Evidence for a protective role for adiponectin in Osteoarthritis

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摘要

Abstract

Obesity has been associated with an increased risk of osteoarthritis (OA). However, the mechanism by which obesity contributes to OA remains uncertain. Adiponectin, an adipocyte-derived hormone, has shown anti-diabetic and anti-atherogenic properties. In the present study, we aimed to investigate the potential role of adiponectin in OA disease. We demonstrated that adiponectin was present in OA synovial fluid (SF) and its expression level was almost 100-fold decrease compared with that in OA plasma. FPLC and ELISA studies revealed the distribution and abundance of the adiponectin complexes in plasma and SF from patients with OA. The percentage of high molecular weight (HMW) per total adiponectin in OA SF was lower than in OA plasma, while that of the hexamer form was similar and the trimer form was higher. The expression levels of adiponectin receptors AdipoR1 and AdipoR2 were examined in human OA tissues by RT-PCR. AdipoR1 was abundantly expressed in cartilage, bone and synovial tissues, whereas AdipoR2 was rarely detected. Finally, the effects of adiponectin on primary chondrocyte functions were studied by using antibody-based protein array and RT-PCR. The patterns of mRNA expression and protein production strongly indicate that adiponectin is involved in the modulation of cartilage destruction in chondrocytes by up-regulating TIMP-2 and down-regulating IL-1β-induced MMP-13. Together these findings clearly indicate that the adiponectin may act as a protective role in the progression of OA, and this also provide new thinking on the relationship between obesity and OA.