Inter-reader agreement for mPsAMRIS was moderate or sufficient (weighted $\kappa(w)$ =0.57 for pre-treatment; weighted $\kappa(w)$ =0.70 for post-treatment, respectively). Inter-reader agreement for iodine quantification for pre- and post-treatment showed significant correlation (Spearman's ρ =0.93 p <0.005, Spearman's ρ =0.95 p <0.005, respectively).

Both mPsAMRIS and iodine uptake showed significant improvement after treatment for both readers (Wilcoxon signed-rank test: z =7.37, z =5.98 for reader 1, z =7.38, z =6.20 for reader 2, p <0.005 for all z).

The treatment effect of mPsAMRIS and iodine uptake showed significant correlation (Spearman's ρ =0.56 p <0.005 for reader 1, Spearman's ρ =0.57 p <0.005 for reader 2). Graph shows the correlation between change of mPsAMRIS score and iodine uptake.

Abstract AB1216 – Figure 1

Conclusions: A significant improvement of inflammatory changes in PsA was confirmed by iodine uptake post-treatment, which was in-keeping with mPsAMRIS, and there was a strong correlation between the mPsAMRIS scoring system and iodine quantification. Therefore, iodine quantification may be useful in evaluating the treatment effect of PsA. Furthermore, changes in iodine uptake were observed even with small changes of mPsAMRIS, thus iodine uptake may provide a more sensitive and detailed measure of inflammatory activity in PsA.

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AB1217 FLUOROMETRIC IMAGING FOR EARLY DIAGNOSIS AND PROGNOSIS OF RHEUMATOID ARTHRITIS

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Background: Early diagnosis and monitoring of disease progress are of significant importance in the effective treatment of rheumatoid arthritis (RA), because the continuing inflammation can lead to irreversible joint damage and systemic complications. However, using imaging modalities for the prognosis of RA remains challenging, because no tissue-specific guidelines are available to monitor the progressive course of RA

Objectives: We report fluorometric imaging of RA for early diagnosis and prognosis, using structure-inherent targeting of the blood vessel, bone, and cartilage

Methods: we conducted dual channel near-infrared (NIR) fluorescence imaging, by using NIR light in the wavelength range of 700–800 nm and NIR fluorophores, to monitor the pathophysiologic processes of RA. In RA mice, we intravenously injected two NIR fluorophores—indocyanine green (ICG, 800 nm) and DEX700 (700 nm)—that have the characteristics of vascular perfusion agents in order to identify the severity of joint inflammation and the corresponding changes, on the

basis of differences in fluorescence intensity. In addition, for monitoring the changes in cartilage and bone on the basis of the progression of arthritis, we also intravenously injected C700-OMe (700 nm), a cartilage-targeting NIR fluorophore with an affinity for hyaluronic acid and glycosaminoglycan and P800SO3 (800 nm), a bone-targeting agent that has a strong binding affinity for bone minerals such as hydroxyapatite and calcium phosphate.

Results: In the acute inflammatory stage of arthritis, ICG with a lower molecular weight showed a significantly higher signal-to-background ratio (SBR) than DEX700 (p <0.05). But, in the chronic inflammatory stage, DEX700 showed a higher SBR value than ICG (p <0.05). The changing tendency of SBR value obtained from ICG showed similar to those of the clinical arthritis score in RA mice. In the fluorescence images of the mouse cartilage with C700-OMe before arthritis induction, very clear and distinct lines were observed in the fore paw and ankle joints. In the images obtained after arthritis was induced, these lines were lost, indicating cartilage destruction due to the progression of arthritis. A fluorescence image of the bone was obtained 24 hour after the injection of P800SO3; in this image, it was difficult to view the bone shape of joints especially in the fore paw before arthritis induction, because of a very low fluorescence intensity, in contrast to the cartilage. However, with the progression of arthritis, the fluorescence image of the bones was dramatically appeared and the SBR value of them increased significantly to clearly display the altered morphology of the joints (p <0.05). In particular, as it was confirmed that bone-specific NIR fluorophore, P800SO3 went only into the osteoclast cells, it was determined that monitoring of bone remodelling caused by arthritis-induced osteoclastogenesis is possible by using NIR fluorescence images.

Conclusions: The fluorometric imaging of RA by using tissue-specific contrast agents plays a key role in the systemic treatment of RA by monitoring structural damage and disease progression

Disclosure of Interest: None declared

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AB1218 DIAGNOSIS OF PRIMARY RAYNAUD'S PHENOMENON AND CAPILLAROSCOPY

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Background: Raynaud's phenomenon (RP) is a clinical expression of recurrent reversible vasospasm of small peripheral arteries and arterioles. It is a common pathology in clinical practice and is classified into two main categories – primary RP in the absence of an underlying disorder and secondary RP that is in the context of another disease. The differential diagnosis is of crucial importance for the practising rheumatologists because the patients with primary RP are with benign course while those with secondary RP require further differentiation and establishment of the precise diagnosis and treatment. Differentiation between primary and secondary RP is based on clinical features, laboratory including immunological investigations and capillaroscopic findings.

Objectives: The nailfold capillaroscopy is a key imaging tool for monitoring the RP patients because of the high predictive value of the abnormal capillaroscopic pattern for future development of connective tissue disease. Patients with primary

RP have younger age at onset (<30 years), there are no clinical features of a secondary disease, no trophic changes or abnormal capillaroscopic pattern.

Methods: Literature data on quantitative analysis of capillaroscopic parameters in primary RP are limited.

Results: In an own study that included 31 patients with primary RP patients, significantly wider arterial and venous capillary diameters as compared with healthy controls was found in 96.6% of cases. The mean arterial capillary diameter (0.018 ± 0.004 mm) in primary RP patients was significantly larger in comparison healthy volunteers (0.012 ± 0.001 mm, $p < 0.005$). The mean venous capillary diameter was also significantly higher in primary RP (0.026 ± 0.006 mm vs 0.017 ± 0.002 mm in healthy controls, $p < 0.005$).¹ Similarly, Bukhari *et al.* (2000)² also observed greater diameters of arterial, venous limb and apical loop in comparison with control subjects in 15 primary RP patients, but the difference was not statistically significant.² Anderson *et al.* (2005)³ also found greater capillary diameters in 21 patients with primary RP vs healthy volunteers but the difference was statistically significant only for the arterial capillary limb and the apex loop but not for the venous capillary diameter.³

Conclusions: These capillaroscopic observations in primary RP patients suggest that the absence of an abnormal capillaroscopic pattern is diagnostic for primary RP but minor capillaroscopic dilation is a frequent microvascular feature in these patients.

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AB1219 CONTRIBUTION OF MRI TO CERVICAL INVOLVEMENT IN RHEUMATOID ARTHRITIS: PROSPECTIVE STUDY OF 30 CASES

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Background: Cervical spine involvement is common during RA and is characterized by its potential severity.

Objectives: To determine the prevalence of cervical involvement in RA, to clarify the contribution of MRI to diagnosis and to identify predictive factors for cervical rheumatoid involvement.

Methods: Our study included 30 RA patients with a duration of more than 2 years.

Results: 16 patients (53%) were assessed on the two imaging methods (standard radiographs in 37% and MRI in 53%), of which 2 cases (7%) were asymptomatic. This cervical involvement was dominated by the C1-C2 pannus objectivated in 50% of cases and AAS. Of the AAS, aAAS was the most frequent with a prevalence of 23%, followed by the pAAS found in 10% of the cases, the vAAS present in 7% of the cases then the IAAS and the rAAS objectivated in 3% each. The ASS was found in 3 cases (10%), odontoid erosion in 11 cases (37%), C1-C2 arthritis in 5 cases (16%) and inflammatory spondylodiscitis in 6 cases (20%). MRI resulted in a better study of the C1-C2 pannus and odontoid erosions as well as the evaluation of the impact of rheumatoid lesions on the neural axis: a medullary imprint was noted in 4 cases (13%). Several factors were associated with cervical rheumatoid involvement: the presence of cervicobrachial neuralgia or bulbomedullary signs, duration of PR ≥ 5 years, HAQ score ≥ 1.1 and positive RF. The search for factors associated with AAS has revealed the duration of the disease, DAS $28 > 3.2$ and the presence of a biological inflammatory syndrome.

Conclusions: Cervical involvement accompanies the active and destructive forms of RA. It can be asymptomatic, it is the interest to seek it in a systematic way in RA. The standard radiography with dynamic views is to be realised first-line. The MRI must be indicated in order to make an early diagnosis, to carry out an accurate lesional assessment and to guide the therapeutic decision.

Disclosure of Interest: None declared

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AB1220

STUDY OF THE RELATIONSHIP BETWEEN TOE DEFORMITIES IN THE FOREFOOT REGION AND THE FLEXOR TENDONS IN RHEUMATOID ARTHRITIS USING 3D VOLUME RENDERING

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Background: Multi-slice computed tomography (CT) is frequently used to evaluate the morphology, arrangement, and other characteristics of bone. Three-dimensional volume rendering (3D-VR) has made it possible to three-dimensionally visualise tendons and other structures by arbitrarily changing CT values. In deformities of the forefoot region in rheumatoid arthritis (RA), dislocation of the metatarsophalangeal (MTP) joints results in the formation of painful calluses that require surgery; however, the toes can sometimes be displaced inwards or outwards by this dislocation. MTP joint dislocation also causes the flexor tendons to dislocate from their original positions, although the relationship with toe displacement is unclear.

Objectives: We therefore used 3D-VR to examine the relationship between the flexor tendons and toe displacement in the dislocated toes of RA patients.

Methods: Thirty-one feet (10 right and 21 left) of 24 patients (5 men and 19 women) were examined. The Tsuboi classification was used to classify MTP joint dislocation into subluxation (Grade 2) or dislocation (Grade 3). CT images taken with no load applied to the feet were used for preoperative evaluation. The mean age of the patients at the time of imaging was 59.0 (36–76) years. A Fujifilm volume analyzer (SYNAPSE VINCENT) was used for 3D-VR reconstruction and CT values were adjusted to visualise the flexor tendons and examine their relationship with the heads of the metatarsal bones. When the flexor tendons were displaced inward or outward from the base of the metatarsal bone head, this was classified as flexor tendon dislocation. Toe displacement was identified when the proximal phalanx was displaced inward or outward from the extended line of the metatarsal axis.

Results: MTP joint dislocation was seen in 80 toes (63 cases of dislocation and 17 cases of subluxation). The flexor tendons were dislocated in 27 s toes (15 inward and 12 outward), 27 third toes (21 inward and 6 outward) and 16 fourth toes (15 inwards and 1 outward). Of the cases of MTP joint dislocation, toe displacement was seen in 12 s toes (1 inward and 11 outward), 12 third toes (12 outward) and 2 fourth toes (1 inward and 1 outward). The flexor tendons were dislocated towards the displaced toes in all cases. No flexor tendon dislocation was seen in any of the cases of subluxation.

Conclusions: RA is often accompanied by hallux valgus and toe displacement is affected by retraction of the first toe. The results of this study demonstrate that the toes are displaced inwards in some cases and can become dislocated independent of the influence of the first toe. All the toes were displaced towards the dislocated flexor tendons and MTP arthritis had resulted in loosening of the joint capsule and ligaments and dislocation of the flexor tendons, which was likely to cause displacement.

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AB1221

THE ASSOCIATION BETWEEN SYNOVITIS IN THE FOOT ON JOINT ULTRASONOGRAPHY AND CLINICAL PARAMETERS IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Background: Treatment of rheumatoid arthritis (RA) has improved dramatically with the widespread use of biological disease-modifying antirheumatic drugs. In this context, the number of RA patients who undergo orthopaedic surgery is reportedly decreasing. However, the number of RA patients who undergo foot surgery is increasing. Joint ultrasonography has been used for early diagnosis and