(70%). Results show no significant relationship between EULAR moderate response or EULAR good response and the presence of comorbidity. Lower HAQ, lower baseline DAS28 and seronegativity contribute towards good treatment response. The limitations of this study include gaps in clinical records, absence of patient reported questionnaires, and small size of database.

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AB0304 SERUM LEVELS OF SCLEROSTIN AND DICKKOPF-1, AND THEIR CORRELATION WITH BONE MINERAL DENSITY AND BONE MARKERS IN RHEUMATOID ARTHRITIS

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Background: Sclerostin (SOST) and dickkopf-1 (DKK1) are involved in the development of primary osteoporosis. Although to date, it is controverted does exist about if serum levels of these molecules may reflex adequately a subgroup of patients with decrement of Bone Mineral Density (BMD) being useful as clinical biomarkers. Some non-conclusive observations made in postmenopausal osteoporosis have shown abnormalities in serum levels. To date, there is a lack of information about if these serum molecules are associated with a decrease of BMD in RA. This information is relevant for to know if the measurement of these serum molecules could be useful in the clinical care to identify a subgroup of patients with low BMD.

Objectives: To evaluate if serum levels of SOST and DKK1 correlate with bone mineral density and other bone markers in RA.

Methods: In this Cross-sectional study, we included 115 women with RA >40 years old. All patients were assessed for clinical characteristics disease activity (DAS28) and functioning (HAQ-Di). BMD was measured in lumbar spine, hip and forearm using DXA. According to their results, osteoporosis was identified if the BMD in a patient had a T-score with a decrement of ≤ -2.5 standard deviation (SD). According to their results we classified these patients in two groups: a) low BMD (T-score ≤ -1 SD on lumbar spine or total hip) and b) normal BMD (T-score > -1 SD). Serum SOST, DKK1, including serum Receptor Activator of NF- κ B Ligand (sRANKL) and osteoprotegerin (OPG) were quantified by ELISA. We compared serum levels between the groups using Student t-tests. For comparisons between proportions we performed Chi-square test (or Fisher exact test if required). Correlations between serum levels of SOST, DKK1, with BMD, clinical variables, sRANKL and OPG we performed Pearson correlation tests.

Results: From the 115 women with RA, 58 patients had low BMD (50.4%), from them 44 patients (38.3%) had osteoporosis. Patients in the group with low BMD had higher age (63 ± 8 vs 53 ± 9 , $p < 0.0001$), DAS28 (4.1 ± 1.5 vs 3.3 ± 1.4 , $p = 0.011$), and HAQ-Di score (0.69 ± 0.53 vs 0.36 ± 0.47 , $p = 0.001$) compared with normal BMD; whereas lower serum levels of sclerostin was observed in the low BMD group (128.5 ± 75.0 vs 178.2 ± 103.3 , $p = 0.004$). SOST levels were correlated with BMD in lumbar spine ($r = 0.393$, $p < 0.0001$), hip ($r = 0.388$, $p < 0.0001$) and forearm ($r = 0.319$, $p = 0.001$). sRANKL serum levels had a negative correlation with BMD in hip ($r = -0.17$, $p = 0.03$). No correlations were observed between serum DKK1 and OPG with BMD in hip or lumbar spine.

Conclusions: These results indicate that SOST, and RANKL are biomarkers may associated with abnormal BMD in RA. Further long-term follow-up studies should evaluate if high levels of these serum biomarkers could be useful as tests to predict the future development of osteoporotic fractures.

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AB0305 FACTORS CONSIDERED BY RHEUMATOLOGISTS TO DECIDE TREATMENT DURING RHEUMATOID ARTHRITIS PATIENT'S FOLLOW-UP

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Background: Disease activity (DA) is the most important factor in the treatment decision during rheumatoid arthritis (RA) patient's follow-up. In routine clinical

practice, it is recommended to regularly evaluate DA and musculoskeletal ultrasound has been suggested to add value to establish the level of DA. Nevertheless, the final treatment proposal also requires considering additional factors. In a previous clinical study performed in the setting of an early arthritis clinic, we found that in 20% of the clinical scenarios evaluated, the German ultrasound score of 7 joints (GUS-7) (1) findings impacted the rheumatologist's treatment proposal; the impact was more frequent among the trainee in rheumatology (TR) than among the senior rheumatologist (SR).

Objectives: To determine and rate, which among the following factors were determinant to recommend a treatment in the same population of RA patients above described: the clinical assessment, the GUS-7, comorbidities, treatment-related adverse events, DMARDs costs/availability, patient's preference and DMARD maximum dose. We also compared if factors differed between both physicians.

Methods: Eighty-seven consecutive and randomly selected RA outpatients were invited to participate; 2 patients denied and 85 patients underwent 170 assessments (85 each by the SR and the TR); at first, both physicians (blinded to each other) performed a clinical evaluation that included DAS28 scoring and recommended a RA-treatment. Then, patients underwent GUS-7 by a blinded (to clinical evaluations) rheumatologist. In the final step, the TR and the SR integrated the US findings to their previous evaluation and reviewed their prescription; also, both physicians recorded and rated on a standardized format which of the factors above described were determinant in the final treatment proposal. Patients signed informed consent and were instructed about the process. Only the SR met each patient for the final recommendation. Descriptive statistics was used.

Results: Patients were primarily middle-aged female (91.4%) and had (mean $\pm$ SD) follow-up of 7.5 ± 3.9 years. The majority of them were in DAS28-remission (72%). Clinical assessment (DAS28) was rated as determinant in the totality of the clinical scenarios (100%), followed by GUS-7 in 84.7%, DMARD maximum dose in 41.2%, comorbidities in 23.5%, DMARD cost/availability in 21.2%, treatment-related adverse events in 20% and patient's preference in 14.1% of them. The SR and the TR differed in their selection: GUS-7 and treatment-related adverse events were more frequently considered determinant for the TR (45.9% vs. 38.8%, $p = 0.01$ and 12.9% vs. 7.1%, $p = 0.08$), meanwhile the opposite figure was true for DMARD cost/availability (4.7% vs. 16.5%, $p \leq 0.001$) and DMARDs maximum doses (17.1% vs. 24.1%, $p = 0.08$).

Conclusions: in a real clinical setting, DA assessed by DAS28 and by musculoskeletal ultrasound were the most important factors to determine the treatment of RA outpatients; additional factors were considered and differently rated by TR and SR.

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AB0306 CAPLAN'S SYNDROME, CADMIUM AND CHINA CLAY: COULD OCCUPATIONAL KAOLIN INHALATION ENHANCE CADMIUM EXPOSURE TO EXPLAIN THE SIXTY YEAR CONUNDRUM OF CAPLAN'S SYNDROME FIRST REPORTED IN COAL MINERS?

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Background: Caplan's syndrome was first described in the coal miners of South Wales (UK). The specific cause for rheumatoid pulmonary nodules associated with coal dust exposure remains unknown. Coal dust exposure alone does not appear to explain Caplan's syndrome as almost all of these men were also smokers. Cigarette smoke is the most important environmental cause of cadmium exposure. We describe Caplan's syndrome in an ex-smoking kaolin worker associated with a significantly raised urinary cadmium level.

Objectives: A 65 year old Cornish kaolin worker and ex-smoker of 20 pack years with life limiting nodular erosive rheumatoid arthritis (RA), developed extra-articular manifestations including pulmonary nodules suggestive of Caplan's syndrome. We review the literature on kaolin, with respect to inhalation and mechanism of action for heavy metal adsorption and nodular disease development.

Methods: Pubmed searches were undertaken using the keywords "kaolinosis", "kaolin", "cadmium", "nodules", "adsorption", "coal". First pass mid-stream urine was analysed for cadmium using inductively coupled plasma-mass spectrometry (ICP-MS).¹

Results: Urinary cadmium was significantly raised at $0.66 \mu\text{mol/mol}$ creatinine (non-occupationally exposed UK male median $0.17 \mu\text{mol/mol}$ creatinine¹), 20 years post-industrial exposure and 35 years post-smoking cessation. Contemporary serology levels demonstrated a rheumatoid factor of 481.7 iu/ml (0–10 normal range) and an anti-cyclic citrullinated peptide of $>500 \text{ u/ml}$ (0–17 normal range). CT scan of the chest demonstrated multiple pulmonary nodules consistent with Caplan's syndrome.

The prevalence of Caplan's syndrome in kaolin workers is the highest of any occupation ever reported.² Elevated cadmium levels of $11.2\text{--}15.9 \text{ mg/kg}$ have been observed in kaolin,³ fifty-fold higher than those reported in coal.⁴ Coal contains variable amounts of clays and minerals such as kaolinite. Cadmium content in coal is strongly associated with levels of kaolinite contamination.⁴ Cadmium

nanoparticles have been observed to cause lung parenchyma inflammation and granuloma formation in an animal model.⁵

Conclusions: Kaolinite mineral capacity for adsorption of heavy metals, in particular cadmium, could explain the scale and pattern of Caplan's syndrome incidence seen in Welsh coal miners and Cornish kaolin workers, and further explains the interactive risk seen in sequential dust and cigarette smoke exposure.

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AB0307 DIFFERENTIAL ASSOCIATION OF AGE AND DISEASE ACTIVITY WITH CAROTID INTIMA-MEDIA THICKNESS IN MEN AND WOMEN WITH RHEUMATOID ARTHRITIS

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Background: Rheumatoid arthritis (RA) is the most common chronic inflammatory condition and is characterized by an increase risk in cardiovascular (CV) disease. Carotid intima-media thickness (cIMT) is a surrogate marker of CV disease and many studies have evaluated the relationship between cIMT and RA disease activity with contradictory results.

Objectives: To evaluate in RA patients the association between both cIMT and carotid plaque presence and clinical RA features and analytical measurements.

Methods: We selected 214 RA patients according to the American College of Rheumatology criteria. Conventional clinical evaluation and analytical measurements were performed, including a standard lipid profile. We used My Lab 50 X-Vision sonograph to measure cIMT and atherosclerotic plaque presence

Results: No differences between men and women regarding age, body mass index, glycaemia, LDL-C and TG were observed. However, men had a significantly higher waist circumference, systolic and diastolic BP and lower levels of HDLc. On the other hand, women had significantly higher values of DAS28 (3.7 vs 2.99), HAQ, and VSG with no differences in other inflammatory variables (rheumatoid factor, ACPA, CRP or fibrinogen). Moreover, 74% of patients had pathological cIMT without gender differences and 43% had plaque presence in the carotid artery with a significant higher percentage in men (57%) than women (36%). Overall, men had significantly higher cIMT (0.678 vs 0.627 mm) but when disease activity (DAS28) was considered, we observed that such difference was due to patients that were in remission or in low activity. Men and women with moderate and high disease activity had no statistical differences in cIMT. Furthermore, across women cIMT was significantly higher in those with high disease activity compared with remission. This effect was not observed in men. Multivariate linear regression with cIMT showed a significant interaction between age and gender, so that the effect of age on cIMT was significantly more pronounced in men than in women.

Conclusions: We have described that in our RA cohort, disease activity measured with DAS28 and age are differentially associated with cIMT in men and women. Our results could explain the contradictory results published in the literature and it can be justified by a higher incidence of RA in women and by the hormonal-genetic status.

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AB0308 DISEASE ACTIVITY, GRIP STRENGTHS AND HAND DEXTERITY IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Background: Rheumatoid arthritis (RA) is a chronic inflammatory disease affecting hand joints, and leading impairment in hand functions. To date many scientific studies assessed the disease activity of patients with RA, but little attention has been carried out to assess hand functions, and dexterity (1–2).

Objectives: The purpose of this study was to determine the clinical relevance of the Quick Disabilities of Arm, Shoulder and Hand (QuickDASH), hand dexterity with the Purdue Pegboard Test (PPT), and grip and pinch strengths of RA patients.

Methods: Eighty-two women with a diagnosis of RA according to the 2010 American College of Rheumatology/the European League Against Rheumatism (ACR/EULAR) criterion were recruited to the study. The disease activity scores were determined by using Disease activity score-28 (DAS-28). Grip strengths were measured with a Jamar dynamometer, and pinch strengths were measured by pinchmeter. Hand functions were evaluated with the PPT, and functional outcomes were assessed with the QuickDASH questionnaire.

Results: The mean age of the study group was 49.27±10.69 years. Average values of DAS-28, the QuickDASH values were found to be 4.22±1.28, 38.33±19.78, consecutively. High correlation was observed between DAS-28 and the QuickDASH values ($p<0.001$). The mean grip strengths were significantly correlated with the QuickDASH and DAS-28 values ($p<0.01$) (Table 1). The mean lateral pinch strengths were correlated significantly with DAS-28 and the QuickDASH scores ($p<0.001$). DAS-28 was correlated with PPT performance just on the dominant hand ($p<0.05$). The QuickDASH values were not correlated with all PPT performances ($p>0.05$). Grip strengths were positively correlated with the PPT performances ($p<0.05$).

Table 1. Showing the correlation coefficients of DAS 28 and QuickDASH scores between other parameters

	Correlation coefficients (r)	
	DAS 28	QuickDASH
QuickDASH	0.616***	
Grip strength (dominant hand)	-0.412***	-0.409***
Grip strength (nondominant hand)	-0.329**	-0.404***
Lateral pinch strength (dominant hand)	-0.320***	-0.327***
Lateral pinch strength (nondominant hand)	-0.276*	-0.310**
Palmar pinch strength (dominant hand)	-0.215	-0.157
Palmar pinch strength (nondominant hand)	-0.190	-0.165
Tip pinch strength (dominant hand)	-0.248*	-0.237*
Tip pinch strength (nondominant hand)	-0.227*	-0.201
Dexterity (dominant hand)	-0.277*	-0.033
Dexterity (nondominant hand)	-0.128	-0.098
Dexterity (both hands)	0.004	0.059
Dexterity (assembly)	-0.084	0.047

Spearman correlation analysis used for all parameters. * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

Conclusions: In conclusion, we determined that grip strengths were significantly related to disability and disease activity in RA patients in our study. The clinical significance of QuickDASH is high, and the questionnaire can be used effectively.

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AB0309 LIPID-LOWERING INTERVENTION OF A PREVENTIVE CARDIO-RHEUMA CLINIC IN MEXICAN MESTIZO PATIENTS WITH RHEUMATOID ARTHRITIS

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Background: Patients with rheumatoid arthritis (RA) have a significantly increased risk for cardiovascular (CV) morbidity and mortality when compared to general population (1). Preventive cardio-rheuma clinics have been created in recent years and proven to be effective to manage CV risk in patients with inflammatory joint diseases around the world (2).

Objectives: To evaluate the need for lipid-lowering intervention in Mexican mestizo patients with RA.

Methods: We initiated a preventive cardio-rheuma clinic for appropriate CV disease prevention in patients with RA in our population. A complete evaluation and CV risk stratification was performed to our patients, including blood tests and ultrasound examination of both carotid arteries. Each patient was classified to lifestyle changes only, a lifestyle intervention plus lipid-lowering treatment, or to have a low risk with no need for intervention, in accordance to the 2012 European Guidelines on cardiovascular disease prevention in clinical practice and the 2016 ESC/EAS Guidelines for the Management of Dyslipidemias.

Results: A total of 100 patients were evaluated, patient characteristics and intervention group distribution are shown in Table 1. Among these patients, 49 were found not to need any lipid-lowering intervention. The remaining 51 were classified into lifestyle change (n=18, 35.3%) or lipid-lowering drug regimens (n=33, 64.7%). A significant difference between intervention groups was only found regarding age ($p<0.001$). A multiple regression analysis was performed to predict the kind of intervention needed from age, disease duration, disease