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Clinical and Structural Differences in Knee Osteoarthritis with/without Synovial Hypertrophy

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Abstract : Objective: The synovium is known to be involved in many pathological characteristic processes. Also, synovitis is common in advanced osteoarthritis. We aimed to evaluate the clinical, radiographic, and ultrasound findings in patients with knee osteoarthritis and to compare the clinical and imaging findings between knee osteoarthritis with and without synovial hypertrophy confirmed by ultrasound. Methods: One hundred knees (54 left, 46 right) in 95 patients (64 women, 31 men; mean age, 65.9 years; range, 43-85 years) with knee osteoarthritis were recruited. The Visual Analogue Scale (VAS) was used to assess the intensity of knee pain. The severity of knee osteoarthritis was classified according to Kellgren and Lawrence's (K-L) grade on a radiograph. Ultrasound examination was performed by a physiatrist who had 24 years of experience in musculoskeletal ultrasound. Ultrasound findings, including the thickness of joint effusion in the suprapatellar pouch, synovial hypertrophy, infrapatellar tendinosis, meniscal tear or extrusion, and Baker cyst, were measured and detected. The thickness of knee joint effusion was measured at the maximal anterior-posterior diameter of fluid collection in the suprapatellar pouch. Synovial hypertrophy was identified as the soft tissue of variable echogenicity, which is poorly compressible and nondisplaceable by compression of an ultrasound transducer. The knees were divided into two groups according to the presence of synovial hypertrophy. The differences in clinical and imaging findings between the two groups were evaluated by independent t-test and chi-square test. Results: Synovial hypertrophy was detected in 48 knees of 100 knees on ultrasound. There were no significant differences in demographic parameters and VAS score except in sex between the two groups ($P<0.05$). Medial meniscal extrusion and tear were significantly more frequent in knees with synovial hypertrophy than those in knees without synovial hypertrophy. K-L grade and joint effusion thickness were greater in patients with synovial hypertrophy than those in patients without synovial hypertrophy ($P<0.05$). Conclusion: Synovial hypertrophy in knee osteoarthritis was associated with greater suprapatellar joint effusion and higher K-L grade and maybe a characteristic ultrasound feature of late knee osteoarthritis. These results suggest that synovial hypertrophy on ultrasound can be regarded as a predictor of rapid progression in patients with knee osteoarthritis.

Keywords : knee osteoarthritis, synovial hypertrophy, ultrasound, K-L grade
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