

Is There any Relationship Between the Grade of Mucoïd Degeneration of Torn Menisci and Biochemical Marker Levels in Synovial Fluid?

Halit İbrahim Pınar¹, Oktay İscen¹, Didem Keles², Sermin Ozkal³, Gulgun Oktay²

¹Dokuz Eylül University School of Medicine Department of Orthopedics and Traumatology, Izmir, TURKEY, ²Dokuz Eylül University School of Medicine Department of Medical Biochemistry, Izmir, TURKEY, ³Dokuz Eylül University School of Medicine Department of Medical Pathology, Izmir, TURKEY

Objectives: Mucoïd degeneration (MD) leads to nontraumatic tears of the meniscus even in the young population. The tears are often irreparable. The purpose of this study is to find out if there is any relationship between the severity of mucoïd degeneration (MD) and the biochemical environment of the knee. Our hypothesis is that meniscal tears due to more severe MD are associated with higher levels of markers in the synovial fluid.

Methods: Synovial fluid samples were taken during isolated arthroscopic meniscectomies. Samples of excised menisci were sent to the department of pathology for grading of MD. According to the Copenhaver staging classification, stage 1-2 menisci comprised group A (n:13), and grade 3 menisci group B (n:19). Cases with instability and with greater than grade 2 chondral lesions were excluded. Synovial fluid samples were also aspirated from 9 normal knees of individuals operated from other sites of lower extremities; these comprised the control group (C). The synovial fluids were examined for MMP-3, TIMP-1, COMP and proteoglycan (PG) fragment levels. Results were statistically analyzed with nonparametric Mann Whitney's U test.

Results: PG fragment levels were significantly higher in group B as compared to group A ($p=0.044$). When groups B and C were compared, the difference between PG fragment levels almost displayed significance ($p=0.055$). There were no significant differences between the groups A, B and C for MMP-3, TIMP-1, and COMP levels. MMP-3 levels were significantly higher for traumatic meniscal tears than nontraumatic tears ($p=0.025$).

Conclusion: In this study, our hypothesis was partially confirmed. Higher levels of PG fragments were found in knees with higher grade of meniscal mucoïd degeneration. MD may be associated with an insidious degenerative process in the knee.

The Orthopaedic Journal of Sports Medicine, 2(11)(suppl 3)

DOI: 10.1177/2325967114S00191

©The Author(s) 2014