Cartilage oligomeric matrix protein and matrix metalloproteinase-3 expression in the serum and joint fluid of a reversible osteoarthritis rabbit model

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ABSTRACT. The main pathological characteristic of osteoarthritis (OA) is cartilage damage. We explored cartilage oligomeric matrix protein (COMP) and matrix metalloproteinase-3 (MMP-3) changes during articular cartilage injury and repair. Rabbits were randomly divided into the following: a blank control group; groups M1, M2, and M3, in which breaking was performed for 2, 4, and 6 weeks, respectively; and groups L1, L2, and L3, in which breaking was discontinued for 2, 4, and 6 weeks, respectively, following a 4-week recovery period. There are 7 rabbits in each group. The degree of cartilage damage in each group was scored (OA score). An enzyme-linked immunosorbent assay was used to detect COMP and MMP-3 levels in serum and joint fluid. The OA scores were 3.89 ± 2.31, 7.21 ± 2.31, and 10.88 ± 2.08 points in groups M1, M2, and M3, respectively (P < 0.05). COMP and MMP-3 levels were significantly
higher in groups M1, M2, and M3 than in C. The OA score improved significantly following the 4-week recovery period (P < 0.05). COMP and MMP-3 levels began to decrease as the time following discontinuation of breaking increased, but were higher than in the control (P < 0.05). MMP-3 and COMP levels were correlated with OA score (r > 0.7, P < 0.05). COMP and MMP-3 levels were correlated between joint fluid and serum (r = 0.899, r = 0.874, P < 0.05, respectively). Long-term joint breaking can cause articular cartilage damage. Doing some activities after the process can promote self-repair of articular cartilage. COMP and MMP-3 levels were associated with articular cartilage destruction and repair.

**Key words:** Osteoarthritis; Cartilage oligomeric matrix protein; Reversible; Matrix metalloproteinase-3