

# Changes in the composition of the extracellular matrix in patellar tendinopathy.

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## Abstract

**OBJECTIVE:** To compare the chemical levels and mRNA expression of proteoglycan and collagen in normal human patellar tendons and tendons exhibiting chronic overuse tendinopathy. **METHODS:** Sulfated glycosaminoglycan and hydroxyproline content were investigated by spectrophotometric measurement using papain-digested samples. Deglycosylated proteoglycan core proteins were analysed by Western blot using specific antibodies. Total mRNA isolated from samples of frozen tendons was assayed by relative quantitative RT-PCR for decorin, biglycan, fibromodulin, versican, aggrecan, and collagens Type I, II and III and normalised to glyceraldehyde-3-phosphate dehydrogenase. **RESULTS:** There was a significant increase in sulfated glycosaminoglycan content in pathologic tendons compared to normal. This was attributed to an increased deposition of the large aggregating proteoglycans versican and aggrecan and the small proteoglycans biglycan and fibromodulin, but not decorin. Aggrecan and versican were extensively degraded in both normal and pathologic tendons, biglycan was more fragmented in the pathologic tendons while predominantly intact fibromodulin and decorin were present in normal and pathologic tendons. There was a greater range in total collagen content but no change in the level of total collagen in pathologic tendons. There were no significant differences between the pathologic and normal tendon for all genes, however p values close to 0.05 indicated a trend in downregulation of Type I collagen and fibromodulin, and upregulation in versican and Type III genes in pathologic tissue. **CONCLUSION:** The changes in proteoglycan and collagen levels observed in patellar tendinopathy appear to be primarily due to changes in the metabolic turnover of these macromolecules. Changes in the expression of these macromolecules may not play a major role in this process.

PMID: 19371780 [PubMed - indexed for MEDLINE]