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Shear Wave Elastography Properties Of Vastus Lateralis And Vastus Medialis Obliquus Muscles In Normal Subjects And Female Patients With Patellofemoral Pain Syndrome

Huseyin Botanlioglu, MD, TURKEY
Fatih Kantarci, Assoc. Prof., TURKEY
Gokhan Kaynak, MD, TURKEY
Yelda Unal, MD., TURKEY
Sema Ertan, MD., TURKEY
Onder Aydingoz, Prof. MD, TURKEY
Rifat Erginer, Prof., TURKEY
Mehmet Can Unlu, MD, TURKEY
Ismail Mihmanli, Prof., TURKEY
Muharrem Babacan, MD, TURKEY

Istanbul University Cerrahpasa Medical Faculty
Istanbul, TURKEY

Summary:
We found a significant vastus medialis obliquus weakness and this method may provide quantitative data that might influence the diagnosis of muscle weakness in female patients with patellofemoral pain syndrome.

Abstract:
ABSTRACT Objective: The aim of our study was to define and compare the mechanical properties of the vastus lateralis (VL) and vastus medialis obliquus muscles (VMO) by the way of quantitative shear-wave elastography in male and female healthy control (HC) subjects, and in female patients with patellofemoral pain syndrome (PFPS). Material and Methods: Twenty-two healthy volunteers (11 male and 11 female) and 11 female patients with anterior knee pain were included in the study. The SWE examinations for VL and VMO were performed while the subjects were performing open kinetic chain exercises in neutral and 30° hip abduction. The contraction capacity (CC) and contraction ratio (CR) values were determined in resting and contraction phases in both hip positions. Results: The mean elasticity values in the CC for VL and VMO muscles were significantly higher in male HC subjects when compared to female HC subjects ($p<0.05$). The CR of the VL muscle in female patients with PFPS was not significantly different than the female HC group. The CR for the VMO muscle was significantly lower in female patients with PFPS when compared to female HC subjects ($p<0.05$). Conclusion: We found a significant VMO weakness and this method may provide quantitative data that might influence the diagnosis of muscle weakness in female patients with PFPS.
Keywords: shear wave elastography, vastus lateralis, vastus medialis obliquus, patellofemoral pain syndrome, muscle mass.