POS0528

SCORES OF CARDIOVASCULAR RISK CALCULATORS AS PREDICTORS OF EARLY ATHEROSCLEROSIS IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Background: Rheumatoid arthritis (RA) is a systemic inflammatory disease leading to significant increase in cardiovascular morbidity and mortality. Development of cardiovascular diseases (CVD) in RA patients is associated with the accumulation of traditional risk factors and immunological disorders. Carotid Artery Doppler Ultrasound (DUS) Exam is the gold standard to identify early atherosclerosis.

Objectives: To evaluate the cardiovascular risk and analyze its relationship with detection of early carotid artery atherosclerotic lesion in patients with rheumatoid arthritis (RA).

Methods: One hundred and nine RA patients (female/male 93/16), aged 45 to 60 without established CVD were included in the study. The median age was 52 [48; 54] years, duration of RA was 120 [36; 204] months, DAS28 was 4,7 [3,5; 5,6] points. 54% (n=59) of patients received methotrexate (median dose 20 [15;27]mg/week), 12% - leflunomide (20mg/day), 12% - sulfasalazine (2000mg/day), 40% - glucocorticoids (median dose 4 [2;8]mg/day), 44% - non-steroidal anti-inflammatory drugs. None of study participants had biologics or statins in their therapeutic regimens at the time of inclusion. CVD risk was calculated with mSCORE, RRS, ASSIGN, QRISK3, ERS-RA scales and results of Carotid Artery DUS imaging in all patients.

Results: Traditional risk factors were highly among RA patients without CVD, including: arterial hypertension - in 73%, dyslipidemia - 68%, overweight - 53%, family history of CVD - 43% and smoking - 39% patients. A combination of three traditional risk factors was found in 60% of patients with RA, and combination of two - in 25%. High risk was found in 5, 5, 14, 6, and 38% of patients according to mSCORE, RRS, ASSIGN, QRISK3, ERS-RA scales, respectively. Carotid atherosclerotic plaques were found in 30% of patients, more often in men (48%) than in women (28%, p=0,049), with similar prevalence regardless RA activity or stage of disease. Positive correlations of carotid intima-media thickness were established with scores of all CVD risk calculators: mSCORE (R = 0,50), RRS (R = 0,40), ASSIGN (R = 0,40), QRISK3 (R = 0,36), ERS-RA (R = 0,26), p < 0,05 in all cases, as well as with age (R = 0,41; p = 0,04), the level of total cholesterol (R = 0,23; p = 0,01), systolic blood pressure (R = 0,66; p = 0,02), diastolic blood pressure (R = 0,33; P = 0,03), erythrocyte sedimentation rate (R = 0,26; p = 0,04), IL-6 levels (R = 0,65; p = 0,01). The sensitivity and specificity of the CVR algorithms in prognostication of atherosclerotic carotid artery lesions were 73 and 67% for mSCORE, 64 and 63% for RRS, 64 and 56% for ASSIGN, 73 and 49% for QRISK3, respectively, p<0.05 in all cases, 67 and 50% for ERS-RA, p=0,06.

Conclusion: RRS, mSCORE, ASSIGN, QRISK 3 calculators equally predicted the presence of carotid atherosclerotic plaques in RA patients. The optimal ratio of specificity and sensitivity is shown for the mSCORE scale. Stratification of CVR in RA patients should include assessment of the carotid intima-media thickness. mSCORE calculation and carotid intima-media thickness were the most informative methods identify CVR assessment in RA patients.

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POS0529

ANTI-TNF AND METHOTREXATE PROTECT AGAINST RHEUMATOID ARTHRITIS ATHEROSCLEROSIS

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Objectives: To analyze the effect of different anti-rheumatic treatments on the carotid intima-media thickness (cIMT) in patients with Rheumatoid Arthritis (RA).

Methods: Controlled cross-sectional observational study of a cohort of patients with RA. 146 patients with RA (ACR/EULAR2010).cIMT was measured by semi-automatic carotid ultrasound. Other variables: atheroma plaques, bilateral plaques, DAS28-VSG, lipid metabolism, apoB, apoA1, apoB/apoA1, uric acid, homocysteine. Biological or conventional synthetic disease-modifying

antirheumatic drug therapy (bDMARDs/csDMARDs), glucocorticoids. Descriptive, bivariate, Spearman's test and multivariate model were constructed to identify factors associated with cIMT.

Results: The baseline characteristics are shown in Table 1. Significant positive correlation was found between cIMT and apoB (r=0.22; p=0.014), apoB/apoA1 (r=0.18; p=0.044), cholesterol (r=0.23; p=0.006), triglycerides (r=0.21, p=0.013), uric acid (r=0.26; p=0.009), age (r=0.65, p>0.001), RF (r=0.16, p=0.05) homocysteine (r=0.5, p<0.001), BMI (r=0.19, p=0.023), CRP (r=0.18, p=0.032) and negative correlation with anti-TNFα treatment time (r=-0.20, p=0.02). Patients receiving bDMARDs alone or combined with csDMARDs had less cIMT than those taking only csDMARDs [median (IQR): 0.54 (0.50-0.63), 0.57 (0.53-0.65) and 0.65 (0.53-0.75); p=0.046]. The factors associated with cIMT were age (β=0.007, p<0.001), anti-tnf-α treatment ever (β=-0.06, p=0.027) and methotrexate treatment ever (β=-0.07, p=0.08).

Table 1. Baseline characteristics

Variables	RA n=146
Epidemiological characteristics and comorbidities	
Age (years), mean (SD)	55.9 (13.1)
Female sex; n (%)	112 (76.7)
Smoker, n (%)	30 (21.6)
Arterial hypertension, n (%)	45 (30.8)
Diabetes mellitus, n (%)	5 (3.4)
Previous Cardiovascular disease, n (%)	10 (14.6)
Hyperlipidemia, n (%)	46 (31.5)
BMI (kg/m ²), median (IQR)	26.8 (23.4-29.7)
Clinical-laboratory characteristics	
Disease duration, years, median (IQR)	6.77 (2.2-14.2)
Erosions, n (%)	53 (36.6)
RF positive, n (%)	119 (81.55)
ACPA positive, n (%)	123 (84.2)
CRP (mg/dl), median (IQR)	4.8 (1.6-11.5)
ESR (mm/h), median (IQR)	12 (6-24)
DAS28 at protocol, median (IQR)	2.8 (2.1-3.7)
HAQ, mean (SD)	0.78 (0.6)
ApoB (mg/dl), mean (SD)	86.8 (21.8)
ApoA1 (mg/dl), mean (SD)	149.8 (32.7)
Cholesterol (mg/dl), mean (SD)	198.7 (37.3)
cLDL (mg/dl), mean (SD)	119.3 (30.3)
cHDL (mg/dl), median (IQR)	56 (47-70)
Triglycerides (mg/dl), median (RIQ)	92 (73-121)
Homocysteine (mg/dl), median (RIQ)	2.08 (1.7-2.8)
cIMT mean (mm), median (IQR)	0.6 (0.53-0.7)
Atherosclerotic plaques, n (%)	51 (34.9)
Bilateral plaques, n (%)	22 (15.1)
Anti-rheumatic treatment	
Synthetic DMARDs ever, n (%)	146 (100)
Methotrexate ever, n (%)	132 (90.4)
Time with methotrexate (years), median (IQR)	4.4 (1.04-9.5)
Leflunomide ever, n (%)	83 (56.8)
Sulfasalazine ever, n (%)	13 (8.9)
Hydroxychloroquine ever, n (%)	99 (67.8)
Biological DMARDs ever, n (%)	76 (52.05)
Anti TNFα ever, n (%)	47 (32.2)
Time with anti-TNFα (years), mean (SD)	1.18 (2.8)
Jak inhibitor ever, n (%)	10 (6.8)
Anti-IL-6 ever, n (%)	28 (19.2)
Rituximab ever, n (%)	15 (10.3)
Glucocorticoids at protocol, n (%)	82 (56.5)
Glucocorticoids dose at protocol (mg), median (IQR)	5 (0-5)

Abbreviations: RF: rheumatoid factor; ACPA: anti-citrullinated peptide antibodies, cIMT: carotid intima media thickness; ApoB: apolipoprotein B, ApoA1: apolipoprotein A1, LDL: low-density lipoprotein; HDL: high-density lipoprotein; DAS28: 28-joint Disease Activity Score; HAQ: Health Assessment Questionnaire; CRP: C-reactive protein; ESR: erythrocyte sedimentation rate; IL-6: interleukin 6; Anti TNF, anti-tumor necrosis factor

Conclusion: biological disease-modifying antirheumatic drug therapy, in particular Anti TNFα, could protect against the development of atherosclerosis in RA

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POS0530

HOW DOES MULTIMORBIDITY IMPACT ON THE DIRECT AND INDIRECT COSTS IN PATIENTS WITH RHEUMATOID ARTHRITIS?

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Background: Comorbidities are prevalent in patients with rheumatoid arthritis (RA) and associated with worse outcomes as well as higher economic burden. Little is known about the impact of multimorbidity on the direct and indirect costs

of RA. Evidence of the incremental scale of these multimorbidity costs will usefully inform RA interventions and policies.

Objectives: The aim of this study was to describe how multimorbidity impacts on the cost-of-illness, including direct and indirect costs, in patients with RA.

Methods: The Scottish Early Rheumatoid Arthritis (SERA) is a registry of patients newly presenting with RA since 2011. It contains data on patient characteristics, clinical outcomes, health-related quality of life, and employment status data. These data were linked to routinely recorded hospital admissions and primary care prescribing data. Direct costs were estimated by applying relevant unit costs to health-care resource use quantities. Indirect cost estimates were obtained from information on employment status and hospital admissions, valued by age and sex specific wages. Two-part models (probit followed by generalized linear model) were used to estimate direct and indirect costs, adjusting for age, gender, and functional disability. The Charlson Comorbidity Index (CCI) score was calculated using patient ICD-10 diagnoses from hospital records. The number of comorbidities was categorized into "RA alone," "single comorbidity" and "multimorbidity (>1 comorbidity)."

Results: Data were available for 1,150 patients, 65.7% were female and a mean age of 57.5±14 years. The majority of patients only had RA (54.1%), followed by a single comorbidity (23.4%) and multimorbidity (22.5%). Annual total costs were significantly higher for patients with multimorbidity (£6,669 95% CI £4,871-£8,466; OR 11.3 95% CI 8.14-15.87) and for patients with a single comorbidity (£2,075 95% CI £1,559-£2,591; OR 3.52 95% CI 2.61-4.79), when compared with RA alone (£590). The excess costs were mainly driven by direct costs (£6,281 versus £1,875 versus £556). Although the difference in indirect costs between patients with multimorbidity and a single comorbidity were not statistically significant (£1,218 versus £914, $p=0.11$), patients with multimorbidity were associated with significantly higher costs than those with RA only (£594, $p<0.01$).

Conclusion: The presence of comorbidity contributes significant excess to both direct and indirect costs among RA patients. In particular, patients with multimorbidity incurred substantially higher direct costs than those with a single comorbidity or RA only.

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POS0531

FACTORS ASSOCIATED WITH BASELINE HYPERTENSION IN EARLY RHEUMATOID ARTHRITIS: DATA FROM A REAL-WORLD LARGE INCIDENT COHORT

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Background: It is not well understood why hypertension (HTN) is so common in rheumatoid arthritis (RA) patients. Reported prevalence of HTN in RA patients ranges from 4-73%.(1)

Objectives: This study explored the prevalence of HTN at time of RA diagnosis and which demographic, behavioural and clinical factors were associated with HTN.

Methods: Data from the Canadian Early Arthritis Cohort (CATCH), a prospective inception cohort of patients with RA <1 year duration, were used to analyze baseline demographic, behavioural and clinical characteristics associated with HTN, which was reported by physicians. Univariate logistic regression models were

created to explore associations with baseline HTN. A multivariate logistic regression model was built based on goodness of fit indicated by likelihood ratio tests. Variables included in the model were age, sex, race, body mass index (BMI), education, smoking, alcohol servings, seropositivity, disease activity and comorbidities.

Results: In total, 2052 subjects were included with mean (±SD) age of 55 (±14) years and symptom duration 5.60(5.47, 5.73) months, 71% of subjects were female and 85% were Caucasian. HTN was reported in 26% of subjects at baseline. Hypertensive subjects were older and more likely to be male. Other factors significantly associated with HTN at baseline were lower education, ever smoking, high BMI, diabetes, hyperlipidemia, worse RA disease activity, longer duration of RA symptoms, being seropositive, as well as the use of NSAIDs and/or corticosteroids (Table 1). In multivariable analysis HTN was associated with older age, overweight and obese BMI, diabetes, and hyperlipidemia. Expression of anti-citrullinated protein antibodies was inversely associated with HTN (Table 1). Other RA disease factors and treatments were not significantly associated with HTN on multivariable analysis.

Table 1. Results of univariate and multivariate logistic regression analyses exploring the association between baseline characteristics and HTN in early RA.

		Univariate Logistic Regression	Multivariable Logistic Regression
	Variable	Crude OR (95% CI)	Adjusted OR (95% CI)
Socio-Demographic	20-39 years old	0.15 (0.07, 0.26)	0.14(0.05, 0.34)
	40-59 years old	Reference	Reference
	60-79 years old	2.81 (2.26, 3.50)	2.26(1.65, 3.11)
	80-99 years old	5.87 (3.36,10.25)	3.80(1.53, 9.41)
	Female	0.55 (0.45, 0.68)	1.10(0.78, 1.54)
Lifestyle/Behavioural	Normal weight (18.5- 24.9kg/m ²)	Reference	Reference
	Overweight (25-29.9 kg/m ²)	2.33(1.74, 3.11)	1.63(1.10, 2.43)
	Obese (30+ kg/m ²)	3.19(2.38, 4.27)	2.84(1.91, 4.23)
	Ever-smoking	1.41(1.15, 1.73)	1.02(0.75, 1.40)
	Post-secondary education	0.58(0.47, 0.71)	0.88(0.65, 1.20)
Clinical Characteristics	Symptom duration	0.99(0.99, 0.99)	1.00(1.00, 1.00)
	DAS-28	1.09(1.09, 1.17)	1.02(0.92, 1.13)
	ACPA+	0.68(0.56, 0.85)	0.64(0.44, 0.92)
	Corticosteroid use pre-baseline	1.37(1.04, 1.81)	Omitted
	NSAID use at baseline	0.68(0.55, 0.84)	Omitted
	Diabetes	5.62(4.09, 7.73)	3.20(1.99, 5.15)
	Hyperlipidemia	4.75(3.74, 6.03)	2.80(1.94, 4.02)
	CVD	15.59(3.35, 72.64)	Omitted

DAS-28; Disease activity score 28, ACPA; Anti-citrullinated protein antibody, CVD; Cardiovascular disease. Pre-baseline is 29 to 365 days before entering the cohort. Baseline is within 28 days before entering the cohort. Omitted variables either failed likelihood ratio test or were collinear. Additional variables tested but found insignificant: race, alcohol servings, depression, RF+, and use of DMARDs.

Conclusion: Approximately 1 in 4 diagnosed with RA had HTN reported by their rheumatologists, which is similar to that of the general population. This suggests that increased risk of HTN in RA patients may develop as RA disease or treatment time progresses. Factors that may be predictive of this excess risk will be explored in further analysis.

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