Elucidation of the Mechanism of Cartilage Degeneration in Osteoarthritis Focusing on the Process of Activation of Proteolytic Enzymes

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To elucidate the mechanism of cartilage degeneration in osteoarthritis, cartilage tissues were obtained from osteoarthritic knee joints at macroscopically degenerated areas and preserved areas in pairs, and proteins were extracted. Analysis of the extracted proteins revealed that the expression of two types of plasminogen activators was increased in degenerated areas compared to preserved areas, and plasmin activity was also increased in degenerated areas, by the activities of both types of plasminogen activators. We further performed experiments using primary cultured human articular chondrocytes and found that the change in the surrounding matrix may be involved in the increased expression of the two plasminogen activators in degenerated areas. Thus, the results of this study suggest the possibility that increased plasmin activity may be induced in degenerated areas of osteoarthritic cartilage, likely due to changes in cartilage matrix there.