poorly understood. The study of lipid profiles in RA has been biased towards lipoprotein levels, whereas those of triglycerides (TG) and lipoprotein functionality have been neglected.

Objectives: since recent findings point to an emerging role for TG and TG-rich lipoproteins (TRL) on inflammation, we aimed to evaluate a combined lipid profile characterized by high TG and low HDL levels ($TG^{high}HDL^{low}$) in RA.

Methods: lipid profiles were analyzed in 113 RA patients, 113 healthy controls (HC) and 27 dyslipemic subjects (DL). A group of 13 biological-naïve RA patients was prospectively followed for 3 months upon TNFα-blockade. Serum levels of inflammatory mediators were assessed by immunoassays. PON1 activity and Total Antioxidant Capacity (TAC) were quantified in serum. PON1 rs662 status was evaluated by RT-PCR

Results: the prevalence of the $TG^{high}HDL^{low}$ profile was similar among RA patients (29/113), HC (30/113) and DL (11/27), linked to higher TRL levels in all groups. However, this profile was associated with increased CRP (p=0.012), TNFα (p=0.004), MCP-1 (p=0.004), IP-10 (p=0.018) and leptin ($p<0.001$) serum levels in RA, where decreased PON1 activity and TAC were found (both $p<0.001$). TRL serum levels were positively correlated to inflammatory mediators, whereas a negative association was found for PON1 activity (r=-0.203, p=0.036). These findings remain after excluding patients with previous CV events or those under statins. No associations were observed in the HC and DL groups. When RA patients were stratified by PON1 rs662 status, these associations were restricted to the low activity genotype (QQ) (TNFα: p=0.002, MCP-1: p=0.013, EGF: p=0.047, IP-10: p=0.018 and leptin: p=0.002), whereas no effect of the lipid profile was observed in those harboring the QR or RR genotypes (all $p>0.050$). As expected, QQ-patients exhibited a lower PON1 activity compared to the other genetic variants (both $p<0.010$). The $TG^{high}HDL^{low}$ prevalence was related to a decreased anti-TNFα usage in the cross-sectional sample (p=0.004). A poor clinical response upon TNFα-blockade was related to an increasing prevalence of the $TG^{high}HDL^{low}$ profile over treatment (p=0.021) and elevated baseline TRL levels (p=0.042).

Conclusions: the $TG^{high}HDL^{low}$ profile is associated with systemic inflammation, increased TRL levels, decreased PON1 activity and a poor clinical outcome upon TNFα-blockade in RA. Overall, these findings support the link between inflammation and lipid profile, oxidative status and TRL having a pivotal role. The $TG^{high}HDL^{low}$ profile can be proposed as a surrogate marker of HDL dysfunction in RA.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2017-eular.4380

SAT0094 METABOLIC AND CARDIO-VASCULAR BENEFITS OF HYDROXYCHLOROQUINE IN PATIENTS WITH RHEUMATOID ARTHRITIS: A SYSTEMATIC REVIEW AND META-ANALYSIS

C. Rempenault[1], B. Combe[1], T. Barnetche[2], C. Gaujoux-Viala[3], C. Lukas[1], J. Morel[1], C. Hua[1]. *[1]Rheumatology, University Hospital Lapeyronie, Montpellier; [2]Rheumatology, University Hospital Pellegrin, Bordeaux; [3]Rheumatology, University Hospital Carémeau, Nimes, France*

Background: Cardiovascular disease (CVD) is the leading cause of mortality in rheumatoid arthritis (RA) patients (1). Hydroxychloroquine (HCQ) has been shown to improve major outcomes like survival rates in other inflammatory diseases, like systemic lupus (2).

Objectives: The aim of our study was to assess currently available literature on the cardiovascular impact of hydroxychloroquine (HCQ) in patients with RA.

Methods: We systematically searched literature (via Pubmed, Embase and abstracts from recent ACR and EULAR congresses) for studies evaluating the effects of HCQ, wether in monotherapy or in combination with other conventional synthetic disease modifying antirheumatic drugs (csDMARDs) on cardiovascular outcomes or known risk factors for CVD in RA patients (lipid profiles, diabetes incidence, insulin resistance and incidence of CVD). A meta-analysis was performed with Review Manager Software, with random effects models, whenever methodologically possible and relevant. Data were extracted by one investigator and independently checked by another.

Results: The literature search revealed 185 articles and abstracts of potential interest, and further examination resulted in 16 studies fulfilling required criteria for preplanned analyses regarding the cardiovascular impact of HCQ in RA. For lipid profiles, the mean difference (mg/dL) between HCQ users versus nonusers was -9,82 (95% confidence interval [95% CI] 14.03; 5.60) for total cholesterol, -10.61 [14.17;7.04] for low density lipoprotein, -19.15 [27.20; 11.10] for triglycerides and +4.13 [2.22;6.04] for high density lipoprotein (figure 1); with respectively a decrease (mg/dL) of 13.15 [20.96; 5.34], 12.35 [20.14; 4.36], 12.54 [28.94; 3.86] and an increase of 1.67 [0.96, 4.31] after HCQ initiation. Diabetes incidence was reduced in "HCQ ever users" versus "patients who never used HCQ" with a hazard ratio of 0.59 [0.49; 0.70]. In addition, HCQ seems to decrease insulin resistance and incidence of cardiovascular events but data were too scarce for meta-analysis.

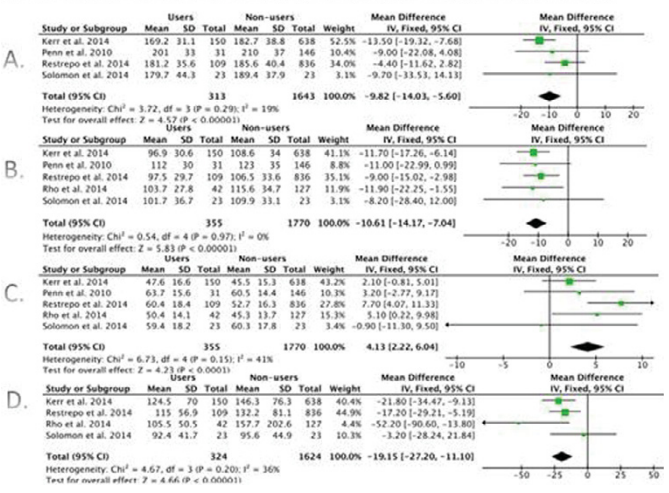
Conclusions: Beside its limited efficacy on disease activity, this study supports the interest of HCQ on lipid profiles, and diabetes incidence, and to a lesser extent on cardio-vascular events and insulin resistance in RA patients. Therefore, this study suggests that HCQ may be of some interest in RA, in combination with other csDMARDS.

References:

[1] Aviña-Zubieta JA, Choi HK, Sadatsafavi M, Etminan M, Esdaile JM, Lacaille D. Risk of cardiovascular mortality in patients with rheumatoid arthritis: a meta-analysis of observational studies. Arthritis Rheum. 2008 Dec 15;59(12):1690–7.

[2] Petri M. Hydroxychloroquine use in the Baltimore Lupus Cohort: effects on lipids, glucose and thrombosis. Lupus. 1996 Jun;5 Suppl 1:S16–22.

Figure 1. Forest plot for the mean difference (mg/dL) between HCQ users and non-users of total-cholesterol (A), low-density-lipoprotein (B), high-density-lipoprotein (C), and triglycerides (D).



Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2017-eular.2048

SAT0095 INCRETINS-INSULIN AXIS IN PATIENTS WITH RHEUMATOID ARTHRITIS

B. Segura[1], A. de Vera-González[2], A. González-Delgado[2], J.M. Olmos[3], J.L. Hernández[3], R. López-Mejías[4], B. Ubilla[4], M.A. González-Gay[5,6], I. Ferraz-Amaro[1]. *[1]Division of Rheumatology; [2]Central Laboratory Division, Hospital Universitario de Canarias, Tenerife; [3]Division of Internal Medicine; [4]Division of Rheumatology; [5]Division of Rheumatology, IDIVAL, Hospital Universitario Marqués de Valdecilla, Santander, Spain; [6]Cardiovascular Pathophysiology and Genomics Research Unit, School of Physiology, University of the Witwatersrand, Johannesburg, South Africa*

Background: Rheumatoid arthritis (RA) patients have higher levels of resistance to the action of insulin (IR) compared to healthy subjects.The "Incretin effect" consists in a greater release of insulin by the pancreas when there is a gastrointestinal glucose stimulation, compared to an intravenous stimulation. It is known that this effect is altered in patients with IR.

Objectives: To determine if the incretins-insulin axis is altered in patients with RA and if this correlates to IR in patients with RA, as well as if it is explainable by certain features of the disease.

Methods: Cross-sectional study that includes 361 non-diabetic individuals, 151 patients with RA and 210 controls. Serum levels of insulin, C-peptide, Amylin, glucagon-like peptide 1 (GLP-1), gastric inhibitory polypeptide (GIP) and dipeptidyl peptidase 4 (DPP-4) were analyzed in patients and controls. Indexes of resistance and sensitivity to insulin activity were determined by HOMA2.

A "meal test" consisting on the intake of 500 kcal was performed to a subset of 10 patients and 10 controls, in order to determine the postprandial curves of glucose, insulin, C-peptide, GLP-1 and GIP. Differences between patients and controls as well as the relationship of selected characteristics of the disease with the baseline and postprandial levels of incretins were analyzed using multivariate regression. During the meal test, areas under the curve (AUC), maximum concentrations and the minutes of response were compared between patients and controls. This study was approved by the Clinical Trial Committee of the University Hospital of the Canary Islands.

Results: Patients with RA showed, at baseline and after multivariate adjustment, higher levels of insulin (9.8±6.5 vs 13.0±13.4 U/ml, p=0.05), C-peptide (1.53±0.77 vs. 3.37±2.94 ng/ml, p=0.00), GLP-1 (0.49±1.28 vs. 0.71±0.22, p=0.00) and GIP (0.37±0.40 vs. 1.78±0.51, p=0.00). Similarly, IR indexes such as HOMA2-IR and HOMA2%B, built with insulin or Cpeptide, were higher in patients with RA compared to controls. Patients with RA, showed significantly lower levels of DPP-4 (811±459 vs. 696±301 ng/ml,p=0.02) after multivariate analysis. Amylin levels did not differ between patients and controls. Both C-reactive protein (beta coefficient 0.54,95% CI 0.16–0.96, p=0.013) and Erythrocyte Sedimentation Rate (beta coef. 0.01,0.00–0.01, p=0.033) showed a positive relationship with HOMA2%B and GIP levels, respectively. The presence of anti-cyclic citrullinated peptide antibody (beta coef. 157 CI 58–256, p=0.002) and the levels of disease activity measured by DAS28 (beta coef. 46,CI 6–87, p=0.026) and CDAI (beta coef 1.27 (0.28–2.26), p=0.012) showed a positive relationship with the levels of DPP-4. Patients with RA showed Pearson correlation coefficient of incretines, DPP-4 with insulin, C peptide and IR lower compared to control group. After the meal test patients with

RA exhibited an AUC of glucose and GIP greater than controls and a slower C-Peptide response time (75 vs. 30 minutes, p=0.029).
Conclusions: Incretins-insulin axis is altered in patients with RA compared to controls.
Disclosure of Interest: None declared
DOI: 10.1136/annrheumdis-2017-eular.5144

SAT0096 MYOCARDIAL FUNCTION IMPROVES IN RHEUMATOID ARTHRITIS PATIENTS TREATED ACTIVELY A MAGNETIC RESONANCE FOLLOW-UP STUDY

R. Koivuniemi[1], A. Kuuliala[2], S. Kivistö[3], M. Holmström[3], M. Leirisalo-Repo[1]. *[1]Rheumatology; [2]Bacteriology and Immunology; [3]Medical Imaging Center, Helsinki University Hospital and University of Helsinki, Helsinki, Finland*

Background: Rheumatoid arthritis (RA) patients are susceptible to development of heart failure (HF). Increased HF risk is not explained by increased prevalence of coronary heart disease (CHD) or traditional cardiovascular (CV) risk factors. Chronic inflammation is suggested to play an important role. In parallel with others (1, 2), we observed RA patients with active disease to have myocardial dysfunction and local myocardial late gadolinium enhancement (LGE) indicative of fibrosis or inflammation on cardiac magnetic resonance (cMR) (3).
Objectives: In our patients (3), we here studied the effects of disease modifying anti-rheumatic drugs (DMARDs) on the myocardium over one-year period.
Methods: Fifty-eight female patients with active RA (<70 years) and 22 fibromyalgia (FM) patients underwent cardiac magnetic resonance (cMR). Two RA groups existed: patients with untreated active early RA (ERA) starting conventional synthetic DMARDs (csDMARDs) or biological DMARDs (bDMARDs) and patients with chronic RA (CRA) who had inadequate response to csDMARDs and were candidates for bDMARDs. Patients with CHD, diabetes and smoking were excluded. CMR was performed to analyze LGE and ventricular function before and after one-year DMARD therapy
Results: Of 30 ERA patients, each started csDMARDs (77% as combination), two started also bDMARD. Of 28 CRA patients, each started bDMARD (one monotherapy).

Table 1. Patient charasteristics at baseline

	RA patients	FM patients	p-value
Age, years; mean ± SD	49±14	54±12	0.112
Rheumatoid factor positivity; n (%)	48 (84)		
Anti-citrullinated peptide antibody positivity; n (%)	51 (90)		
Extra-articular features; n (%)	19 (33)		
Erosions on radiographs; n (%)	26 (47)		
Body mass index, kg/m^2; mean±SD	25±4	27±5	0.012
Mean blood pressure, mmHg; mean±SD	113±17	114±15	0.814
Glycosylated hemoglobin A1C, mmol/mol; mean±SD	5.4±0.3	5.6±0.3	0.037
Low density lipoprotein, mmol/l; mean±SD	3.0±0.8	3.4±0.8	0.025

In RA patients, biventricular systo-diastolic function of the heart was impaired compared to FM (Table 2). Over the study-period, myocardial function improved (Table 2) and DAS28-CRP declined (3.5±1.1 vs 2.3±1.0; p<0.001). Only RA patients had LGE, with no improvement over time (67%).

Table 2. Cardiac magnetic resonance findings in RA and FM patients

RA patients	Baseline mean±SD	Follow-up mean±SD	p-value	FM vs RA patients at baseline	p-value
LV EF%	59±4	59±5	0.477	61±7	0.085
LV ESV, ml/m^2	34±6	33±8	0.449	29±8	0.011
LV EDV, ml/m^2	82±11	81±11	0.645	74±11	0.010
LV TPFR, ms	472±99	445±106	0.035	–	–
RV EF%	59±6	60±6	0.065	61±7	0.314
RV ESV, ml/m^2	34±9	32±8	0.009	29±7	0.043
RV EDV, ml/m^2	81±12	79±11	0.034	73±9	0.006

LV = left ventricle, RV = right ventricle, ESV = end-systolic volume, EDV = end-diastolic volume, EF = ejection fraction, TPFR = time to peak filling rate.

Conclusions: Myocardial function was impaired in RA patients with active RA compared to FM controls, although the latter group had worse classical CV risk factor profile. After one-year DMARD-treatment targeting to remission, myocardial function improved in parallel with decreasing RA activity. Inflammation seems to be deleterious to the myocardium. Tight control of RA activity may improve myocardial function.
References:
[1] Ntusi N, JACC Cardiovasc Imaging 2015.
[2] Kobayashi H, Arthritis Care Res 2016.
[3] Holmström M, Clin Exp Rheumatol 2016.
Acknowledgements: Main funding: The Finnish Medical Foundation.
Disclosure of Interest: None declared
DOI: 10.1136/annrheumdis-2017-eular.4661

SAT0097 FACTORS ASSOCIATED WITH ATHEROSCLEROSIS PROGRESSION IN PATIENTS WITH LOW-ACTIVE RHEUMATOID ARTHRITIS

A. Giollo[1], A. Dalbeni[2], A. Tagetti[2], S. Atanasio[2], G. Orsolini[1], G. Cioffi[3], F. Ognibeni[3], M. Rossini[1], C. Fava[2], O. Viapiana[1]. *[1]Rheumatology Unit, Department of Medicine; [2]General Medicine and Hypertension Unit, Department of Medicine, University of Verona, Verona; [3]Department of Cardiology, Villa Bianca Hospital, Trento, Italy*

Background: Longitudinal studies of the carotid intima-media thickness (IMT) change in RA suggested a role for inflammation in atherosclerosis progression. However, data on well controlled joint disease are scarce since most studies enrolled patients with very high disease activity.
Objectives: To estimate atherosclerosis progression and identify influencing factors in a cohort of longstanding and well controlled RA patients.
Methods: One hundred nine RA patients (females 80%, age 59±12 years, disease duration 15.6±10.6 years, mean Framingham 10-year CV disease risk score 16±12%) without previous cardiovascular (CV) events underwent carotid ultrasound (CUS) examination at baseline and after a mean time of 1.1±0.3 years. Atheromatous plaques and intima-media thickness (IMT) were assessed. Data on CV risk factors, inflammation markers, medications, and RA characteristics were collected.
Results: Overall, we observed a significant increase of IMT (0.03±0.10 mm, p=0.005) and plaques (+ 8%, p=0.035). The IMT progression rate was 0.027 mm/year (95% CI 0.007 - 0.046). Disease activity (DAS28-CRP) remained stable (2.68±1.01 vs 2.79±1.33, p=0.45). Anti-rheumatic, cardiovascular medications and the number of CV risk factors were substantially unchanged. In models of regression analysis sex, age, dyslipidemia, hypertension and use of corticosteroids were independently associated with the increase of IMT, whereas there were no confounding from use of biological therapies, seropositivity or disease duration. Patients with active disease (DAS28-CRP ≥2.6) had a significant increase in IMT (0.04±0.11 mm, p=0.009). Conversely, there was not a significant progression of patients in remission, who had also a lower prevalence of hypertension (40% vs 64%, p=0.027), dyslipidemia (43% vs 58%, p=0.044), and use of corticosteroids (37% vs 63%, p=0.007) and were receiving more frequently methotrexate (60% vs 40%, p=0.027).
Conclusions: In patients with established and controlled RA, the progression of atherosclerosis is mainly driven by traditional CV risk factors than disease activity. In addition, a remission state is associated with a lower prevalence of CV risk factors, which in turn could account for a slower progression of atherosclerosis in these patients. This study provides evidence that even in RA patients who achieve good disease control the treatment of CV risk factors should be optimized.
Disclosure of Interest: None declared
DOI: 10.1136/annrheumdis-2017-eular.3789

SAT0098 THE ASSOCIATION BETWEEN WORK DISABILITY AND MENTAL HEALTH IN RHEUMATOID ARTHRITIS

A. Houssien[1], S. Norton[2], E. Nikiphorou[2], F. Matcham[2], J. Galloway[2]. *[1]Academic Rheumatology Department, King's College London; [2]Academic Rheumatology, KCL, London, United Kingdom*

Background: Rheumatoid arthritis (RA) is characterised by joint inflammation, resulting in functional impairment. Consequently, it has long been recognised that work disability is common in RA. However, despite significant pharmacological advances in disease control, little is known about contemporary impact upon work. Depression has emerged in recent years as a key comorbidity in RA. In the general population, depression is strongly correlated with work disability
Objectives: To establish the extent to which depression associates with work ability in RA in a cross sectional study.
Methods: Our hospital routinely collects data via an electronic screening interface, which incorporates a series of validated questionnaires, which patients complete via an iPad while waiting for their appointment. The dataset is linked to the clinical record. For this study, cross sectional data were extracted on adults with RA. Question 2 of the Work and Social Adjustment Scale ("Because of my [RA] my ability to work is impaired") was used as a measure or work disability (scale 0–8). Mental health status was collected using the Patient Health Questionnaire-2 (PHQ), with a score≥3 considered a positive screen for depression.

Table 1

Characteristic	Whole Cohort N=385	PHQ2 score <3 n=263	PHQ2 score ≥3 n=122	p value
Age, mean (SD)	54 (15)	54 (15)	55 (14)	0.768
Female, n (%)	305 (79)	207 (79)	98 (80)	0.681
Seropositive, n (%)	261 (73)*	175 (72)*	86 (76)*	0.705
Disease duration, mean (SD)	6.6 (8.0)	6.0 (7.0)	8.0 (10.0)	0.118
DAS28, mean (SD)	4.0 (1.7)	3.6 (1.6)	4.7 (1.6)	<0.001
HAQ, mean (SD)	1.3 (0.9)	1.0 (0.8)	1.9 (0.7)	<0.001
Work ability, mean (SD)**	3.1 (2.9)	2.1 (2.4)	5.1 (2.6)	<0.001
Univariate regression				
Beta coefficient (95% CI)		Ref	2.94 (2.40 to 3.50)	<0.001
Multivariate regression***			1.40 (0.84 to 1.96)	<0.001

*Missing data on serostatus in 28 subjects. **Work ability on scale 0–8 from WSAS scale. ***Adjusted for age, gender, disease duration, HAQ and DAS score.