disease is active – making the films useful as a baseline but not much help in getting a timely diagnosis and treatment. Modern imaging techniques, including ultrasound and magnetic resonance imaging (MRI), which can reveal early, non-bony signs of RA that are invisible on X-ray

Objectives: To conduct a comparative analysis of the possibility of MRI in RA patients in the early diagnosis of the disease with the data X-ray of hands and feet

Methods: The study included 56 patients with a reliable diagnosis of RA aged from 17 to 66 years, with disease duration from 4 months to 1 year. Verification of the diagnosis of RA was carried out in accordance with the diagnostic APA criteria (1987). The criteria for the selection of patients was the presence of disease activity. Patients were mainly with the II degree of disease activity. All patients underwent radiography of the small joints of the hands and feet, and 28 patients underwent MRI with dominant hands

Results: The study showed certain changes in the structures of the joint based on MRI in the early stages of RA. So, according to MRI of the brushes, it was revealed: thickening of the synovial membrane - in 23 (86%) patients; marginal erosion and subchondral cysts - in 21 (75%) patients; bone erosions - in 25 (90%) patients; phenomena of destruction of the articular cartilage (thinning, ulceration and destruction) - in 16 (57%) patients; effusion to the joints - in 19 (68%) patients and tenosynovitis - in 18 (64%) patients. In turn, the radiological data of the hands and feet showed that erosive arthritis was found in 23 (41%) patients and marginal erosions - in 22 (39%) patients

Conclusion: Thus, MRI of the hands plays an important role in the early diagnosis of RA, since it allows visualizing the characteristic changes in all joint structures in RA. MRI is a highly effective diagnostic method in diagnosis of RA, which in combination with other methods of research helps to establish the diagnosis at an early stage diseases and timely appointment of adequate basic treatment unlike radiography

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THU0619

THE VALUE OF MORPHOLOGICAL AND BIOCHEMICAL MAGNETIC RESONANCE IMAGING (MRI) OF RADIOCARPAL CARTILAGE FOR THE DIFFERENTIATION OF RHEUMATOID ARTHRITIS AND OSTEOARTHRITIS

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Background: Using high-field MRI to differ morphologically between OA and RA.

Objectives: To evaluate the value of morphological and biochemical, contrast-agent free high-field (3 Tesla) MRI of the radiocarpal cartilage to differ between osteoarthritis (OA) and rheumatoid arthritis (RA).

Methods: The group consisted of 47 subjects, who were examined during the period from October 2016 to December 2017. The clinical dominant hand of 11 patients suffering from early rheumatoid arthritis (RA) (German ArthroMark cohort, Ø 52.8years; min: 32; max 74), seropositive (ACPA and/or RF), disease duration < 6 months (range 2–23 weeks)), 10 with osteoarthritis (OA) (Ø 48.55 ± 15.23 years, min: 34 years, max: 68 years, disease duration Ø 6 years ± 8.29) and 26 healthy volunteers (Ø 46.55 ± 17.55 years, min: 20 years, max: 79 years) were examined with a 3T MRI scanner, prospectively. Morphological and biochemical assessment of radiocarpal cartilage was performed using DESS, TrueFISP and T2* images.

Results: Morphological sequences demonstrated significantly higher cartilage damage in RA and OA compared to healthy controls (DESS: $p = 0.01$, $p = 0.0004$; TrueFISP: $p = 0.02$, $p = 0.0001$), while there was no significant difference between RA and OA patients. With biochemical MRI using T2* imaging, patients with OA showed higher cartilage integrity compared to patients with RA ($p = 0.01$).

Conclusion: Morphological and biochemical MRI of radiocarpal cartilage could be helpful to differentiate between RA and OA patients. Both, RA and OA, are associated with cartilage damage measured by morphological MRI of the hand. Hence, OA was associated with more loss of cartilage integrity compared to RA using biochemical MRI, whereby only early RA patients were analyzed in this first evaluation. Non-contrast-agent morphological and biochemical MRI could be a non-invasive tool to investigate cartilage integrity in RA and OA patients and could help to differ disease pattern in the future.

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THU0620

THE PHYSIOLOGICAL FINGER JOINT ARCHITECTURE – AGE-RELATED INCREASE OF EROSIONS AND OSTEOPHYTES IN THE JOINTS OF HEALTHY INDIVIDUALS

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Background: The “normal” finger joint architecture has not yet been defined and could change in the course of life. Therefore the objective was to assess the physiological finger joint architecture of healthy individuals and the relation of structural changes to age and sex.

Objectives: Therefore the objective was to assess the physiological finger joint architecture of healthy individuals and the relation of structural changes to age and sex using high-resolution quantitative computed tomography (HR-pQCT) of the hands.

Methods: Healthy individuals without rheumatic diseases and other comorbidities were recruited through a field campaign and received HR-pQCT examination of the Metacarpophalangeal 2/3 and Proximal Interphalangeal 2/3 joints of one hand. The number of erosions and osteophytes was quantified across different sexes and age decades (6 decades within the age range of 21-80 years).^{1,2,3}

Results: 120 healthy individuals (10 women and 10 men in each decade) were recruited. Bone erosions [median (Q1-Q3), 1 (0-2)] and osteophytes [2 (1-4)] were found in both sexes without significant differences. However, structural changes increased with age: the overall incidence rate ratio (IRR) for the number of erosions and osteophytes per age were 1.04 (95% CI 1.03-1.06; 95% CI 1.03-1.05), which indicates a 4% increase in the number of erosions and osteophytes per year. The use of the 3rd decade as the reference demonstrated that healthy individuals in the age decades from 50 years had higher IRR for erosion number (6th, 7th, 8th decade: 4.87 (2.20-11.75), 6.81 (3.08-16.46) and 6.92 (3.11-16.79)) compared to younger subjects (4th, 5th decade: 1.80 (0.69-4.87), 1.53 (0.59-4.10)). The IRRs of osteophytes also indicate a progressive increase after the fifth decade, with IRRs of 2.32 (1.32-4.17), 4.17 (2.38-7.49) and 6.86 (3.97-12.20) for the 6th, 7th and 8th decades, respectively.

Conclusion: Structural changes in the finger joints of healthy individuals are age-related. While being rare under 50 years of age, erosions and osteophytes accumulate above the age of 50, suggesting that the threshold between “normal” and “pathological” shifts with increasing age.

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