Increased serum ADAMTS-4 in knee osteoarthritis: a potential indicator for the diagnosis of osteoarthritis in early stages

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ABSTRACT. We compared serum levels of a disintegrin and metalloproteinase with thrombospondin motifs (ADAMTS)-4, ADAMTS-5, matrix metalloproteinase (MMP)-1, and MMP-3 in patients with different stages of knee osteoarthritis (OA), and investigated the clinical significance of diagnosing OA in early stages. OA patients were divided into 2 groups: early OA group (44 cases), intermediate and advanced OA group (26 cases). The healthy control group included 30 samples. ADAMTS-4, ADAMTS-5, MMP-1, and MMP-3 levels in the serum were tested using an enzyme-linked immunosorbent assay. A protein-protein interaction network was constructed by seeding the significantly expressed marker, followed by Gene Ontology enrichment analyses using Database for Annotation, Visualization and Integrated Discovery. ADAMTS-4 levels were significantly higher in patients at early stages of OA compared to intermediate or advanced OA and healthy controls. ADAMTS-5, MMP-1, and MMP-3 levels in intermediate and advanced-stage OA patients were significantly higher than those in early-stage OA patients and healthy controls. The protein-protein interaction network showed that ADAMTS-4 participates in...
67 interactions. Gene Ontology enrichment analysis validated that genes associated with ADAMTS-4 participate in collagen metabolism and OA. ADAMTS-4 is a potential biomarker as an early diagnostic indicator of OA.

Key words: ADAMTS; MMP; Osteoarthritis