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|  | **RA (n = 219)** | **Female (n = 143)** | **Male (n = 76)** | **p** |
| **Characteristics of the groups** | | | | |
| Sex – female (%, n) | 65.29%, 143 |  |  |  |
| Age (years, SD) | 57.59 (12.11) | 57.4 (12.31) | 57.96 (11.81) | 0.74 |
| Body mass index (kg/m3, IQR) | 26.89  (23.54 – 30.84) | 26.54 (22.88 – 31.47) | 27.84 (25.47 – 30.58) | 0.14 |
| Waist circumference (cm, SD) | 92.18 (14.78) | 88.27 (14.85) | 100 (11.58) | < 0.001 |
| SBP (mmHg, IQR) | 135 (120 – 150) | 133 (120 – 146.5) | 137.5 (124.5 – 155) | 0.06 |
| DBP (mmHg, IQR) | 80 (72 – 89) | 80 (71.50 – 87) | 82.50 (75 – 90) | 0.03 |
| LDL cholesterol  (mg/dL, IQR) | 114 (99 – 134.5) | 114 (95.5 – 134.5) | 115 (100.8 – 134.2) | 0.49 |
| HDL cholesterol  (mg/dL, IQR) | 66 (53 – 76) | 69 (61 – 80) | 54 (43 – 66) | <0.001 |
| Tryglycerides (mg/dL, IQR) | 93 (69 – 128) | 88 (65 – 126.5) | 95 (74 – 128.5) | 0.31 |
| Glucose (mg/dL, IQR) | 89 (82 – 98.5) | 89 (81.50 – 97) | 92 (83 – 101.25) | 0.14 |
| Current smoker (%, n) | 27%, 59 | 27.27%, 39 | 26.31%, 20 | 1 |
| Hypertension (%, n) | 57.99%, 127 | 51.74%, 74 | 69.74%, 53 | 0.02 |
| Diabetes mellitus (%, n) | 11.41%, 25 | 11.11%, 16 | 11.84%, 9 | 1 |
| Dyslipidaemia (%, n) | 40.63%, 89 | 39.86%, 57 | 42.10%, 32 | 0.86 |
| **Disease features** | | | | |
| Disease duration (years, IQR) | 7 (2.50 - 13) | 8 (3 – 13.50) | 6 (2 – 11) | 0.09 |
| DAS28-ESR (median, IQR) | 3.48 (2.67 – 4.37) | 3.59 (2.82 – 4.69) | 3.02 (2.45 – 3.76) | < 0.001 |
| DAS28-CRP (median, IQR) | 2.21 (1.38 – 3.10) | 2.43 (1.64 – 3.28) | 1.69 (1.20 – 2.68) | <0.001 |
| CDAI (median, IQR) | 7.20 (2.90 – 13.80) | 8.80 (4.20 – 16.35) | 4.70 (1.55 – 9.68) | <0.001 |
| HAQ (median, IQR) | 0.38 (0 – 0.88) | 0.50 (0.13 – 0.88) | 0 (0 – 0.375) | < 0.001 |
| Rheumatoid factor + (%, n) | 75.79%, 166 | 74.13%, 106 | 78.94%, 60 | 0.53 |
| Anti-CCP + (%, n) | 73.97%, 162 | 74.12%, 106 | 73.68%, 56 | 1 |
| Erosions (%, n) | 55.25%, 121 | 57.34%, 82 | 51.31%, 39 | 0.48 |
| ESR (mm/h, IQR) | 31 (19 – 50) | 31 (19 – 53) | 28.50 (19.75 – 47.25) | 0.25 |
| CRP (mg/dL, IQR) | 0.5 (0.2 – 0.95) | 0.4 (0.2 -0.9) | 0.5 (0.2 – 1) | 0.28 |
| Fibrinogen (mg/dL, SD) | 444.1 (95.11) | 440 (95.56) | 459.5 (96.12) | 0.30 |
| **Treatments (%, n)** | | | | |
| DMARDsc | 73.97%, 162 | 62.57%, 102 | 78.94%, 60 | 0.29 |
| Biological agent | 21%, 46 | 23.77%, 34 | 15.79%, 12 | 0.23 |
| NSAIDs | 58.44%, 128 | 58.74%, 84 | 57.89%, 44 | 1 |
| Corticosteroids  (mean dose: 3.11 mg/day) | 52.51%, 115 | 53.15%, 76 | 51.31%, 39 | 0.91 |

**Supplementary Table 1.** Description of the general characteristics, the disease features and the treatments of the overall RA cohort and stratified by sex.

n=number of individuals, SBP=systolic blood pressure, DBP=diastolic blood pressure, HAQ=health assessment questionnaire index, anti-CCP= anti-citrullinated cyclic peptide, ESR=erythrocyte sedimentation rate, CRP=C-reactive protein, DAS28=disease activity score, CDAI=clinical disease activity index, DMARDsc=conventional disease-modifying antirheumatic drugs, NSAIDs=non-steroidal anti-inflammatory drugs, p=p value

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|  | **Patients with metabolic disorders (n = 82)** | **Female (n = 58)** | **Male (n = 24)** | **p** |
| **Characteristics of the groups** | | | | |
| Sex – female (%, n) | 58, 70.73% |  |  |  |
| Age (years, SD) | 61.50 (11.89) | 64.47 (12.37) | 58.62 (9.64) | 0.01 |
| Body mass index (kg/m3, IQR) | 26.56 (23.34 – 29.69) | 26.59 (23.16 – 30.20) | 26.53 (24.76 – 28.47) | 0.87 |
| Waist circumference (cm, SD) | 95.54 (13.92) | 94 (85 – 101.75) | 96.50 (92.50 – 100) | 0.20 |
| SBP (mmHg, IQR) | 135 (123 – 149.8) | 136.5 (122.2 – 149.8) | 134.5 (123 – 148.5) | 0.97 |
| DBP (mmHg, IQR) | 80 (10.32) | 80 (75 – 85) | 83.50 (78 – 93) | 0.04 |
| LDL cholesterol  (mg/dL, IQR) | 123 (107 – 139) | 120.9 (33.28) | 131.7 (24.86) | 0.13 |
| HDL cholesterol  (mg/dL, IQR) | 62 (49.5 – 75) | 66 (53 – 76) | 56.50 (42.75 – 71.75) | 0.07 |
| Tryglycerides (mg/dL, IQR) | 93.5 (75 – 141.5) | 97.50 (75.25 – 148) | 93 (69 – 129.2) | 0.79 |
| Glucose (mg/dL, IQR) | 94.50 (90 – 102) | 93.50 (87.25 – 102.75) | 95.50 (92.75 – 99.75) | 0.39 |
| Current smoker (%, n) | 8, 9.75% | 6, 10.34% | 2, 8.33% | 1 |
| Hypertension (%, n) | 50, 60.97% | 36, 62.07 | 14, 58.33% | 0.89 |
| Diabetes mellitus (%, n) | 5, 6.09% | 4, 68.96% | 1, 4.17% | 0.96 |
| Dyslipidaemia (%, n) | 52, 65% | 35, 60.03% | 18, 70.08% | 0.59 |
| ESR (mm/h, IQR) | 16 (9 – 26.5) | 22 (12 – 29.50) | 9.50 (5.75 – 15) | < 0.001 |
| CRP (mg/dL, IQR) | 0.12 (0.07 – 0.25) | 0.13 (0.08 – 0.27) | 0.12 (0.06 – 0.19) | 0.30 |
| Fibrinogen (mg/dL, SD) | 345 (71.88) | 345 8300 – 408.5) | 306 (272 – 359) | 0.01 |
|  | **Controls (n = 64)** | **Female (n = 50)** | **Male (n = 14)** | **p** |
| **Characteristics of the groups** | | | | |
| Sex – female (%, n) | 50, 78.13% |  |  |  |
| Age (years, SD) | 51.23 (9.12) | 51.82 (8.91) | 49.14 (9.87) | 0.27 |
| Body mass index (kg/m3, IQR) | 24.61 (3.39) | 24.33 (3.58) | 25.59 (2.48) | 0.11 |
| Waist circumference (cm, SD) | 86.28 (10.31) | 84.26 (10.23) | 93.50 (6.95) | 0.004 |
| SBP (mmHg, IQR) | 120 (110 – 130) | 120 (110 – 130) | 126.5 (120 – 135.2) | 0.19 |
| DBP (mmHg, IQR) | 72.34 (9.69) | 71.66 (9.35) | 74.79 (10.86) | 0.43 |
| LDL cholesterol  (mg/dL, IQR) | 114.4 (22.12) | 112.5 (21.35) | 121.1 (24.23) | 0.14 |
| HDL cholesterol  (mg/dL, IQR) | 69.22 (14.89) | 71.70 (13.74) | 60.36 (15.94) | 0.008 |
| Tryglycerides (mg/dL, IQR) | 76 (57 – 93.25) | 76 (57 – 88.75) | 78.50 (71.50 – 98.50) | 0.42 |
| Glucose (mg/dL, IQR) | 90.75 (8.38) | 90.78 (7.95) | 90.64 (10.09) | 0.87 |
| Current smoker (%, n) | 10, 15.63% | 8, 16% | 2, 14.29% | 1 |
| Hypertension (%, n) | 7, 10.94% | 4, 8.33% | 3, 21.42% | 0.35 |
| Diabetes mellitus (%, n) | 0, 0% | 0, 0% | 0, 0% | 1 |
| Dyslipidaemia (%, n) | 0, 0% | 0, 0% | 0, 0% | 1 |
| ESR (mm/h, IQR) | 9.50 (5 – 14.25) | 12 (6.25 – 16.75) | 5.35 (2.25 – 7.50) | <0.001 |
| CRP (mg/dL, IQR) | 0.20 (0.06 - 0.20) | 0.19 (0.05 – 0.18) | 0.21 (0.15 – 0.20) | 0.007 |
| Fibrinogen (mg/dL, SD) | 304.5 (281 – 332.8) | 316.3 (281 – 335.2) | 296 (275.8 – 322.2) | 0.49 |

**Supplementary Table 2.** Description of the general characteristics of the patients with metabolic disorders and control subjects, of the overall cohorts and stratified by sex.

n=number of individuals, SBP=systolic blood pressure, DBP=diastolic blood pressure, ESR=erythrocyte sedimentation rate, CRP=C-reactive protein

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| **MEN RA PATIENTS (n = 76)** | | | | | |
|  | **β** | **p** | **R2** | **∆R2** | **AIC** |
| **DAS28-ESR** |  |  |  |  |  |
| Basal Model |  |  | 12.72 |  | 235.25 |
| Area GlycB | 0.25 | 0.04 | 17.81 | 5.09 | 232.68 |
| H/W GlycA | 0.33 | 0.01 | 20.83 | 8.11 | 229.83 |
| H/W GlycB | 0.26 | 0.04 | 17.90 | 5.18 | 232.60 |
| **ESR** |  |  |  |  |  |
| Basal Model |  |  | 12.44 |  | 689.26 |
| Area GlycB | 8.76 | <0.001 | 27.81 | 15.37 | 676.59 |
| H/W GlycA | 8.88 | <0.001 | 27.66 | 15.22 | 676.75 |
| H/W GlycB | 8.69 | <0.001 | 27.57 | 15.13 | 676.84 |
| **CRP** |  |  |  |  |  |
| Basal Model |  |  | 5.58 |  | 215.82 |
| Area GlycB | 0.31 | 0.004 | 16.15 | 10.57 | 208.80 |
| H/W GlycA | 0.30 | 0.007 | 15.31 | 9.73 | 209.56 |
| H/W GlycB | 0.31 | 0.005 | 16.07 | 10.49 | 208.88 |
| **Fibrinogen** |  |  |  |  |  |
| Basal Model |  |  | 10.86 |  | 915.90 |
| Area GlycA | 28.36 | 0.01 | 18.60 | 7.74 | 911.04 |
| Area GlycB | 43.31 | <0.001 | 30.25 | 19.39 | 899.27 |
| H/W GlycA | 42.79 | <0.001 | 29.08 | 18.22 | 900.53 |
| H/W GlycB | 43.38 | <0.001 | 30.30 | 19.44 | 899.21 |
| **WOMEN RA PATIENTS (n = 143)** | | | | | |
|  | **β** | **p** | **R2** | **∆R2** | **AIC** |
| **DAS28-ESR** |  |  |  |  |  |
| Basal Model |  |  | 8.17 |  | 490.80 |
| Area GlycB | 0.35 | 0.002 | 14.42 | 6.25 | 482.71 |
| H/W GlycA | 0.33 | 0.003 | 13.77 | 5.60 | 483.79 |
| H/W GlycB | 0.35 | 0.002 | 14.72 | 6.55 | 482.21 |
| **DAS28-CRP** |  |  |  |  |  |
| Basal Model |  |  | 9.51 |  | 406.52 |
| Area GlycB | 0.18 | 0.04 | 12.31 | 2.8 | 404.03 |
| H/W GlycA | 0.20 | 0.02 | 13.28 | 3.77 | 402.43 |
| H/W GlycB | 0.18 | 0.03 | 12.55 | 3.04 | 403.63 |
| **ESR** |  |  |  |  |  |
| Basal Model |  |  | 9.61 |  | 1344.52 |
| Area GlycB | 7.52 | <0.001 | 16.90 | 7.26 | 1334.48 |
| H/W GlycA | 5.76 | 0.01 | 13.91 | 4.30 | 1339.54 |
| H/W GlycB | 7.61 | <0.001 | 17.10 | 7.49 | 1334.14 |
| **CRP** |  |  |  |  |  |
| Basal Model |  |  | 10.40 |  | 352.36 |
| Area GlycB | 0.21 | 0.002 | 16.44 | 6.04 | 344.37 |
| H/W GlycA | 0.24 | <0.001 | 17.79 | 7.39 | 342.05 |
| H/W GlycB | 0.22 | 0.002 | 16.58 | 6.18 | 344.15 |
| **Fibrinogen** |  |  |  |  |  |
| Basal Model |  |  | 6.02 |  | 1713.04 |
| Area GlycB | 26.25 | 0.001 | 13.04 | 7.02 | 1703.94 |
| H/W GlycA | 24.75 | 0.002 | 12.30 | 6.28 | 1705.15 |
| H/W GlycB | 26.38 | 0.001 | 13.13 | 7.11 | 1703.79 |
| **CDAI** |  |  |  |  |  |
| Basal Model |  |  | 8.36 |  | 408.33 |
| Area GlycB | 0.19 | 0.03 | 11.68 | 3.32 | 405.05 |
| H/W GlycA | 0.22 | 0.01 | 12.66 | 4.30 | 403.45 |
| HW GlycB | 0.19 | 0.02 | 11.77 | 3.41 | 404.90 |
| **CONTROL WOMEN (n = 50)** | | | | | |
|  | **β** | **p** | **R2** | **∆R2** | **AIC** |
| **Fibrinogen** |  |  |  |  |  |
| Basal Model |  |  | 8.53 |  |  |
| Area GlycB | 0.45 | 0.001 | 27.3 | 18.77 | 134.94 |
| H/W GlycA | 0.39 | 0.004 | 23.16 | 14.63 | 137.71 |
| H/W GlycB | 0.42 | 0.002 | 25.17 | 16.64 | 136.39 |

**Supplementary Table 3:** Study of the associations between the different inflammatory parameters and the glycoprotein parameters analysed by NMR stratified by sex. Multivariate lineal models, adjusted for age, sex and BMI were used. Models with RA patients were also adjusted for RA treatment.

DAS28 = disease activity score 28; ESR = erythrocyte sedimentation rate; CRP = C reactive protein; CDAI = clinical disease activity index

β = beta coefficient; p = p-value, AIC = Akaike information criteria.

Diagrama, Dibujo de ingeniería

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**Supplementary figure 1:** Study of the associations between the different miRNAs and the glycoprotein parameters analysed by NMR stratified by sex. Multivariate lineal models, adjusted for age, sex and BMI were used. Models with RA patients were also adjusted for RA treatment.

β = beta coefficient; p = p-value, AIC = Akaike information criteria.