in 12 out of 84 wrists without CTS (14.3%). In idiopathic CTS, PD signal was found in 15 out of 24 wrists (62.5%).

Conclusion: US allowed a detailed identification of the pathological findings at carpal tunnel in both RA and idiopathic CTS patients. When CTS was diagnosed, different US patterns were distinguished being median nerve less frequently enlarged and synovitis more frequently detected in RA patients. Finally, a positive association was found between the presence of intra-neural PD signal and clinical diagnosis of CTS independently of the diagnosis of RA.

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AB1182 THE CORRELATION BETWEEN THE ULTRASOUND-DETECTED SYNOVITIS OF SMALL JOINTS AND THE DISEASE ACTIVITY IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Background: In patients with rheumatoid arthritis (RA), small joints, especially metacarpophalangeal (MCP), and interphalangeal (PIP) joints are frequently affected. Ultrasound (US) is a sensitive method for detecting joint inflammation in patients with RA. So far, what degree does the synovitis of every small joint contribute to the disease activity in RA was not clear.

Objectives: The purpose of the present study was to compare the correlation between the ultrasound-detected synovitis of small joints and the disease activity in RA.

Methods: 211 RA patients with DAS28-ESR >2.6 were included in this study. Thirty joints, including bilateral metacarpophalangeal (MCP) 1-5, proximal interphalangeal (PIP) 1-5 and metatarsophalangeal (MTP) 1-5 joints, were evaluated by ultrasound scan in all patients. Disease activity was assessed by DAS28-ESR, DAS28-CRP, CDAI, SDAI. Synovitis was detected by using semi-quantitative scoring systems (0-3) for grey scale (GS) and power Doppler (PD). All correlations among US variables and clinical variables were assessed using Spearman's rank correlation test.

Results: Their median age was 51.82 years, median disease duration was 60 months, with 84.3% females. The mean (SD) DAS28-ESR and DAS28-CRP were 4.59±1.51 and 4.18±1.39, respectively. The whole GS scores of MCPs (MCP1-5 joints) showed highest correlation with the disease activity ($r=0.403-0.452$, $p<0.01$), including DAS28-ESR, DAS28-CRP, CDAI and SDAI, followed by PIPs ($r=0.318-0.331$, $p<0.01$) and MTPs ($r=0.277-0.301$, $p<0.01$). Similarly, the whole PD scores of MCPs also showed highest correlation with the disease activity ($r=0.332-0.396$, $p<0.01$), followed by PIPs ($r=0.211-0.242$, $p<0.01$), and then the least MTPs ($r=0.198-0.222$, $p<0.01$). In individual joint, GS score showed better correlation with disease activity than PD score. In 30 joints, MCP3 joint exhibited the highest correlation between GS score and DAS28-ESR ($r=0.411$, $p<0.01$), DAS28-CRP ($r=0.459$, $p<0.01$), SDAI ($r=0.444$, $p<0.01$). MCP2 joint exhibited the highest correlation between GS score and CDAI ($r=0.421$, $p<0.01$). While MCP5 joint exhibited the highest correlation between PD score and DAS28-ESR ($r=0.353$, $p<0.01$), DAS28-CRP ($r=0.399$, $p<0.01$), CDAI ($r=0.368$, $p<0.01$), SDAI ($r=0.377$, $p<0.01$). In 30 joints, PIP1 showed lowest correlation between GS ($r=0.166-0.199$, $p<0.01$)/PD ($r=0.134-0.143$, $p<0.01$) score and disease activity.

Conclusion: In small joints of RA patients, the ultrasound-detected synovitis of MCPs had best correlation with disease activity, compared with PIPs and MTPs. In individual joint, MCP2, MCP3, and MCP5 joint had the best correlation between ultrasound-detected synovitis and disease activity, while PIP1 joint showed lowest correlation.

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AB1183 ULTRASOUND POWER DOPPLER AND GREY-SCALE JOINT INFLAMMATION: WHAT DO THEY REVEAL ABOUT RHEUMATOID ARTHRITIS?

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Background: Grey-scale (GS) and Power Doppler (PD) imaging are routinely performed when assessing rheumatoid arthritis (RA) joint inflammation using ultrasound (US). While PD vascularity is often regarded as an US feature of more active joint inflammation, the true clinical significance of GS joint inflammation in RA is less understood.

Objectives: To gain further insight into US PD and GS joint Inflammation through studying their relationship with two distinct, yet important outcome measures: (i) DAS28 – a disease activity measure and (ii) US-detected erosion – a structural joint damage measure.

Methods: In this cross sectional study, US PD and GS joint inflammation were graded semi-quantitatively (0-3), while bone erosion(s) was scored dichotomously (1=yes/0=no) at each joint recess. At the patient level, PD and GS scores were correlated with DAS28 and US erosion scores respectively using Pearson's correlation coefficient, while linear regression was used to characterize the relationship between variables.

Results: 1080 joints and 1800 joint recesses from bilateral elbows, wrists, MCPJs, thumbs' IPJs, PIPJs, ankles and MTPJs were scanned in 30 adult RA patients (baseline characteristics: 76.7% Chinese; 93.3% female; mean (SD) DAS28, 3.58 (1.20); mean (SD) disease duration, 70.3 (61.2) months). PD scores were correlated ($r=0.46$, $P<0.0104$) with DAS28 but not with US erosion scores. GS scores were correlated ($r=0.64$, $P<0.0001$) with US erosion scores but not with DAS28 (table 1). Scatter plots for these variables are presented in Figure 1. Results of simple linear regressions showing PD as a predictor of DAS28 (coefficient (95% CI), 0.167 (0.048, 0.286); $P=0.0104$) and GS as a predictor of US erosion (coefficient (95% CI), 0.223 (0.125, 0.322); $P=0.0001$) are summarized in table 2.

Figure 1: Scatter plots for the ultrasound and clinical variables

Figure 1

Conclusion: US PD and GS joint inflammation in RA were characterized using disease activity and structural joint damage outcome measures. PD joint inflammation is associated with disease activity and has moderate

correlation with DAS28. In contrast, GS joint inflammation is associated with structural joint damage and has strong correlation with US-detected erosion.

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Abstract AB1183 Table 1. Pearson's correlation for the ultrasound and clinical variables

Variables	Correlation coefficient	P-value
Correlation with DAS28		
PD score	0.46	0.0104*
GS score	0.21	0.2634
Correlation with number of joint recesses with ultrasound-detected erosion(s)		
PD score	0.23	0.2302
GS score	0.64	0.0001***

Statistically significant: * $p < 0.05$; *** $p < 0.001$

Abstract AB1183 Table 2. Linear regression for the ultrasound and clinical variables

Variables	Coefficient (95% CI)	P-value
Prediction of DAS28		
PD score	0.167 (0.048, 0.286)	0.0104*
GS score	0.016 (-0.012, 0.044)	0.2634
Prediction of number of joint recesses with ultrasound-detected erosion(s)		
PD score	0.371 (-0.222, 0.963)	0.2302
GS score	0.223 (0.125, 0.322)	0.0001***

Statistically significant: * $p < 0.05$; *** $p < 0.001$

Disclosure of Interests: None declared

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AB1184 BONE MINERAL DENSITY, TRABECULAR BONE SCORE AND 3D-DXA ASSESSMENT IN ADULT PATIENTS WITH A POSITIVE AND NEGATIVE GENETICAL TESTING FOR HYPOPHOSPHATASIA

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Background: Scarce evidence exists on the assessment of bone mineral density (BMD) in adult Hypophosphatasia (HPP). Recent studies suggest that dual-energy X-ray absorptiometry (DXA) could not appropriately predict their fracture risk and note the importance on further explore bone microstructure.

Objectives: To evaluate BMD at the lumbar spine (LS) and proximal femur (PF) assessed by DXA, the trabecular bone score (TBS) at the LS and the fracture risk assessment (FRAX and adjusted by TBS, T-FRAX) in patients with persistent low alkaline phosphatase levels (ALP) and HPP genetically confirmed (HPP TG +) compared with a group of subjects with the same biochemical abnormality and a negative HPP genetic test (HPP TG-). As a secondary objective, to assess the cortical and trabecular bone at the PF using DXA-based 3D modeling.

Methods: Seventy-three subjects with persistent low ALP levels - at least two values < 35 IU/L and none > 45 IU/L - and a genetic test for HPP performed were included. Individuals were distributed into 2 groups according to their genetic status. BMD was measured using GE-LUNAR iDXA and TBS. The 3D-SHAPER software was employed in a subgroup of 52 subjects matched by age, gender and body mass index. A clinical questionnaire and a battery of lab measures to assess risk factors for Osteoporosis were also performed.

	HPP - GT	HPP + GT	P-VALUE
DEMOGRAPHICS			
Age (years $\pm$ SD)	48.2 $\pm$ 10.1	50.1 $\pm$ 14.1	0.516
Gender (Female, n/N, %)	29/33 (88.4%)	26/38 (68.4%)	0.182
Weight (kg $\pm$ SD)	65.15 $\pm$ 15.12	72.09 $\pm$ 15.62	0.016
Height (cm $\pm$ SD)	161.94 $\pm$ 9.67	164.37 $\pm$ 7.236	0.210
BMI (kg/m ² $\pm$ SD)	25.90 $\pm$ 4.39	26.57 $\pm$ 4.08	0.011
BIOCHEMICAL DATA			
Alkaline phosphatase (U/L)	33.2 $\pm$ 6.8	24.9 $\pm$ 6.9	0.0004
Serum calcium (mg/dl)	9.45 $\pm$ 0.39	9.49 $\pm$ 0.460	0.928
Urea nitrogen (mg/dl)	14.65 $\pm$ 2.78	17.72 $\pm$ 6.6	0.053
Serum phosphate (mg/dl)	3.54 $\pm$ 0.5	3.89 $\pm$ 0.64	0.010
Urea nitrogen (mg/dl)	669.57 $\pm$ 181.65	752.66 $\pm$ 203.7	0.075
Vitamin D	23.11 $\pm$ 11.9	20.38 $\pm$ 9.62	0.285
PTH	47.8 $\pm$ 17.3	43.8 $\pm$ 22.04	0.286
DUAL X-RAY ABSORPTIOMETRY			
Lumbar spine aBMD (g/cm ² $\pm$ DE)	1.157 $\pm$ 0.147	1.115 $\pm$ 0.148	0.233
Femoral neck aBMD (g/cm ² $\pm$ DE)	0.948 $\pm$ 0.155	0.864 $\pm$ 0.18	0.014
Wards aBMD (g/cm ² $\pm$ SD)	0.781 $\pm$ 0.161	0.695 $\pm$ 0.140	0.021
Trochanter aBMD (g/cm ² $\pm$ SD)	0.771 $\pm$ 0.147	0.750 $\pm$ 0.095	0.494
Diaphysis aBMD (g/cm ² $\pm$ SD)	1.174 $\pm$ 0.146	1.108 $\pm$ 0.150	0.076
Total aBMD (g/cm ² $\pm$ SD)	0.981 $\pm$ 0.142	0.936 $\pm$ 0.112	0.106
TRABECULAR BONE SCORE (TBS)			
Lumbar spine TBS	1.395 $\pm$ 0.094	1.363 $\pm$ 0.126	0.261
FRAX INDEX			
Major FRAX (%)	2.136 $\pm$ 1.84	3.058 $\pm$ 1.62	0.05
Hip FRAX (%)	3.46 $\pm$ 0.87	0.84 $\pm$ 0.94	0.049
Major T-FRAX (%)	1.846 $\pm$ 0.947	3.466 $\pm$ 1.159	0.002
Hip T-FRAX (%)	0.15 $\pm$ 0.25	0.82 $\pm$ 0.83	0.001
3D-SHAPER*			
* performed in a subgroup of 52 subjects (26 per subgroup) with no differences in gender, sex and BMI			
Total cortical vBMD (mg/cm ² $\pm$ DE)	167.3 $\pm$ 25.3	155.8 $\pm$ 19	0.070
Cortical vBMD (mg/cm ² $\pm$ DE)	873.6 $\pm$ 84.4	819.4 $\pm$ 95.3	0.035
Trabecular vBMD total (mg/cm ² $\pm$ DE)	179.6 $\pm$ 39.2	161.6 $\pm$ 39.9	0.137
Integral total vBMD (mg/cm ² $\pm$ DE)	340.9 $\pm$ 51.1	313 $\pm$ 58.9	0.074

Figure 1

Results: Demographic, densitometric, TBS and 3D-DXA parameters are shown in table 1. Of the 73 subjects included, 38 (52%) had pathogenic mutations in ALPL. Between postmenopausal women and men above 50 years, 9 subjects (29%) with ALPL mutations had osteopenia and 4 (13%), osteoporosis whereas 4 (13%) and 2 (6.5%) were detected in the HPP-GT group, respectively ($p > 0.05$). Between premenopausal women and men under age 50, only 2 (5%) showed low BMD (Z-score < -2). BMD at femoral neck was significantly lower in the HPP + GT group compared to the HPP- GT group (0.864 ± 0.18 vs 0.948 ± 0.16 ($p = 0.014$), similar findings were found for Wards area (0.695 ± 0.14 and 0.781 ± 0.16 , $p = 0.021$) and a trend was observed at the femoral diaphysis ($p = 0.076$). BMD at the LS and TBS assessment did not show differences. Major, hip FRAX and T-FRAX were superior in the HPP + GT group. In terms of the parameters of bone metabolism, ALP levels were lower in the HPP + GT ($p = 0.0004$), serum phosphate levels were higher in this group ($p = 0.01$) and the rest did not show differences. The 3D-SHAPER software was applied in a subgroup of 52 subjects: volumetric BMD at the PF was lower in the HPP + GT (873.6 ± 84.4 g/cm³ vs 819.4 ± 95.3 g/cm³; $p = 0.035$) with no differences in trabecular vBMD ($p = 0.117$).

Conclusion: HPP + GT group showed less BMD at femoral neck and wards area and this trend was also observed at the diaphysis. At the femur, vBMD was also lower in this group. No differences in BMD at the lumbar spine and in TBS were found. These findings and its value for predicting the risk of fractures, specially in atypical femoral fractures, must be elucidated.

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AB1185 RADIOLOGICAL INDEX IN THE FLAT VERTEBRAE

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Background: Spine is a mechanical structure, which disposes their vertebral bodies in harmony with their stature, and progressively increasing in magnitude from the cervical to the lumbar spine (1). Defects in type II collagen gene are described, and in these cases, flat vertebra can be found, defined with flattening of the vertebral body, with irregular surface