DIFFERENTIAL DIAGNOSIS BETWEEN HAND OSTEOARTHRITIS AND PSORIATIC ARTHRITIS USING INDOCYANINE GREEN-BASED FLUORESCENCE OPTICAL IMAGING

Keywords: Imaging, Osteoarthritis, Psoriatic arthritis

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Background: Fluorescence optical imaging (FOI) provides a measure of inflammation in finger joints and wrists [1,2]. Recognizing specific joint signals and morphologic patterns in FOI may be helpful in differential diagnosis of hand osteoarthritis (OA) and psoriatic arthritis (PsA).

Objectives: To analyze the diagnostic value of the established FOI Activity Score (FOIAS) and predefined morphologic patterns in the differentiation between hand OA and PsA.

Methods: FOIAS has been validated for inter- and intra-reader reliability[3]. FOI sequences were examined by one trained reader (BD). Cases with physician-based diagnosis of hand OA (n=47) and PsA (n=54) were randomly mixed and the reader was blinded to diagnosis. In total, 16 joints (wrist, thumb base, MCP1-5, (P)IP1-5, DIP2-5) in each hand were evaluated on a semiquantitative 0-3 scale in five images during the FOI sequence (composite image PrimaView Mode (PVM), phase 1, phase 2 (first and middle image), and phase 3). Additionally, predefined morphologic patterns were observed ('streaky signals'[2], 'green/blue nail sign'[4], 'Werner sign'[1,5] and 'bishop’s crozier sign'[3]). A collection of example images for joint signals and morphologic findings was previously compiled into an atlas for reference and training[3]. Based on joint signals and morphologic findings, the reader matched each case to diagnosis OA or PsA.

Results: In OA, significantly more frequent signal enhancement in PVM and DIP joints was observed (p<0.001) as well as for each of the 5 phases (PVM, phase 1, phase 2 first and middle, phase 3). DIP-2 displayed overall statistically significantly higher mean joint sum scores in OA (16.5 vs OA vs. 8.4 in PsA, p<0.001) as well as in PVM, phase 2 first and middle images. Other joint groups (MCP1-5, wrist) did not present any statistically significant differences between OA and PsA. Regarding morphologic patterns, the ‘Werner sign’ was presented significantly more often in PsA patients (55.6% in PsA vs. 21.3% in OA, p<0.001).

Conclusion: There was moderate agreement between the physician-based diagnosis of OA and PsA and the diagnosis that was proposed based on FOI findings. OA cases presented more pronounced signal enhancement in PIP and DIP joints when compared to PsA cases. Additional morphologic criteria and pattern recognition might be needed to expand the diagnostic capability of FOI.

REFERENCES:

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ANKLE RETINACULA ABNORMALITIES AS FEATURES OF PSORIATIC ARTHRITIS: AN ULTRASOUND STUDY

Keywords: Psoriatic arthritis, Ultrasound

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Background: Ankles are frequently involved in rheumatoid arthritis (RA) and psoriatic arthritis (PsA) and can be observed in both diseases. The detection of enthesitis may support the diagnosis for PsA and help to distinguish these 2 rheumatic diseases. At ankle level, retinaculitis can be analyzed with ultrasonography (US) and their insertions into bones can be considered as entheses.

Objectives: The aim of the present study was to compare the US assessment of the retinaculum of ankles in a population of RA and PsA patients with painful ankle.

Methods: This was an observational cross-sectional study. We analyzed consecutive RA or PsA patients with ankle pain. We also analyzed healthy controls (HC), without rheumatic disorders nor ankle pain. The following US features were assessed: presence of synovitis of tibiotar or talonavicular joints, presence of tencynovitits of peroneal or posterior tibial tendons. Two retinacul: the superior peroneal retinaculum (SPR) and the flexor retinaculum (FR) were also evaluated in mode B (thickness, echogenicity and presence of malleolar peristositis) and the vascularization at their insertion into bone by using power Doppler (PD).

Results: We analyzed data for 80 consecutive patients (60 women, median age 56 years). Among these patients, 37 (46%), 23 (29%) and 20 (25%) were RA, PsA and HC patients, respectively. A total of 160 ankles were assessed. The evaluation of SPR did not show difference between the two diseases. Regarding the FR, we observed that FR was thicker in PsA patients than in RA (0.96mm ± 0.39 vs. 0.64mm ± 0.15, P<0.001) and HC (0.96mm ± 0.39 vs. 0.56mm ± 0.12, P<0.001) without difference between RA patients and HC. The following US features were more frequently found in PsA than in RA ankles: hypoechogenicity (46% vs. 7%, P<0.001), positivity of PD (43% vs. 8%, P<0.001) and malleolar peristositis (43% vs. 8%, P<0.001). By using ROC curve analysis, we determined that a cut-off of 1 mm of FR thickness provided a sensitivity of 49% and specificity of 97% for the diagnosis of PsA. The association of a thickness ≥1mm with hypervasculization of the malleolar insertion of FR, named “retinaculitis,” was observed in 39% and 3% of ankles in PsA and RA, respectively. The proportion of retinaculitis of SPR was not different between the two diseases.

Conclusion: US abnormalities of FR were more frequently observed in PsA than in RA patients and appear to be specific for PsA. Thus, assessment of FR might be useful to distinguish RA and PsA in patients with painful ankles.

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ANKLE RETINACULA ABNORMALITIES AS FEATURES OF PSORIATIC ARTHRITIS: AN ULTRASOUND STUDY

Keywords: Psoriatic arthritis, Ultrasound

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