Ultrasonography Findings in Knee Osteoarthritis: a Prospective Observational Cross-Sectional Study of 100 Patients

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Introduction: Worldwide, knee osteoarthritis (KOA) accounts for 2.2% of total years lived with disability. There is low correlation between joint tissue damage and pain intensity. Periarticular structures may be involved and cannot be identified in X-rays.

Objectives: To describe the main ultrasonography (USG) changes in symptomatic patients with primary KOA; to correlate number of USG findings with KOA severity assessed by Kellgren and Lawrence (K&L) radiological scores, with pain intensity measured by a visual analogue scale (VAS) and with functioning scores assessed with Timed up and go test (TUG) and Western Ontario and McMaster Universities (WOMAC) questionnaire.

Methods: 100 patients with primary symptomatic KOA were assessed with X-ray and USG. Quantitative and qualitative analyses were evaluated in a systematic manner.

Results: The most frequent findings were joint effusion, pes anserinus bursitis, quadriceps tendon enthesopathy, popliteal cyst, iliotibial band tendinitis and patellar tendinitis. Pearson's correlation analysis demonstrated a significant moderate positive association between VAS scores and number of USG findings ($r=0.36$; $p<0.0001$). The number of USG findings was different between K&L grades I and III ($p=0.041$), I and IV ($p<0.001$), and II and IV ($p=0.001$, ANOVA with Bonferroni correction). There was significant association between number of USG findings and TUG ($r=0.18$; $p=0.014$) and WOMAC scores for pain ($r=0.16$; $p<0.029$) and physical function domains ($r=0.16$; $p<0.028$).

Conclusion: The most frequent USG finding was joint effusion. Periarticular structures should be explored as potential sources of pain and disability.

Keywords: Osteoarthritis; Knee; Ultrasonography; Pain; Diagnostic imaging.