0.60
Ever receiving bDMARD (%)	21 (11.6)	3 (4.5)	0.09	

M: Male; F: Female; ACPA: Anti-Cyclic Citrullinated Peptide Antibody; RF: Rheumatoid factor; DAS-28: Disease activity score-28; HAQ-DI: Health assessment questionnaire disability index; DMARD: Disease modifying drugs; bDMARD: Biologic disease modifying drugs. **For continuous variables. Continuous variables shown as Mean ± SD. $p < 0.05$ is significant

Conclusion: The only different disease feature was the increased frequency of extra-articular involvement in the more severe co-morbidity group. All other disease characteristics were similar. In addition, the severity of the co-morbidities may not change the doctors' decision to prescribe biological or synthetic DMARDs and steroid dosage.

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POS0561 OBESITY PHENOTYPES IN EARLY RHEUMATOID ARTHRITIS

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Background: Patients with rheumatoid arthritis (RA) and obesity have a lower risk of early death than patients with normal weight due to the so-called "obesity paradox". Available publications discuss three phenotypes of obesity: classical obesity, metabolically healthy overweight/obesity, and latent obesity (normal weight associated with metabolic disorders, most importantly - with insulin resistance and adipocytokines imbalance).

Objectives: To clarify the prevalence of obesity phenotypes and to identify factors predisposing to «latent obesity» in early RA without diabetes mellitus or hyperglycemia.

Methods: The study included 35 pts (23 women, 12 men) with early RA (criteria ACR / EULAR, 2010), 56 [43.0; 60.0] years old, naive to treatment with glucocorticoids

and disease-modifying anti-rheumatics, without established diabetes mellitus. Pts were seropositive for IgM RF and anti-CCP, with highly active RA (DAS28 5.9 [5.2; 6.4]; SDAI 35.4 [27.0; 45.8], and CDAI 31.0 [26.0; 44.0]) scores, and median disease duration of 8.0 [6.0; 15.0] months. Electrochemiluminescence assay Elecsys (Roche Diagnostics) was used to measure patients' insulin levels, and ELISA (DBS - Diagnostics Biochem Canada Inc.) - for evaluation of serum leptin concentrations. Insulin resistance (IR) was defined as Homeostasis Model Assessment of Insulin Resistance index (HOMA-IR) ≥ 2.77 . Leptin levels were considered elevated at values ≥ 11.1 ng/ml for women, ≥ 5.6 ng/ml for men. The overweight/obesity status was determined by World Health Organization criteria in pts with body mass index (BMI) ≥ 25 kg/m².

Results: Overweight/obesity were documented in 19 (54, 3%) pts with early RA, 4/19 (21%) had high leptin levels and IR, 11/19 (58%) had isolated hyperleptinemia. Normal BMI was found in 16 (45,7%) pts with early RA, 2/16 (12,5%) had elevated leptin levels and IR, and 6/16 (37,5%) - only hyperleptinemia. Four (21%) out of 19 overweight and 8 (50%) out of 16 pts with normal BMI did not show any metabolic disorders ($p = 0.02$). Classical obesity was found in 15 (43%), and latent obesity - in 8 (23%) pts with early RA. Leptin levels correlated with waist circumference ($r = 0.58$, $p = 0.02$), BMI ($r = 0.71$, $p = 0.0006$), ESR ($r = 0.5$, $p = 0.02$) in the overweight/obese pts, and with waist circumference ($r = 0.59$, $p = 0.03$), IgM RF ($r = 0.58$, $p = 0.03$), triglyceride levels ($r = 0.77$, $p = 0.003$), and atherogenic index ($r = 0.62$, $p = 0.03$) in pts with normal weight.

Conclusion: The classical obesity phenotype associated with abdominal obesity and inflammation was the most common and prevailing over other phenotypes in early RA. Latent obesity was less common and was associated with an unfavorable lipid profile and accumulation of abdominal fat, therefore increasing the risk of cardiovascular diseases in RA. Metabolically healthy overweight/obesity in early RA was really a rare phenotype.

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POS0562 PULSE PRESSURE AS AN INDICATOR OF SUBCLINICAL ATHEROSCLEROSIS IN RHEUMATOID ARTHRITIS

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Background: Pulse pressure (PP) is defined as the difference between systolic and diastolic blood pressure and represents arterial compliance and reflective properties of blood flow (1). It is well known that gender, age, and race / ethnicity are intrinsic factors of the patient that influence PP. Brachial PP has recently been associated with markers of subclinical cardiovascular disease after adjustment with traditional cardiovascular risk factors in the general population (2). However, this relationship has not been studied in patients with rheumatoid arthritis (RA) and its identification would allow earlier adjustments of cardiovascular therapies in this high-risk group.

Objectives: The aim of the study is to analyze the difference in PP between patients with RA and healthy controls. Additionally, to analyze the difference between patients with carotid plaque (CP) and without CP.

Methods: A cross-sectional, observational, and comparative study of ninety-two patients with RA aged 40-75 years and who fulfilled ACR/EULAR 2010 classification criteria. Also, we included ninety-two controls without RA, matched by gender, age and comorbidities. A carotid ultrasound was performed in patients with RA and it was divided into two subgroups, with the presence of CP and without CP. A blood pressure measurement was taken after 15 minutes of rest on the right arm of all patients. Distribution was evaluated with the Kolmogorov-Smirnov test. Descriptive analysis was done using measures of central tendency. Chi square, Student's t test and Mann-Whitney U test were used for comparisons between groups. A p value < 0.05 was considered statistically significant.

Results: We found no statistical difference between groups regarding age, gender and, comorbidities (type 2 diabetes mellitus, hypertension, dyslipidemia and, active smoking) (Table 1). There was a significant difference in PP between patients with RA and controls (50 mmHg vs 41 mmHg respectively, $p = 0.032$). Patients with RA had a significant difference in PP of patients with CP and without CP (50 mmHg vs 44 mmHg respectively, $p = 0.008$) (Figure 1). When performing a binary logistic regression, it was found that PP was the only independent factor for the presence of CP in patients with RA, OR 1.054 (95% CI 1.008-1.101, $p = 0.020$).

Conclusion: Patients with RA had a higher PP than controls. Binary logistic regression showed PP as the only independent factor for the presence of sub-clinical atherosclerosis in patients with RA. PP is a parameter that all rheumatologists should consider when evaluating cardiovascular risk in patients with RA.

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