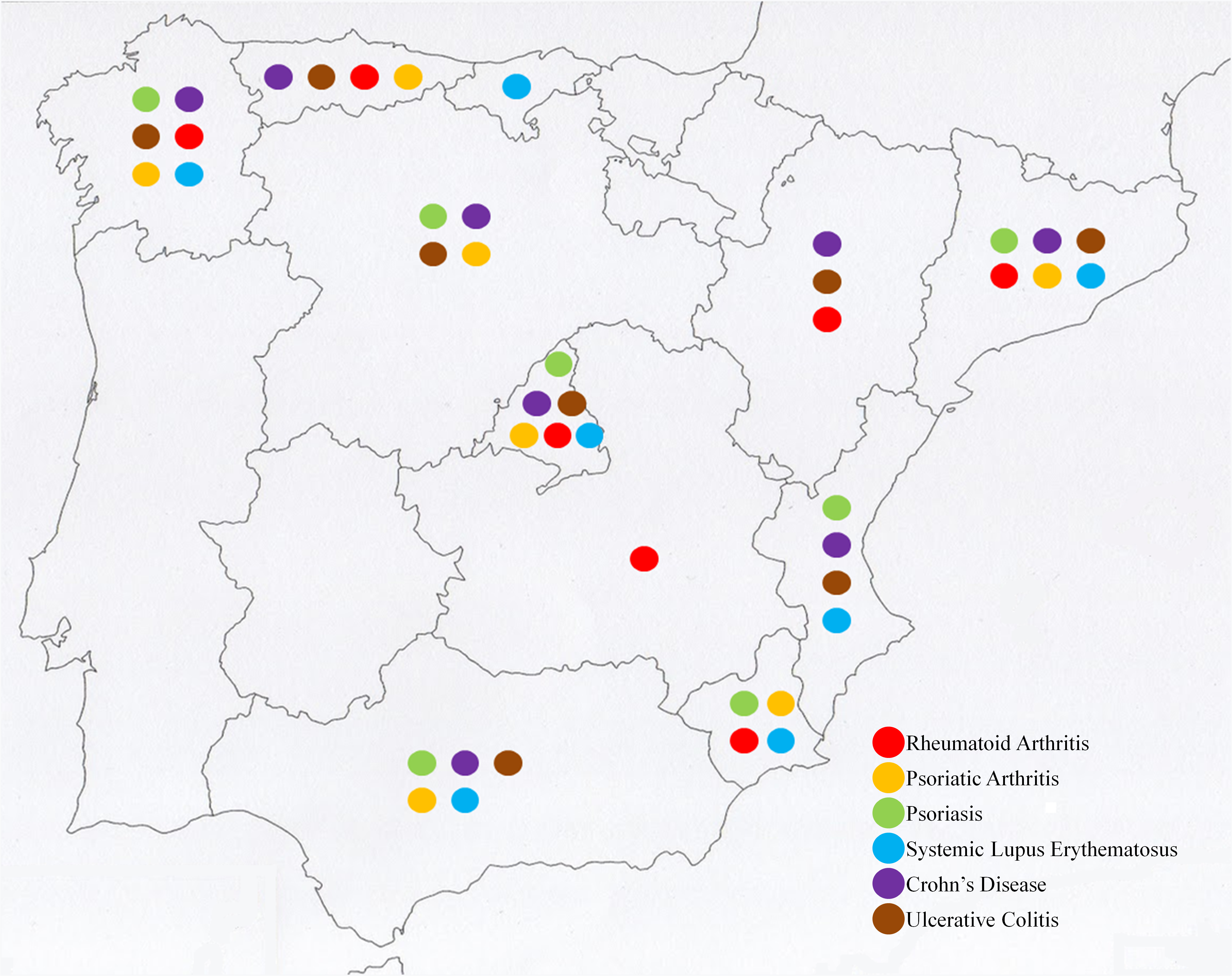
**ccS1 Figure**: Location of the tertiary centers where patients were enrolled**.**



**S1 Table**: Clinical characteristics of the patients included in this study.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Variables** | Rheumatoid arthritis | Psoriatic arthritis | Psoriasis | Systemic lupus erythematosus | Crohn’s disease | Ulcerative colitis |
| Presence of rheumatoid factor | 1842 (85.6) | - | - | - | - | - |
| Presence of anti citrullinated peptide antibodies | 862 (50.4) | - | - | - | - | - |
| Anti citrullinated peptide antibodies levels |  | - | - | - | - | - |
| 0 | 366 (21.4) | - | - | - | - | - |
| 1 - 49 | 484 (28.3) | - | - | - | - | - |
| 50 - 349 | 450 (26.3) | - | - | - | - | - |
| ≥ 350 | 412 (24.1) | - | - | - | - | - |
| Erosive disease | 1925 (89.5) | - | - | - | - | - |
| Subcutaneous nodules | 328 (15.2) | - | - | - | - | - |
| Pulmonary fibrosis | 41 (1.9) | - | - | - | - | - |
| Pleuritis | 25 (1.2) | - | - | - | - | - |
| Pericarditis | 19 (0.9) | - | - | - | - | - |
| Vasculitis | 27 (1.3) | - | - | - | - | - |
| Amyloidosis | 30 (1.4) | - | - | - | - | - |
| Sjogren syndrome | 361 (16.8) | - | - | - | - | - |
| Axial involvement | - | 235 (21.3) | - | - | - | - |
| Moderate/severe cutaneous psoriasis | - | 219 (19.6) | 1.516 (61.0) | - | - | - |
| Presence of psoriatic arthritis | - | - | 370 (15.0) | - | - | - |
| Vitiligo | - | - | - | 4 (0.5) | - | - |
| Family history of autoimmune thyroiditis | - | - | - | 19 (2.5) | - | - |
| Acute psychosis | - | - | - | 21 (2.8) | - | - |
| Seizures | - | - | - | 43 (5.7) | - | - |
| Organic cerebral syndrome | - | - | - | 12 (1.6) | - | - |
| Severe arthritis | - | - | - | 82 (10.8) | - | - |
| Mild arthritis | - | - | - | 499 (65.7) | - | - |
| Jaccoud arthropathy | - | - | - | 31 (4.1) | - | - |
| Pericarditis | - | - | - | 147 (19.3) | - | - |
| Pleuritis | - | - | - | 153 (20.1) | - | - |
| anti-DNA antibodies | - | - | - | 543 (71.5) | - | - |
| anti-Sm antibodies | - | - | - | 148 (19.5) | - | - |
| anti-phospholipids syndrome | - | - | - | 132 (17.4) | - | - |
| Lupic anticoagulant | - | - | - | 110 (19.5) | - | - |
| anti cardiolipine IgG antibodies | - | - | - | 145 (26.9) | - | - |
| anti cardiolipine IgM antibodies | - | - | - | 108 (19.0) | - | - |
| anti-B2GPI IgG antibodies | - | - | - | 67 (12.7) | - | - |
| anti-B2GPI IgM antibodies | - | - | - | 62 (11.7) | - | - |
| False positive test for syphilis | - | - | - | 14 (3.1) | - | - |
| Extraintestinal manifestations | - | - | - | - | 338 (26.2) | 145 (14.9) |

**S2 Table**: Bivariate logistic regression models to analyze the association between demographic and clinical characteristics, and cardiovascular disease in rheumatoid arthritis patients.

|  |  |  |
| --- | --- | --- |
| **Variables** | **OR [95% CI]** | **p** |
| Women | 0.26 [0.17 to 0.40] | <0.001 |
| Age at inclusion in the study | 1.05 [1.03 to 1.07] | <0.001 |
| Elapsed time from IMID onset | 1.04 [1.02 to 1.06] | <0.001 |
| Secondary or higher vs.  Primary/none education | 0.60 [0.36 to 1.01] | 0.056 |
| Arterial Hypertension | 5.51 [3.51 to 8·66] | <0.001 |
| Dyslipidemia | 3.33 [2.17 to 5·11] | <0.001 |
| Type 2 Diabetes | 3.29 [1.93 to 5·60] | <0.001 |
| Obesity | 1.16 [0.67 to 2·00] | 0.60 |
| Current/past Smoker | 2.20 [1.33 to 3.65] | 0.002 |
| Presence of Rheumatoid factor | 0.78 [0.45 to 1.36] | 0.38 |
| Presence of anti citrullinated peptide antibodies | 1.23 [0.75 to 2.00] | 0.42 |
| ≥ 350 vs. < 350 UI/ml of anti citrullinated peptide antibodies | 1.69 [1.01 to 2.83] | 0.047 |
| Erosive disease | 1.23 [0.59 to 2.57] | 0.59 |
| Subcutaneous nodules | 1.95 [1.20 to 3.17] | 0.007 |
| Pulmonary fibrosis | 4.09 [1.67 to 9.98] | 0.002 |
| Pleuritis | 0.94 [0.13 to 7.05] | 0.95 |
| Pericarditis | 6.27 [2.04 to 19.29] | 0.001 |
| Vasculitis | 2.89 [0.86 to 9.79] | 0.088 |
| Amyloidosis | 1.63 [0.38 to 6.96] | 0.51 |
| Sjogren syndrome | 1.33 [0.79 to 2.23] | 0.29 |
| Number of disease-modifying drugs (tertiles): |  |  |
| 3 vs. ≤ 2 disease-modifying drugs | 1.26 [0.75 to 2.11] | 0.38 |
| ≥ 4 vs. ≤ 2 disease-modifying drugs | 1.31 [0.78 to 2.22] | 0.31 |
| Biological therapy | 0.73 [0.47 to 1.12] | 0.15 |

CI: Confidence interval; IMID: immune-mediated inflammatory disease; OR: Odds ratio.

**S3 Table**: Bivariate logistic regression models to analyze the association between demographic and clinical characteristics, and cardiovascular disease in psoriatic arthritis patients.

|  |  |  |
| --- | --- | --- |
| **Variables** | **OR [95% CI]** | **p** |
| Women | 0.06 [0.01 to 0.43] | 0.005 |
| Age at inclusion in the study | 1.07 [1.03 to 1.10] | <0.001 |
| Elapsed time from IMID diagnosis | 1.06 [1.02 to 1.10] | 0.001 |
| Secondary or higher vs.  Primary/none education | 0.52 [0.18 to 1.47] | 0.22 |
| Dyslipidemia | 3.95 [1.70 to 9.20] | 0.001 |
| Type 2 Diabetes | 5.03 [2.03 to 12.46] | <0.001 |
| Obesity | 1.98 [0.76 to 5.17] | 0.16 |
| Current/past Smoker | 1.17 [0.46 to 3.00] | 0.75 |
| Axial involvement | 0.31 [0.07 to 1.34] | 0.12 |
| Moderate/severe cutaneous Psoriasis | 1.08 [0.40 to 2.94] | 0.87 |
| Number of disease-modifying drugs (tertiles): |  |  |
| 1 vs. 0 disease-modifying drugs | 3.79 [0.48 to 30.09] | 0.21 |
| ≥ 2 vs. 0 disease-modifying drugs | 7.38 [0.96 to 56.51] | 0.054 |
| Biological therapy | 1.43 [0.61 to 3.38] | 0.42 |

CI: Confidence interval; IMID: immune-mediated inflammatory disease; OR: Odds ratio.

**S4 Table**: Bivariate logistic regression models to analyze the association between demographic and clinical characteristics, and cardiovascular disease in Psoriasis patients.

|  |  |  |
| --- | --- | --- |
| **Variables** | **OR [95% CI]** | **p** |
| Women | 0.33 [0.20 to 0.54] | <0.001 |
| Age at inclusion in the study | 1.09 [1.07 to 1.11] | <0.001 |
| Elapsed time from IMID onset | 1.04 [1.03 to 1.05] | <0.001 |
| Late vs. early onset of Ps | 3.49 [2.22 to 5.48] | <0.001 |
| Secondary or higher vs. Primary/none education | 0.26 [0.16 to 0.42] | <0.001 |
| Arterial Hypertension | 8.43 [5.46 to 13.01] | <0.001 |
| Dyslipidemia | 8.23 [5.36 to 12.62] | <0.001 |
| Type 2 Diabetes | 5.72 [3.59 to 9.09] | <0.001 |
| Obesity | 1.89 [1.22 to 2.94] | 0.005 |
| Current/past smoker | 1.46 [0.88 to 2.43] | 0.15 |
| Moderate/severe cutaneous disease | 0.86 [0.57 to 1.30] | 0.47 |
| Presence of Psoriatic arthritis | 1.70 [1.03 to 2.80] | 0.037 |
| Number of disease-modifying drugs (tertiles): |  |  |
| ≥ 1 vs. 0 disease-modifying drugs | 0.74 [0.43 to 1.28] | 0.28 |
| Biological therapy | 0.89 [0.52 to 1.53] | 0.68 |

CI: Confidence interval; IMID: immune-mediated inflammatory disease; OR: Odds ratio.

**S5 Table:** Bivariate logistic regression models to analyze the association between demographic and clinical characteristics, and cardiovascular disease among systemic lupus erythematosus patients.

|  |  |  |
| --- | --- | --- |
| **Variables** | **OR [95% CI]** | **p** |
| Women | 0.19 [0.07 to 0.50] | 0.001 |
| Age at inclusion in the study | 1.05 [1.02 to 1.08] | 0.001 |
| Elapsed time from IMID onset | 1.08 [1.03 to 1.14] | 0.001 |
| Secondary or higher vs. Primary/none education | 0.71 [0.31 to 1.61] | 0.42 |
| Arterial Hypertension | 2.88 [1.27 to 6.55] | 0.012 |
| Dyslipidemia | 2.16 [0.88 to 5.31] | 0.095 |
| Type 2 Diabetes | 1.35 [0.17 to 10.41] | 0.78 |
| Obesity | 2.00 [0.77 to 5.21] | 0.15 |
| Current/past smoker | 0.54 [0.22 to 1.35] | 0.19 |
| Vitiligo | 10.62 [1.06 to 106.05] | 0.044 |
| Family history of Autoimmune thyroiditis | 4.52 [0.53 to 38.28] | 0.17 |
| Acute psychosis | 3.43 [0.75 to 15.65] | 0.11 |
| Seizures | 3.57 [1.17 to 10.96] | 0.026 |
| Organic cerebral syndrome | 6.60 [1.36 to 31.92] | 0.019 |
| Severe arthritis | 1.69 [0.56 to 5.06] | 0.35 |
| Mild arthritis | 0.87 [0.37 to 2.01] | 0.74 |
| Jaccoud arthropathy | 5.25 [1.68 to 16.43] | 0.004 |
| Serositis | 3.10 [1.23 to 7.83] | 0.017 |
| Anti-DNA antibodies | 2.04 [0.69 to 6.03] | 0.20 |
| Anti-Sm antibodies | 3.10 [1.35 to 7.12] | 0.008 |
| Antiphospolipid syndrome | 3.58 [1.55 to 8.24] | 0.003 |
| Lupus anticoagulant | 2.31 [0.90 to 5.92] | 0.083 |
| IgG anti Cardiolipins | 1.77 [0.67 to 4.66] | 0.25 |
| IgM anti Cardiolipins | 1.35 [0.48 to 3.78] | 0.56 |
| IgG anti β2 GPI | 2.78 [0.96 to 8.06] | 0.060 |
| IgM anti β2 GPI | 2.23 [0.71 to 6.99] | 0.17 |
| False positive test for syphilis | 4.20 [0.87 to 20.24] | 0.074 |
| Number of disease-modifying drugs (tertiles): |  |  |
| 2 vs. ≤ 1 disease-modifying drugs | 0.42 [0.12 to 1.49] | 0.18 |
| ≥ 3 vs. ≤ 1 disease-modifying drugs | 1.85 [0.76 to 4.48] | 0.17 |

CI: Confidence interval; IMID: immune-mediated inflammatory disease; OR: Odds ratio.

**S6 Table**: Logistic regression models to analyze the association between demographic and clinical characteristics, and cardiovascular disease among ulcerative colitis and Crohn’s disease patients.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Ulcerative colitis** |  | **Crohn’s disease** |  |
| **Variables** | **OR [95% CI]** | **p** | **OR [95% CI]** | **p** |
| Women | 0.11 [0.03 to 0.49] | 0.004 | 0.56 [0.19 to 1.67] | 0.30 |
| Age at inclusion in the study | 1.07 [1.04 to 1.10] | <0.001 | 1.09 [1.06 to 1.14] | <0.001 |
| Elapsed time from IMID onset | 1.04 [0.99 to 1.09] | 0.12 | 1.10 [1.05 to 1.17] | <0.001 |
| Secondary or higher vs.  Primary/none education | 0.32 [0.12 to 0.82] | 0.018 | 0.59 [0.19 to 1.84] | 0.36 |
| Arterial Hypertension | 7.83 [3.32 to 18.46] | <0.001 | 20.79 [7.16 to 61.46] | <0.001 |
| Dyslipidemia | 7.73 [3.24 to 18.45] | <0.001 | 7.80 [2.13 to 28.63] | 0.002 |
| Type 2 Diabetes | 10.61 [3.98 to 28.28] | <0.001 | 12.16 [2.59 to 57.10] | 0.002 |
| Obesity | 2.63 [1.00 to 6.92] | 0.051 | 2.74 [0.75 to 10.04] | 0.13 |
| Current/past Smoker | 2.00 [0.65 to 6.18] | 0.23 | 1.02 [0.28 to 3.79] | 0.98 |
| Extradigestive manifestations | 0.76 [0.17 to 3.35] | 0.72 | 0.25 [0.03 to 1.98] | 0.19 |
| Number of disease-modifying drugs (tertiles): |  |  |  |  |
| ≥ 1 vs. 0 disease-modifying drugs | 0.80 [0.29 to 2.18] | 0.66 | 0.64 [0.22 to 1.85] | 0.41 |
| Biological therapy | 0.94 [0.12 to 7.11] | 0.95 | 0.98 [0.22 to 4.40] | 0.98 |

CI: Confidence interval; IMID: immune-mediated inflammatory disease; OR: Odds ratio.

**S7 Table**:Bivariate and multivariate mixed-effects logistic regression analysis to assess the overall association between demographic and clinical variables and cardiovascular disease.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variables** | **OR [95% CI]** | **p** | **OR [95% CI]a** | **pa** |
| Women | 0.26 [0.20 to 0.35] | <0.001 | 0.32 [0.21 to 0.48] | <0.001 |
| Age at inclusion in the study | 1.07 [1.06 to 1.08] | <0.001 | 1.07 [1.05 to 1.08] | <0.001 |
| Elapsed time from IMID diagnosis to study | 1.04 [1.06 to 1.05] | <0.001 | 1.03 [1.02 to 1.04] | <0.001 |
| Current/past smoker | 1.50 [1.11 to 2.01] | 0.007 | 1.49 [1.00 to 2.21] | 0.052 |
| Dyslipidemia | 5.09 [3.95 to 6.56] | <0.001 | 3.39 [2.46 to 4.66] | <0.001 |
| Type 2 diabetes | 4.81 [3.56 to 6.48] | <0.001 | 2.19 [1.49 to 3.21] | <0.001 |
| Obesity | 1.73 [1.31 to 2.30] | <0.001 | 1.57 [1.12 to 2.21] | 0.009 |
| Secondary or higher vs.  Primary/no education | 0.41 [0.31 to 0.54] | <0.001 | 0.84 [0.59 to 1.19] | 0.32 |
| Number of disease-modifying drugs (tertiles): |  |  |  |  |
| 2nd vs. 1st | 0.91 [0.61 to 1.38] | 0.67 | 0.82 [0.48 to 1.40] | 0.47 |
| 3rd vs. 1st | 1.08 [0.81 to 1.45] | 0.60 | 1.16 [0.79 to 1.70] | 0.46 |
| Biological therapy | 0.84 [0.62 to 1.14] | 0.26 | 1.13 [0.76 to 1.68] | 0.54 |

a Model adjusted for demographic variables, traditional cardiovascular risk factors and educational level. CI: Confidence interval; IMID: immune-mediated inflammatory disease; OR: Odds ratio.

**S8 Table**: Comparison between psoriatic arthritis patient from the psoriatic arthritis cohort and from the psoriasis cohort.

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Psoriatic arthritis cohort** | **Psoriasis cohort** | **p** |
| Women, n (%) | 522 (47.3) | 177 (49.2) | 0.54 |
| Age at inclusion in the study, median (IQR) | 52 (41-63) | 50 (40-60) | 0.019 |
| Moderate/severe cutaneous psoriasis, n (%) | 219 (19.6) | 285 (77.5) | <0.001 |
| Guttate, n (%) | 60 (5.4) | 37 (10.0) | 0.003 |
| Erythrodermic, n (%) | 22 (2.0) | 19 (5.1) | 0.003 |
| Pustular, n (%) | 17 (1.52) | 13 (3.5) | 0.030 |
| Peripheral involvement, n (%) | 1082 (95.7) | 320 (86.5) | <0.001 |
| Axial involvement, n (%) | 248 (22.2) | 109 (29.5) | 0.006 |
| Distal interphalangeal involvement, n (%) | 139 (12.1) | 34 (9.2) | 0.13 |
| Arthritis mutilans, n (%) | 56 (5.4) | 5 (1.4) | 0.001 |
| HLAB27, presence, n (%) | 127 (17.5) | 8 (13.3) | 0.48 |
| Onychopathy, n (%) | 478 (42.5) | 218 (60.1) | <0.001 |
| Cardiovascular disease, n (%) | 24 (2.1) | 21 (5.7) | 0.001 |
| Type 2 diabetes, n (%) | 92 (8.0) | 27 (7.3) | 0.74 |
| Dyslipidemia, n (%) | 157 (13.7) | 71 (19.2) | 0.012 |
| Obesity, n (%) | 250 (24.6) | 112 (31.6) | 0.012 |
| Ever smoker, n (%) | 533 (59.6) | 194 (65.5) | 0.074 |
| Number of disease-modifying drugs, median [IQR] | 1 (1 to 2) | 0 (0 to 1) | <0.001 |
| Patients with biological drugs, n (%) | 299 (26.1) | 126 (34.1) | 0.003 |

CI: Confidence interval; IMID: immune-mediated inflammatory disease; IQR: interquartile rank; OR: Odds ratio.

**S9 Table**: Comparison between the psoriasis cohort, excluding those patients with psoriatic arthritis, with the psoriatic arthritis cohort.

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Psoriatic arthritis cohort** | **Psoriasis cohort** | **p** |
| Women, n (%) | 522 (47.3) | 880 (42.5) | <0.001 |
| Age at inclusion in the study, median [IQR] | 52 (41-63) | 47 (32-59) | <0.001 |
| Moderate/severe cutaneous psoriasis, n (%) | 219 (19.6) | 1231 (58.1) | <0.001 |
| Guttate, n (%) | 60 (5.4) | 211 (9.9) | <0.001 |
| Erythrodermic, n (%) | 22 (2.0) | 77 (3.6) | 0.007 |
| Pustular, n (%) | 17 (1.5) | 78 (3.7) | <0.001 |
| Onychopathy, n (%) | 478 (42.5) | 900 (42.8) | 0.86 |
| Cardiovascular disease, n (%) | 24 (2.1) | 73 (3.4) | 0.027 |
| Type 2 diabetes, n (%) | 92 (8.0) | 176 (8.3) | 0.80 |
| Dyslipidemia, n (%) | 157 (13.7) | 365 (17.2) | <0.001 |
| Obesity, n (%) | 250 (24.6) | 500 (24.8) | 0.88 |
| Ever smoker, n (%) | 533 (59.6) | 1217 (70.4) | <0.001 |
| Number of disease-modifying drugs, median [IQR] | 2 (2-3) | 1 (1-1) | <0.001 |
| Patients with biological drugs, n (%) | 299 (26.1) | 367 (17.3) | <0.001 |

CI: Confidence interval; IMID: immune-mediated inflammatory disease; IQR: interquartile rank; OR: Odds ratio.

**S Discussion and References**

Several studies have been published in the last 20 years, analyzing the role of different immune-mediated inflammatory disease (IMIDs) in the prevalence and incidence of cardiovascular disease (CVD) and traditional cardiovascular risk factors. A comparison cohort of non-IMID subjects was commonly used to assess the relative risk of suffering or developing CVD or different traditional cardiovascular risk factors, adjusting for demographic and clinical variables, including other traditional cardiovascular risk factors. In most studies, the IMID was associated with a higher risk of CVD, regardless the presence of traditional cardiovascular risk factors. At the same time, several traditional cardiovascular risk factors were more prevalent in these IMIDs, compared with the general population. However, fewer studies analyzed which demographic or clinical-related variables contribute to the CV risk in these conditions, analyzed together or separately, and many of those studies did not perform a direct comparison among IMIDs, adjusted for the presence clinical-related variables or traditional cardiovascular risk factors.

In rheumatoid arthritis patients, clinically overt CVD was associated with older age,1–3 male sex,1–4 older age at disease onset,4 longer rheumatoid arthritis duration,5,6the presence of obesity,1type 2 diabetes mellitus,3,4 arterial hypertension,2–4 dyslipidemia,2,4,7 history of smoking,2,3 higher disease activity,3,4,7 the presence of extra-articular disease,4,8 rheumatoid factor,9,10 anti-citrullinated peptide antibodies,10 erosive disease,9 and lower education level.3,6 Moreover, patients with vasculitis or rheumatoid lung disease have a particularly increased risk of cardiovascular death.11 Regarding subclinical CVD, older age,12–16 male sex,13 longer duration of disease,15,17 the presence of traditional cardiovascular risk factors,14,18–21 including history of smoking,13,17 higher disease activity,16–19,22 higher titers of anti-citrullinated peptide antibodies,15,23 and a more extent radiographic damage of joints12,24 have been associated with greater carotid intima-media thickness or presence of coronary artery calcifications. In our cohort, the association of most of the factors or clinical manifestations previously associated with higher CVD risk was replicated.

In psoriatic arthritis patients, longer duration of disease,25 earlier age at diagnosis,25 the presence of arterial hypertension,26 type 2 diabetes mellitus,27 dyslipidemia,26,27 and a more severe skin disease27 have been associated with higher risk of CVD. Regarding subclinical CVD, a significant association has been observed with older age,28,29 longer duration of disease,28,30 the presence of dyslipidemia,29–31 obesity,28 type 2 diabetes mellitus,31 inflammatory markers,28,32 spine involvement,28 and earlier age at disease onset.30 In our cohort similar results were observed, being the main difference the lack of association with severity of the skin disease and the association between spine involvement and a lower risk of CVD.

In psoriasis patients, CVD has been associated with a more severe skin disease,33–38 the presence of associated arthritis,25,34,39 older age,34 and earlier onset of skin disease.34 Again, similar results were observed in our cohort, except for the effect of severity of the skin disease and age at onset.

In systemic lupus erythematosus, clinically over CVD was associated with older age,40–49 male sex,44,49,50 older age at diagnosis,50–52 longer duration of disease,46,47,51 corticosteroid use,44,51,52 the presence of dyslipidemia,43,44,51–53 arterial hypertension,40,43,44,52–55 obesity,52 current smoking,45,46,48 arthritis, psychosis, seizures,45 anti-phospholipids antibodies,40,42,46,48 markers of endothelial damage,42,48 disease activity,43,44,46,48,49 postmenopausal status,51 and lower education.49 Subclinical CVD was associated with older age,56–62 male sex,62 longer duration of disease,58,59,63,64 the presence of dyslipidemia,56,57,61 arterial hypertension,57,60,61 type 2 diabetes mellitus,56 obesity,61,64 corticosteroid use,57,60,61 organ damage,57,63 higher disease activity,59 the absence of anti-sm antibodies,63 and the presence of anti-phospholipids antibodies.60

In inflammatory bowel disease patients, CVD was associated with older age,65,66 the presence of traditional cardiovascular risk factors,67 a shorter disease duration in Crohn’s disease patients,68 and with higher disease activity.67,69

Subclinical CVD was associated with older age,70 and regarding disease activity, contradictory results has been observed.70,71 In our study, older age and arterial hypertension were associated in both Crohn’s disease and ulcerative colitis. Additionally, disease duration showed no association with cardiovascular risk.

1. Arts EEA, Fransen J, den Broeder AA, Popa CD, van Riel PLCM. The effect of disease duration and disease activity on the risk of cardiovascular disease in rheumatoid arthritis patients. *Ann Rheum Dis*. 2014. doi:10.1136/annrheumdis-2013-204531.

2. Naranjo A, Sokka T, Descalzo MA, et al. Cardiovascular disease in patients with rheumatoid arthritis: results from the QUEST-RA study. *Arthritis Res Ther*. 2008;10(2):R30. doi:10.1186/ar2383.

3. Wolfe F, Michaud K. The risk of myocardial infarction and pharmacologic and nonpharmacologic myocardial infarction predictors in rheumatoid arthritis: a cohort and nested case-control analysis. *Arthritis Rheum*. 2008;58(9):2612-2621. doi:10.1002/art.23811.

4. Innala L, Möller B, Ljung L, et al. Cardiovascular events in early RA are a result of inflammatory burden and traditional risk factors: a five year prospective study. *Arthritis Res Ther*. 2011;13(4):R131. doi:10.1186/ar3442.

5. Masuda H, Miyazaki T, Shimada K, et al. Disease duration and severity impacts on long-term cardiovascular events in Japanese patients with rheumatoid arthritis. *J Cardiol*. 2014. doi:10.1016/j.jjcc.2014.02.018.

6. Amaya-Amaya J, Sarmiento-Monroy JC, Mantilla R-D, Pineda-Tamayo R, Rojas-Villarraga A, Anaya J-M. Novel risk factors for cardiovascular disease in rheumatoid arthritis. *Immunol Res*. 2013;56(2-3):267-286. doi:10.1007/s12026-013-8398-7.

7. Zhang J, Chen L, Delzell E, et al. The association between inflammatory markers, serum lipids and the risk of cardiovascular events in patients with rheumatoid arthritis. *Ann Rheum Dis*. 2014;73(7):1301-1308. doi:10.1136/annrheumdis-2013-204715.

8. Turesson C, McClelland RL, Christianson TJH, Matteson EL. Severe extra-articular disease manifestations are associated with an increased risk of first ever cardiovascular events in patients with rheumatoid arthritis. *Ann Rheum Dis*. 2007;66(1):70-75. doi:10.1136/ard.2006.052506.

9. Van Halm VP, Nurmohamed MT, Twisk JWR, Dijkmans BAC, Voskuyl AE. Disease-modifying antirheumatic drugs are associated with a reduced risk for cardiovascular disease in patients with rheumatoid arthritis: a case control study. *Arthritis Res Ther*. 2006;8(5):R151. doi:10.1186/ar2045.

10. Ajeganova S, Andersson MLE, Frostegård J, Hafström I. Disease factors in early rheumatoid arthritis are associated with differential risks for cardiovascular events and mortality depending on age at onset: a 10-year observational cohort study. *J Rheumatol*. 2013;40(12):1958-1966. doi:10.3899/jrheum.130365.

11. Maradit-Kremers H, Nicola PJ, Crowson CS, Ballman K V, Gabriel SE. Cardiovascular death in rheumatoid arthritis: a population-based study. *Arthritis Rheum*. 2005;52(3):722-732. doi:10.1002/art.20878.

12. Paccou J, Renard C, Liabeuf S, et al. Coronary and abdominal aorta calcification in rheumatoid arthritis: relationships with traditional cardiovascular risk factors, disease characteristics, and concomitant treatments. *J Rheumatol*. 2014;41(11):2137-2144. doi:10.3899/jrheum.140239.

13. Zampeli E, Protogerou A, Stamatelopoulos K, et al. Predictors of new atherosclerotic carotid plaque development in patients with rheumatoid arthritis: a longitudinal study. *Arthritis Res Ther*. 2012;14(2):R44. doi:10.1186/ar3757.

14. Chung CP, Giles JT, Kronmal RA, et al. Progression of coronary artery atherosclerosis in rheumatoid arthritis: comparison with participants from the Multi-Ethnic Study of Atherosclerosis. *Arthritis Res Ther*. 2013;15(5):R134. doi:10.1186/ar4314.

15. Arnab B, Biswadip G, Arindam P, Shyamash M, Anirban G, Rajan P. Anti-CCP antibody in patients with established rheumatoid arthritis: Does it predict adverse cardiovascular profile? *J Cardiovasc Dis Res*. 2013;4(2):102-106. doi:10.1016/j.jcdr.2012.09.003.

16. Karpouzas GA, Malpeso J, Choi T-Y, Li D, Munoz S, Budoff MJ. Prevalence, extent and composition of coronary plaque in patients with rheumatoid arthritis without symptoms or prior diagnosis of coronary artery disease. *Ann Rheum Dis*. 2014;73(10):1797-1804. doi:10.1136/annrheumdis-2013-203617.

17. Chung CP, Oeser A, Raggi P, et al. Increased coronary-artery atherosclerosis in rheumatoid arthritis: relationship to disease duration and cardiovascular risk factors. *Arthritis Rheum*. 2005;52(10):3045-3053. doi:10.1002/art.21288.

18. Im CH, Kim NR, Kang JW, et al. Inflammatory burden interacts with conventional cardiovascular risk factors for carotid plaque formation in rheumatoid arthritis. *Rheumatology (Oxford)*. 2014. doi:10.1093/rheumatology/keu376.

19. Del Rincón I, Polak JF, O’Leary DH, et al. Systemic inflammation and cardiovascular risk factors predict rapid progression of atherosclerosis in rheumatoid arthritis. *Ann Rheum Dis*. 2014. doi:10.1136/annrheumdis-2013-205058.

20. Sandoo A, Kitas GD, Carroll D, Veldhuijzen van Zanten JJCS. The role of inflammation and cardiovascular disease risk on microvascular and macrovascular endothelial function in patients with rheumatoid arthritis: a cross-sectional and longitudinal study. *Arthritis Res Ther*. 2012;14(3):R117. doi:10.1186/ar3847.

21. Sandoo A, Chanchlani N, Hodson J, Smith JP, Douglas KM, Kitas GD. Classical cardiovascular disease risk factors associate with vascular function and morphology in rheumatoid arthritis: a six-year prospective study. *Arthritis Res Ther*. 2013;15(6):R203. doi:10.1186/ar4396.

22. Midtbø H, Gerdts E, Kvien TK, et al. Disease activity and left ventricular structure in patients with rheumatoid arthritis. *Rheumatology (Oxford)*. 2014. doi:10.1093/rheumatology/keu368.

23. Barbarroja N, Pérez-Sanchez C, Ruiz-Limon P, et al. Anticyclic Citrullinated Protein Antibodies Are Implicated in the Development of Cardiovascular Disease in Rheumatoid Arthritis. *Arterioscler Thromb Vasc Biol*. 2014. doi:10.1161/ATVBAHA.114.304475.

24. Dessein PH, Joffe BI, Veller MG, et al. Traditional and nontraditional cardiovascular risk factors are associated with atherosclerosis in rheumatoid arthritis. *J Rheumatol*. 2005;32(3):435-442.

25. Li W-Q, Han J-L, Manson JE, et al. Psoriasis and risk of nonfatal cardiovascular disease in U.S. women: a cohort study. *Br J Dermatol*. 2012;166(4):811-818. doi:10.1111/j.1365-2133.2011.10774.x.

26. Jamnitski A, Visman IM, Peters MJL, Boers M, Dijkmans BAC, Nurmohamed MT. Prevalence of cardiovascular diseases in psoriatic arthritis resembles that of rheumatoid arthritis. *Ann Rheum Dis*. 2011;70(5):875-876. doi:10.1136/ard.2010.136499.

27. Gladman DD, Ang M, Su L, Tom BDM, Schentag CT, Farewell VT. Cardiovascular morbidity in psoriatic arthritis. *Ann Rheum Dis*. 2009;68(7):1131-1135. doi:10.1136/ard.2008.094839.

28. Kimhi O, Caspi D, Bornstein NM, et al. Prevalence and risk factors of atherosclerosis in patients with psoriatic arthritis. *Semin Arthritis Rheum*. 2007;36(4):203-209. doi:10.1016/j.semarthrit.2006.09.001.

29. Eder L, Zisman D, Barzilai M, et al. Subclinical atherosclerosis in psoriatic arthritis: a case-control study. *J Rheumatol*. 2008;35(5):877-882.

30. Gonzalez-Juanatey C, Llorca J, Amigo-Diaz E, Dierssen T, Martin J, Gonzalez-Gay MA. High prevalence of subclinical atherosclerosis in psoriatic arthritis patients without clinically evident cardiovascular disease or classic atherosclerosis risk factors. *Arthritis Rheum*. 2007;57(6):1074-1080. doi:10.1002/art.22884.

31. Tam L-S, Shang Q, Li EK, et al. Subclinical carotid atherosclerosis in patients with psoriatic arthritis. *Arthritis Rheum*. 2008;59(9):1322-1331. doi:10.1002/art.24014.

32. Gonzalez-Juanatey C, Llorca J, Miranda-Filloy JA, et al. Endothelial dysfunction in psoriatic arthritis patients without clinically evident cardiovascular disease or classic atherosclerosis risk factors. *Arthritis Rheum*. 2007;57(2):287-293. doi:10.1002/art.22530.

33. Maradit-Kremers H, Icen M, Ernste FC, Dierkhising RA, McEvoy MT. Disease severity and therapy as predictors of cardiovascular risk in psoriasis: a population-based cohort study. *J Eur Acad Dermatol Venereol*. 2012;26(3):336-343. doi:10.1111/j.1468-3083.2011.04071.x.

34. Ahlehoff O, Gislason GH, Charlot M, et al. Psoriasis is associated with clinically significant cardiovascular risk: a Danish nationwide cohort study. *J Intern Med*. 2011;270(2):147-157. doi:10.1111/j.1365-2796.2010.02310.x.

35. Brauchli YB, Jick SS, Miret M, Meier CR. Psoriasis and risk of incident myocardial infarction, stroke or transient ischaemic attack: an inception cohort study with a nested case-control analysis. *Br J Dermatol*. 2009;160(5):1048-1056. doi:10.1111/j.1365-2133.2008.09020.x.

36. Xiao J, Chen L-H, Tu Y-T, Deng X-H, Tao J. Prevalence of myocardial infarction in patients with psoriasis in central China. *J Eur Acad Dermatol Venereol*. 2009;23(11):1311-1315. doi:10.1111/j.1468-3083.2009.03318.x.

37. Gelfand JM, Dommasch ED, Shin DB, et al. The risk of stroke in patients with psoriasis. *J Invest Dermatol*. 2009;129(10):2411-2418. doi:10.1038/jid.2009.112.

38. Armstrong AW, Schupp C, Bebo B. Psoriasis comorbidities: results from the National Psoriasis Foundation surveys 2003 to 2011. *Dermatology*. 2012;225(2):121-126. doi:10.1159/000342180.

39. Chin Y-Y, Yu H-S, Li W-C, et al. Arthritis as an important determinant for psoriatic patients to develop severe vascular events in Taiwan: a nation-wide study. *J Eur Acad Dermatol Venereol*. 2013;27(10):1262-1268. doi:10.1111/j.1468-3083.2012.04706.x.

40. Bengtsson C, Ohman M-L, Nived O, Rantapää Dahlqvist S. Cardiovascular event in systemic lupus erythematosus in northern Sweden: incidence and predictors in a 7-year follow-up study. *Lupus*. 2012;21(4):452-459. doi:10.1177/0961203311425524.

41. Schoenfeld SR, Kasturi S, Costenbader KH. The epidemiology of atherosclerotic cardiovascular disease among patients with SLE: a systematic review. *Semin Arthritis Rheum*. 2013;43(1):77-95. doi:10.1016/j.semarthrit.2012.12.002.

42. Gustafsson J, Gunnarsson I, Börjesson O, et al. Predictors of the first cardiovascular event in patients with systemic lupus erythematosus - a prospective cohort study. *Arthritis Res Ther*. 2009;11(6):R186. doi:10.1186/ar2878.

43. Touma Z, Gladman DD, Ibañez D, Urowitz MB. Ability of non-fasting and fasting triglycerides to predict coronary artery disease in lupus patients. *Rheumatology (Oxford)*. 2012;51(3):528-534. doi:10.1093/rheumatology/ker339.

44. Nikpour M, Urowitz MB, Ibanez D, Harvey PJ, Gladman DD. Importance of cumulative exposure to elevated cholesterol and blood pressure in development of atherosclerotic coronary artery disease in systemic lupus erythematosus: a prospective proof-of-concept cohort study. *Arthritis Res Ther*. 2011;13(5):R156. doi:10.1186/ar3473.

45. Bertoli AM, Vilá LM, Alarcón GS, et al. Factors associated with arterial vascular events in PROFILE: a Multiethnic Lupus Cohort. *Lupus*. 2009;18(11):958-965. doi:10.1177/0961203309104862.

46. Toloza SMA, Uribe AG, McGwin G, et al. Systemic lupus erythematosus in a multiethnic US cohort (LUMINA). XXIII. Baseline predictors of vascular events. *Arthritis Rheum*. 2004;50(12):3947-3957. doi:10.1002/art.20622.

47. Goldberg RJ, Urowitz MB, Ibañez D, Nikpour M, Gladman DD. Risk factors for development of coronary artery disease in women with systemic lupus erythematosus. *J Rheumatol*. 2009;36(11):2454-2461. doi:10.3899/jrheum.090011.

48. Gustafsson JT, Simard JF, Gunnarsson I, et al. Risk factors for cardiovascular mortality in patients with systemic lupus erythematosus, a prospective cohort study. *Arthritis Res Ther*. 2012;14(2):R46. doi:10.1186/ar3759.

49. Pons-Estel GJ, González LA, Zhang J, et al. Predictors of cardiovascular damage in patients with systemic lupus erythematosus: data from LUMINA (LXVIII), a multiethnic US cohort. *Rheumatology (Oxford)*. 2009;48(7):817-822. doi:10.1093/rheumatology/kep102.

50. Urowitz MB, Gladman D, Ibañez D, et al. Atherosclerotic vascular events in a multinational inception cohort of systemic lupus erythematosus. *Arthritis Care Res (Hoboken)*. 2010;62(6):881-887. doi:10.1002/acr.20122.

51. Manzi S, Meilahn EN, Rairie JE, et al. Age-specific incidence rates of myocardial infarction and angina in women with systemic lupus erythematosus: comparison with the Framingham Study. *Am J Epidemiol*. 1997;145(5):408-415.

52. Petri M, Perez-Gutthann S, Spence D, Hochberg MC. Risk factors for coronary artery disease in patients with systemic lupus erythematosus. *Am J Med*. 1992;93(5):513-519.

53. Mikdashi J, Handwerger B, Langenberg P, Miller M, Kittner S. Baseline disease activity, hyperlipidemia, and hypertension are predictive factors for ischemic stroke and stroke severity in systemic lupus erythematosus. *Stroke*. 2007;38(2):281-285. doi:10.1161/01.STR.0000254476.05620.14.

54. Bessant R, Duncan R, Ambler G, et al. Prevalence of conventional and lupus-specific risk factors for cardiovascular disease in patients with systemic lupus erythematosus: A case-control study. *Arthritis Rheum*. 2006;55(6):892-899. doi:10.1002/art.22343.

55. Haque S, Gordon C, Isenberg D, et al. Risk factors for clinical coronary heart disease in systemic lupus erythematosus: the lupus and atherosclerosis evaluation of risk (LASER) study. *J Rheumatol*. 2010;37(2):322-329. doi:10.3899/jrheum.090306.

56. Scalzi L V, Bhatt S, Gilkeson RC, Shaffer ML. The relationship between race, cigarette smoking and carotid intimal medial thickness in systemic lupus erythematosus. *Lupus*. 2009;18(14):1289-1297. doi:10.1177/0961203309345781.

57. Manzi S, Selzer F, Sutton-Tyrrell K, et al. Prevalence and risk factors of carotid plaque in women with systemic lupus erythematosus. *Arthritis Rheum*. 1999;42(1):51-60. doi:10.1002/1529-0131(199901)42:1<51::AID-ANR7>3.0.CO;2-D.

58. Von Feldt JM, Scalzi L V, Cucchiara AJ, et al. Homocysteine levels and disease duration independently correlate with coronary artery calcification in patients with systemic lupus erythematosus. *Arthritis Rheum*. 2006;54(7):2220-2227. doi:10.1002/art.21967.

59. Romero-Díaz J, Vargas-Vóracková F, Kimura-Hayama E, et al. Systemic lupus erythematosus risk factors for coronary artery calcifications. *Rheumatology (Oxford)*. 2012;51(1):110-119. doi:10.1093/rheumatology/ker307.

60. Doria A, Shoenfeld Y, Wu R, et al. Risk factors for subclinical atherosclerosis in a prospective cohort of patients with systemic lupus erythematosus. *Ann Rheum Dis*. 2003;62(11):1071-1077.

61. McMahon M, Grossman J, Skaggs B, et al. Dysfunctional proinflammatory high-density lipoproteins confer increased risk of atherosclerosis in women with systemic lupus erythematosus. *Arthritis Rheum*. 2009;60(8):2428-2437. doi:10.1002/art.24677.

62. Asanuma Y, Oeser A, Shintani AK, et al. Premature coronary-artery atherosclerosis in systemic lupus erythematosus. *N Engl J Med*. 2003;349(25):2407-2415. doi:10.1056/NEJMoa035611.

63. Roman MJ, Shanker B-A, Davis A, et al. Prevalence and correlates of accelerated atherosclerosis in systemic lupus erythematosus. *N Engl J Med*. 2003;349(25):2399-2406. doi:10.1056/NEJMoa035471.

64. Norby GE, Günther A, Mjøen G, et al. Prevalence and risk factors for coronary artery calcification following kidney transplantation for systemic lupus erythematosus. *Rheumatology (Oxford)*. 2011;50(9):1659-1664. doi:10.1093/rheumatology/ker186.

65. Bernstein CN, Wajda A, Blanchard JF. The incidence of arterial thromboembolic diseases in inflammatory bowel disease: a population-based study. *Clin Gastroenterol Hepatol*. 2008;6(1):41-45. doi:10.1016/j.cgh.2007.09.016.

66. Ha C, Magowan S, Accortt NA, Chen J, Stone CD. Risk of arterial thrombotic events in inflammatory bowel disease. *Am J Gastroenterol*. 2009;104(6):1445-1451. doi:10.1038/ajg.2009.81.

67. Kristensen SL, Ahlehoff O, Lindhardsen J, et al. Disease activity in inflammatory bowel disease is associated with increased risk of myocardial infarction, stroke and cardiovascular death--a Danish nationwide cohort study. *PLoS One*. 2013;8(2):1-9. doi:10.1371/journal.pone.0056944.

68. Osterman MT, Yang Y-X, Brensinger C, Forde KA, Lichtenstein GR, Lewis JD. No increased risk of myocardial infarction among patients with ulcerative colitis or Crohn’s disease. *Clin Gastroenterol Hepatol*. 2011;9(10):875-880. doi:10.1016/j.cgh.2011.06.032.

69. Rungoe C, Basit S, Ranthe MF, Wohlfahrt J, Langholz E, Jess T. Risk of ischaemic heart disease in patients with inflammatory bowel disease: a nationwide Danish cohort study. *Gut*. 2013;62(5):689-694. doi:10.1136/gutjnl-2012-303285.

70. Kayahan H, Sari I, Cullu N, et al. Evaluation of early atherosclerosis in patients with inflammatory bowel disease. *Dig Dis Sci*. 2012;57(8):2137-2143. doi:10.1007/s10620-012-2148-x.

71. Roifman I, Sun YC, Fedwick JP, et al. Evidence of endothelial dysfunction in patients with inflammatory bowel disease. *Clin Gastroenterol Hepatol*. 2009;7(2):175-182. doi:10.1016/j.cgh.2008.10.021.