

Generic and disease-adapted cardiovascular risk scores as predictors of atherosclerosis progression in Systemic Lupus Erythematosus

Stylianos Panopoulos, George C. Drosos, George Konstantonis, Petros P. Sfikakis, and Maria G. Tektonidou

Supplemental Data

Supplementary Table 1. Overview of generic and SLE-adapted cardiovascular risk prediction tools

Risk equation	Population	Outcome	Time period	Variables
SCORE	General population from 11 European countries	Cardiovascular mortality (myocardial infarction, stroke)	10-year risk prediction	Gender; age; smoking (current); systolic BP; TC; LDL-cholesterol.
mSCORE	General population from 11 European countries	Cardiovascular mortality (myocardial infarction, stroke)	10-year risk prediction	SCORE estimate multiplied by a 1.5 factor for RA and other immune inflammatory diseases
FRS	General population, Framingham, Massachusetts, USA; recalibrated for European countries.	Fatal and non-fatal cardiovascular events (myocardial infarction, stroke)	10-year risk prediction	Gender; age; total cholesterol; HDL-cholesterol; systolic BP; smoking (current); DM; antihypertensive treatment.
mFRS	Toronto Lupus Clinic cohort	Fatal and non-fatal coronary artery disease events	10-year risk prediction	FRS estimate multiplied by a 2.0 factor
QRISK3	General population from the QRESEARCH database, UK	Fatal and non-fatal cardiovascular events (myocardial infarction, stroke)	10-year risk prediction	Gender; age; ethnicity; deprivation; systolic BP; body mass index; total cholesterol:HDL cholesterol ratio; smoking (cigarettes/day); family history of premature coronary heart disease; DM; treated hypertension; RA; atrial fibrillation; CKD; systolic BP variability; migraine; corticosteroids; SLE; treatment with atypical antipsychotics; severe mental illness; HIV/AIDs; erectile dysfunction.
PCRE	General population, USA	First fatal or non-fatal atherosclerotic cardiovascular event (myocardial infarction, stroke)	10-year risk prediction	Gender; age; TC; HDL-cholesterol; systolic BP; DM; smoking (current); antihypertensive treatment.
Globorisk	General population, USA, Honolulu, Puerto Rico; recalibrated for >100 countries.	Fatal cardiovascular disease (myocardial infarction, stroke)	10-year risk prediction	Gender; age; smoking (current); TC; DM; systolic BP.

PROCAM	General population, Germany	Fatal and non-fatal cardiovascular events (myocardial infarction, stroke)	10-year risk prediction	Gender; age; LDL cholesterol; HDL cholesterol; systolic BP; smoking (current); triglycerides; DM; family history of premature myocardial infarction.
--------	-----------------------------	---	-------------------------	--

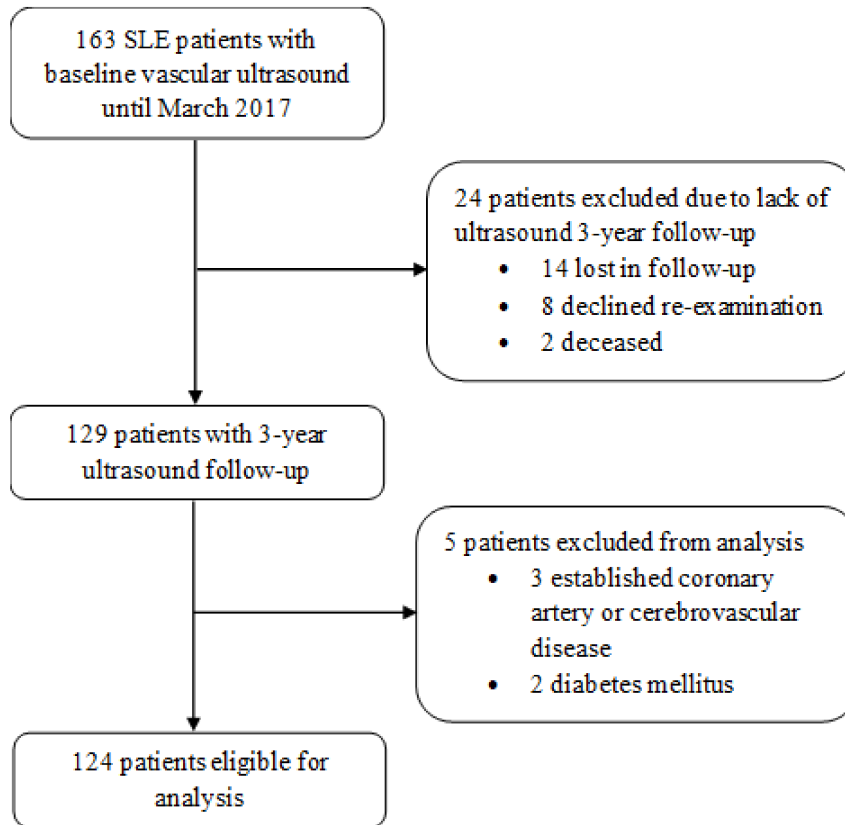
SCORE, Systematic Coronary Risk Evaluation; BP, blood pressure; TC, total cholesterol; LDL, low-density lipoprotein; mSCORE, modified SCORE; RA, rheumatoid arthritis; FRS, Framingham risk score; HDL, high-density lipoprotein; DM, diabetes mellitus; mFRS, modified Framingham risk score; SLE, systemic lupus erythematosus; QRISK3, QRESEARCH risk calculator version 3; CKD, chronic kidney disease; HIV/AIDS, human immunodeficiency virus/acquired immunodeficiency syndrome; PCRE, Pooled Cohort Studies risk equation; PROCAM, Prospective Cardiovascular Müncher Study risk calculator.

Supplementary Table 2. Univariate regression analysis of atherosclerotic plaque progression in 124 patients with systemic lupus erythematosus

Variables	Univariate Analysis	
	OR (95% CI)	P value
Age (per 1 year increase)	1.09 (1.04-1.14)	<0.001
Sex (female)	0.49 (0.14-1.77)	0.276
Disease duration (per 1 year increase)	1.05 (0.99-1.11)	0.095
SLEDAI-2K (per 1 unit increase)	1.01 (0.87-1.16)	0.937
SLICC/ACR-DI (per 1 unit increase)	1.38 (0.94-2.02)	0.098
Antiphospholipid antibody positivity	3.55 (1.41-8.97)	0.007
Lupus Nephritis	0.86 (0.29-2.56)	0.789
Chronic Kidney disease	1.70 (0.41-7.07)	0.469
BMI, kg/m ² (per 1 unit increase)	1.07 (0.99-1.15)	0.061
Smoking	1.32 (0.55-3.19)	0.537
Smoking, pack-years (per 1 pack-year increase)	1.03 (0.99-1.05)	0.062
Hyperlipidemia	1.24 (0.52-2.97)	0.624
Total cholesterol (per 1 unit increase)	1.01 (0.99-1.01)	0.526
LDL (per 1 unit increase)	1.01 (0.99-1.02)	0.679
HDL (per 1 unit increase)	1.01 (0.99-1.04)	0.305
Triglycerides (per 1 unit increase)	1.00 (0.99-1.01)	0.620
Hypertension	1.44 (0.60-3.50)	0.415
Glucocorticoids	2.04 (0.78-5.29)	0.144
Glucocorticoids cumulative dose total*, gr (per 1 gr increase)	1.02 (1.00-1.05)	0.049
Glucocorticoids cumulative dose during follow-up, gr (per 1 gr increase)	1.03 (0.96-1.11)	0.404
Immunosuppressives	1.11 (0.46-2.67)	0.816
Hydroxychloroquine at baseline	0.55 (0.22-1.33)	0.183
Hydroxychloroquine at end of follow-up	0.61 (0.22-1.67)	0.337
Hydroxychloroquine follow-up 75	0.65 (0.24-1.78)	0.404
Hydroxychloroquine follow-up 100	0.93 (0.35-2.47)	0.884
Antiplatelets at baseline	0.88 (0.35-2.22)	0.780
Antiplatelets at end of follow-up	1.44 (0.60-3.50)	0.415
Antiplatelets follow-up 75	1.23 (0.50-3.01)	0.649
Antiplatelets follow-up 100	1.20 (0.48-3.00)	0.696
Statins at baseline	1.15 (0.29-4.51)	0.844
Statins at end of follow-up	2.20 (0.85-5.70)	0.104
Statins follow-up 75	2.20 (0.85-5.70)	0.104
Statins follow-up 100	2.20 (0.85-5.70)	0.104
Antihypertensives at baseline	1.04 (0.42-2.59)	0.928
Antihypertensives drugs at end of follow-up	1.38 (0.57-3.34)	0.474
Antihypertensives drugs follow-up 75	1.42 (0.58-3.48)	0.448
Hypertension drugs follow-up 100	1.26 (0.50-3.15)	0.622
Plaques at baseline	1.94 (0.76-4.98)	0.167

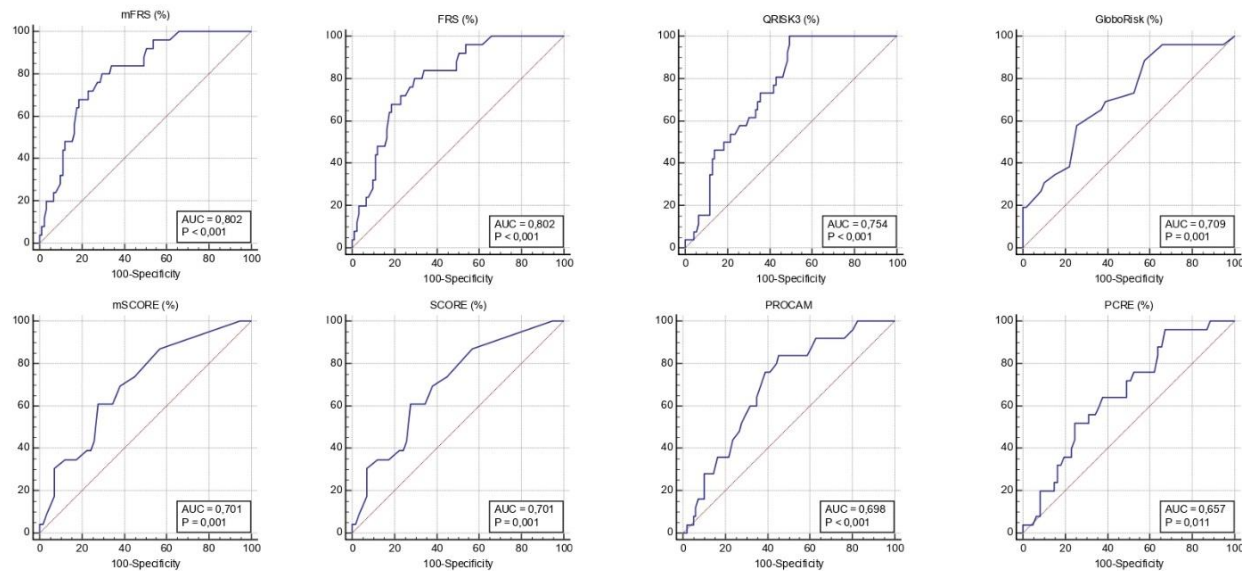
SLEDAI-2K: Systemic Lupus Erythematosus Disease Activity Index 2000; SLICC/ACR DI: Systemic Lupus International Collaborative Clinics/American College of Rheumatology Damage Index; BMI: body mass index; LDL: low density cholesterol; HDL: high density cholesterol; follow-up 75: duration of continuous treatment $\geq 75\%$ of follow-up period; follow-up 100: continuous treatment during the entire follow-up period.

*Glucocorticoids cumulative dose total: dose between glucocorticoids first (ever) administration and the end of follow-up.



Supplementary Figure 1

Flow chart of patients with systemic lupus erythematosus (SLE) eligible for analysis after applying exclusion criteria.



Supplementary Figure 2

Receiver-operating characteristics curve analysis of each cardiovascular risk score for the prediction of the progression of subclinical atherosclerosis in 124 patients with systemic lupus erythematosus.

SCORE: Systematic Coronary Risk Evaluation; mSCORE: modified SCORE; FRS: Framingham Risk Score; mFRS: modified FRS; QRISK3: QRESEARCH risk estimator, version 3; PCRE: Pooled Cohort Risk Equations; PROCAM: Prospective Cardiovascular Munster Study risk calculator.