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Magnetic Resonance Imaging for Assessment of the Quadriceps Tendon Cross-Sectional Area as an Adjunctive Diagnostic Parameter in Patients with Patellofemoral Pain Syndrome

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Abstract : Objectives: Patellofemoral pain syndrome (PFPS) is a common clinical condition characterized by anterior knee pain. Here, we investigated the quadriceps tendon cross-sectional area (QTCSA) as a novel predictor for the diagnosis of PFPS. By examining the association between the QTCSA and PFPS, we aimed to provide a more valuable diagnostic parameter and more equivocal assessment of the diagnostic potential of PFPS by comparing the QTCSA with the quadriceps tendon thickness (QTT), a traditional measure of quadriceps tendon hypertrophy. Patients and Methods: This retrospective study included 30 patients with PFPS and 30 healthy participants who underwent knee magnetic resonance imaging. T1-weighted turbo spin echo transverse magnetic resonance images were obtained. The QTCSA was measured on the axial-angled phases of the images by drawing outlines, and the QTT was measured at the most hypertrophied quadriceps tendon. Results: The average QTT and QTCSA for patients with PFPS (6.33±0.80 mm and 155.77±36.60 mm^2, respectively) were significantly greater than those for healthy participants (5.77±0.36 mm and 111.90±24.10 mm2, respectively; both $P<0.001$). We used a receiver operating characteristic curve to confirm the sensitivities and specificities for both the QTT and QTCSA as predictors of PFPS. The optimal diagnostic cutoff value for QTT was 5.98 mm, with a sensitivity of 66.7%, a specificity of 70.0%, and an area under the curve of 0.75 (0.62–0.88). The optimal diagnostic cutoff value for QTCSA was 121.04 mm^2, with a sensitivity of 73.3%, a specificity of 70.0%, and an area under the curve of 0.83 (0.74–0.93). Conclusion: The QTCSA was found to be a more reliable diagnostic indicator for PFPS than QTT.

Keywords : patellofemoral pain syndrome, quadriceps muscle, hypertrophy, magnetic resonance imaging
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