board-certified echocardiographer. Affection of coronary territories was compared between groups using longitudinal strain by speckle tracking according to the European Society of Cardiology and the American Society of Echocardiography recommendations.

Results: A total of 53 RA-patients and 24 control subjects were included. Demographic characteristics for each group are shown in table 1. There was no statistical difference in global longitudinal strain between RA-patients and controls (-20.86±2.82 vs -21.19±2.46, p=0.62). Comparison of longitudinal strain values of the three vascular territories evaluated between RA-patients and controls did not reach statistical difference (Table 2).

Table 1. Demographic characteristics

	RA group (n=53)	Control group (n=24)	p
Age, mean ± SD	55.54±9.11	52.81±6.61	0.172
Women, n (%)	51 (96.2)	26 (96.3)	0.988
Body Mass Index, mean ± SD	27.53±5.85	28.05±4.66	0.956
Hypertension, n (%)	18 (33.96)	5 (18.5)	0.149
Type 2 Diabetes mellitus, n (%)	7 (13.2)	4 (14.8)	0.844

Table 2 – Variable comparison

	RA group (n=53)	Control group (n=24)	p
Global Longitudinal Strain, mean ± SD	-20.86 ± 2.82	-21.19 ± 2.46	0.620
Anterior descendent territory, mean ± SD	-21.16 ± 3.13	-21.64 ± 2.91	0.510
Circumflex territory, mean ± SD	-20.12 ± 3.28	-21.09 ± 3.1	0.207
Right coronary territory, mean ± SD	-18.98 ± 2.38	-18.79 ± 2.37	0.735

Conclusions: Contrary to previous published evidence (1, 2), there was no statistical difference in global longitudinal strain between RA patients and controls. Coronary territories are not affected in RA patients in comparison with controls. Further studies with a larger cohort are necessary to determine the usefulness of strain in the evaluation of subclinical cardiovascular disease.

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THU0141 | **CAN WE PREDICT THROMBOTIC TENDENCY IN RHEUMATOID ARTHRITIS: A THROMBOELASTOGRAPHIC ANALYSIS**

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Background: Arterial and venous thromboembolism were proven to be increased in cases with rheumatoid arthritis (RA) (1). It would be interesting to predict thrombosis in these patients by a laboratory test. Rotational thromboelastography (ROTEM) is a viscoelastometric clotting test to evaluate the kinetics of clot formation and fibrinolysis which provides global information on cellular and soluble procoagulant/anticoagulant protein interactions.

Objectives: Our aim was to determine the thrombosis predisposition in RA patients by thromboelastography and to identify the possible clinical and laboratory risk factors for thrombotic tendency in RA patients.

Methods: 85 RA patients (mean age: 54.12±13 yrs; female: 66 (77.6%) diagnosed based on 2010 ACR/EULAR classification criteria were sequentially recruited. Patients were receiving either conventional synthetic disease modifying antirheumatic drugs (csDMARD) or were receiving biological treatments. Age- and gender matched 35 healthy individuals were enrolled as a control group. Complete blood count (CBC), erythrocyte sedimentation rate (ESR), and C-reactive protein (CRP) levels were measured and DAS-28 scores were calculated. ROTEM was applied at the same time and clotting time (CT, seconds), clot formation time (CFT, seconds), and maximum clot firmness (MCF, mm) were determined. A shorter CT and/or CFT values and/or a higher MCF levels imply tendency towards hypercoagulability.

Results: RA patients with a higher disease activity were found to have a shorter I-CFT and a higher I-MCF (p values p=0.020, p=0.033, respectively). Correlation analysis revealed shorter I-CFT and E-CFT and higher I-MCF and E-MCF in those with more active disease, hence indicating a higher tendency to thrombosis.

DAS-28 score, high level of CRP, and increased platelet count were identified as variants affecting thromboelastography in favor of thrombosis susceptibility.

Conclusions: Disease activation in RA patients may lead to hypercoagulability, independent of the ongoing medication of patients. Considering the fact that the predictive value of ROTEM parameters for further thrombosis, additional studies are needed whether pro-thrombotic state in RA may herald thrombosis in the presence of inflammation.

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THU0142 | **MATRIX METALLOPROTEINASE-3 AND ANTIBODIES (IGG) AGAINST OXIDIZED LOW-DENSITY LIPOPROTEIN LEVELS IN PATIENTS WITH RHEUMATOID ARTHRITIS**

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Background: Rheumatoid arthritis (RA) is associated with an unexplained increased cardiovascular risk. Matrix metalloproteinase-3 (MMP-3) is the most important protease involved in RA inflammation which may play a role in the development of cardiovascular events. Antibodies against oxidized low-density lipoprotein (oxLDL) are known to be involved in the development of inflammation and atherosclerosis. Specific role of MMP-3 and antibodies against oxLDL in cardiac pathology in RA patients (pts) is not well investigated.

Objectives: To compare MMP-3 and oxLDL-IgG antibody levels, as well as lipid profiles in pts with active RA and healthy controls.

Methods: Thirty nine RA pts (33 women and 6 men, median age 56,5 [49; 65] years), with active arthritis (mean disease duration 96 [48; 190] months; DAS28 5,8 [5,3;6,3]; HAQ 1,8 [1,3; 2,2]) were enrolled in the study. Twenty three pts (59%) received methotrexate, 5 (13%) – the combination of methotrexate with oral glucocorticoids, 10 (26%) - oral glucocorticoids monotherapy.

The control group consisted of 29 volunteers (21 women and 8 men, median age 58,5 [53; 62] years). Serum MMP-3 and oxLDL-IgG levels were measured by enzyme-linked immunosorbent assay (ELISA).

Results: Elevated MMP-3 levels were detected more frequently in RA pts (31/39 (79%)) vs healthy controls (2/29 (7%), $p < 0.0001$). MMP-3 concentrations were higher in RA pts (57,0 [36,6; 114,3ng/ml), than in the control group subjects (13,4 [9,9; 20,4]mg/ml, $p < 0.0001$). MMP-3 levels demonstrated significant correlation with ESR (r =0,64, $p < 0.05$) and CRP (r =0,52, $p < 0.05$) values.

OxLDL-IgG levels in RA pts and healthy controls did not differ significantly (290,3 [111,3; 608,6] mU/ml and 228,1 [125,1; 338,8] mU/ml, respectively $p > 0.05$). Rates of dyslipidemia were similar in RA pts (23/39 (59%)) and control group subjects (15/29 (52%)). Concentrations of lipids were also similar in both groups and were as follows: total cholesterol was 5,2 [4,9; 6,2] mmol/l in RA pts and 6,3 [5,1; 6,6] mmol/l in the control group; HDL cholesterol - 1,7 [1,4; 2,0] mmol/l and 1,7 [1,5; 2,1] mmol/l, LDL cholesterol - 3,3 [2,8; 4,0] mmol/l and 3,6 [3,0; 4,0] mmol/l, triglycerides - 1,3 [1,0; 1,6] mmol/l and 1,4[1,1; 1,8] mmol/l, the atherogenic index of plasma - 2,4 [1,8; 2,8] and 2,4 [1,9; 3,0], respectively. Showed no correlation between the levels of oxLDL-IgG and lipids in both groups. In the RA group, concentrations of HDL cholesterol were negatively correlated with MMP-3 (r=-0,5, p<0,05), C-reactive protein (r=-0,53, p<0,05), and DAS28 (r=-0,4, p<0,05).

Conclusions: RA pts exhibited higher serum MMP-3 levels than healthy individuals. OxLDL-IgG levels were similar in RA pts and healthy subjects. Obtained results suggest that MMP-3 and CRP may produce a negative impact on HDL-cholesterol levels in patients with active RA.

THU0143 | **CHOLESTEROL EFFLUX CAPACITY OF HDL IS OTHERWISE IMPROVED BY DIFFERENT BIOLOGIC-DMARDS IN RHEUMATOID ARTHRITIS**

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Background: Rheumatoid arthritis (RA) patients have an increased mortality for cardiovascular (CV) events, not completely explained by impaired cholesterol levels or other traditional CV risk factor (1). Target therapy with effective control of systemic inflammation have been demonstrated to improve articular outcomes, but the effect on CV risk is still under investigation (2). The ability of high-density lipoprotein (HDL) to accept cholesterol from macrophages (HDL cholesterol efflux capacity; HDLc-EC) is a key step in reverse cholesterol transport, with significant consequences on incident atherosclerotic CV disease (3), but this marker in RA have still alternate evidence (4,5).

Objectives: To assess the effects of different biological DMARDs on HDLc-EC in RA

Methods: Disease activity data and blood samples from 40 patients with RA before and up to 12 months after starting a biologic therapy were collected. The study included patients starting intravenously administered Abatacept (ABA;n=10), Infliximab (INF;n=10), Tocilizumab (TCZ;n=10), and Rituximab (RTX;n=10), at approved dose regimens for RA treatment. HDLc-EC was measured on paired serum samples using THP-1 macrophages and a fluorometric assay for cholesterol measurement. ANOVA was used to compare paired continuous data, and Pearson' r value was calculated for correlations.

Results: Disease activity assessed by DAS28-CRP and CDAI significantly dropped during all treatments. No significant changes in total and high or light density cholesterol fractions were detected. HDLc-EC at baseline was 22±3% with a statistically significant increase up to 25±3% and 27±4% after 6 and 12 months of treatment, respectively (P<0.001) [Figure A]. Patients treated with INF and RTX demonstrated the higher rise in HDLc-EC, already after 6 months and lasting up to 12 months of treatment. ABA and TCZ treated patients after 6 months had a slight HDLc-EC rising, with a subsequent plateau. We observed an opposite correlation between HDLc-EC and disease activity by DAS28-CRP and CDAI (r=-0.2;P=0.01) [Figure B]. Finally, no CV events were detected during the study follow-up.
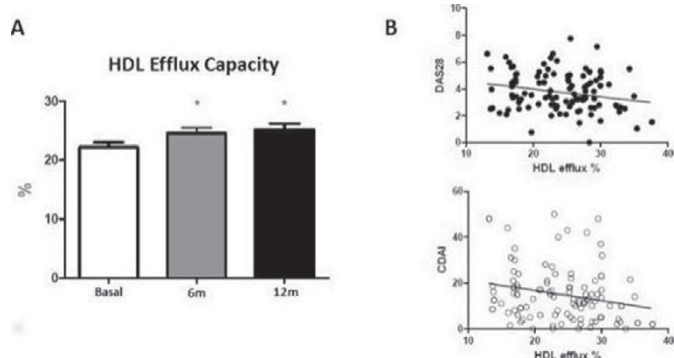
Conclusions: Biologic treatment can influence the HDLc-EC of RA patients, already after 6 months of therapy, and is associated with changes in disease activity and inflammatory status. Infliximab and Rituximab seem to have an enhanced impact on HDLc-EC. Future studies need to address the mechanisms beyond these intriguing findings.

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THU0144   **COGNITIVE FUNCTION OF PATIENTS WITH RHEUMATOID ARTHRITIS IS ASSOCIATED WITH DISEASE ACTIVITY BUT NOT CAROTID ATHEROSCLEROTIC CHANGES**

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Background: Rheumatoid arthritis (RA) is a complex inflammatory disease that has features of atherosclerosis and cognitive decline. Although the relationship between atherosclerosis and cognitive impairment has been studied and replicated, whether cognitive deficits in RA can be attributed to their atherosclerotic changes is not well understood.

Objectives: This study investigated the cognitive function in patients with RA using the Korean version of the Consortium to Establish a Registry for Alzheimer's disease (CERAD-K) neuropsychological battery and evaluated whether cognitive function was affected by the carotid arterial atherosclerosis.

Methods: We examined seventy RA patients and forty healthy controls. RA activity was assessed by disease activity score with 28 joints-*erythrocyte sedimentation rate* (DAS28-ESR) and objective memory impairment was defined as a performance score of 1.5 standard deviations below the respective age-specific, education-specific, and sex-specific normative means for at least one of the four episodic memory tests in CERAD-K; the Word List Memory, Word List Recall, Word List Recognition, and Constructional Recall tests [1]. Carotid arteries were scanned for the presence of plaque and intima-media thickness (IMT). We assessed potential risk factors of cognitive impairment in RA patients using regression analyses.

Results: Of the CERAD-K subtests, there were a significant difference between the RA patients and healthy controls in verbal fluency (12.97±3.73 vs 15.48±4.57, respectively; p=0.004) and Boston Naming Test (11.50±2.08 vs 12.30±1.77, respectively; p=0.035). Carotid ultrasound revealed significantly more plaques in the RA patients than in the healthy controls (39% vs 15%, respectively; p=0.017). RA patients with memory impairment have significantly higher score of DAS28-ESR (4.14±0.99 vs 2.60±0.88, respectively; p<0.001), age (65.71±7.71 vs 58.50±11.33, respectively; p=0.009), and mean cIMT (0.56±0.10 vs 0.50±0.08, respectively; p=0.027) compared to RA patients without memory impairment. In multivariable regression analysis, CERAD-K total score showed a significant negative correlation with age (β=-0.415, p<0.001) or DAS28-ESR (β=-4.685, p<0.001), but no correlation was found between CERAD-K total score and presence of plaque or cIMT (Table 1).

Table 1. Regression analysis of mean CERAD-K total scores and clinical parameters

Total (n=70)	Univariable analysis				Multivariable analysis		
	Coefficient (β)	95% CI	P	R^2	Coefficient (β)	95% CI	P
Age (years)	-0.494	(-0.711, -0.277)	<0.001	0.232	-0.415	(-0.607, -0.224)	<0.001
Male (%)	2.121	(-5.079, 9.320)	0.559	0.005			
RF (IU/MI)	0.003	(-0.014, 0.020)	0.733	0.002			
hsCRP (mmol/L)	-0.074	(-0.284, 0.135)	0.482	0.007			
DAS28	-5.402	(-7.552, -3.252)	<0.001	0.270	-4.685	(-6.629, -2.742)	<0.001
TC	0.020	(-0.038, 0.078)	0.484	0.007			
Mean cIMT	-26.082	(-56.267, 4.103)	0.089	0.042			
Presence of plaque	-1.209	(-6.79, 4.371)	0.667	0.003			

RF: rheumatoid factor, hsCRP: high sensitivity C-reactive protein, DAS28: disease activity score 28, TC: total cholesterol, cIMT: carotid intima-media thickness

Conclusions: Our results indicate that disease activity of RA and aging contribute to cognitive impairment, but there was no association between cognitive function and clinical or subclinical carotid atherosclerotic changes in RA patients.

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THU0145   **IMPACT OF DIFFERENT FORMULATIONS OF "PATIENT GLOBAL ASSESSMENT" ON REMISSION CLASSIFICATION BY DISEASE ACTIVITY INDICES IN RHEUMATOID ARTHRITIS**

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Background: Patient global assessment (PGA) of disease activity is included in a large number of composite indices of disease activity and definitions of remission in Rheumatoid Arthritis (RA). However, the actual question is formulated in a variety of different ways according to the instrument considered.

Objectives: To evaluate how 6 different formulations of PGA affect patient estimates and impact upon disease activity and remission rates as assessed by 4 Disease Activity Indices.

Methods: Consecutive RA patients followed in a Rheumatology outpatient department were included in this cross-sectional study. Data collection comprised: 28 joint counts (tender and swollen), C-reactive protein (CRP) and 6 different PGA formulations. The chosen formulations were the ones stated in the: v1) Portuguese National Registry Reuma.pt, the locally used formulation; v2) ACR/EULAR provisional definition of remission (considered in this study as the "standard"); v3) CDAI and SDAI; v4) Disease Activity Score (DAS28) assessment of general health; v5) DAS28 assessment of disease activity (the currently used); v6) one, exploratory, developed by the investigators, including idiomatic cultural expressions. ACR/EULAR Boolean criteria, CDAI, SDAI, and DAS28-CRP (4v) were used to test how these 6 PGA formulations change the rates of remission. PGA differences were assessed by descriptive analyses (including patients with PGA ≤10 and ≤20mm) and Bland-Altman test.

Results: In total, 193 patients were included (82% female, mean (SD) age of 59 (13) years, mean disease duration of 12 (9) years and 31% under biologics). The average PGA ranged from 42.3 (25.3) to 48.1 (26.7)mm as measured in different formulations. The ACR/EULAR (v2) formulation yielded the largest proportion of

Table 1. Descriptive statistics of the 6 PGA's formulations (n=193)

PGA Formulation	Mean (SD)	PGA below cut-off n (%)	
		≤10 mm	≤20mm
v1 Reuma.pt	47.5 (28.0)	26 (13.5)	43 (22.3)
v2 ACR/EULAR	43.5 (27.9)	31 (16.1)	48 (24.9)
v3 CDAI/SDAI	47.2 (25.9)	23 (11.9)	34 (17.6)
v4 DAS28-GH	42.9 (25.3)	27 (14.0)	42 (21.8)
v5 DAS28-DA	42.3 (25.3)	28 (14.5)	44 (22.8)
v6 Investigators	48.1 (26.7)	22 (11.4)	35 (18.1)