

Serum YKL-40 levels in healthy children and adults. Comparison with serum and synovial fluid levels of YKL-40 in patients with osteoarthritis or trauma of the knee joint

JS Johansen, J Hvolris, M Hansen, V Backer, I Lorenzen and PA Price
Department of Medicine, University of Copenhagen, Hvidovre Hospital, Denmark.

YKL-40 is a recently discovered human glycoprotein which is related in amino acid sequence to the chitinase protein family. YKL-40 is a major secretory protein of human chondrocytes and synoviocytes, and could play a role in tissue remodelling. The aim of the study was to establish the serum YKL-40 level in normal subjects and to evaluate serum YKL-40 as a marker for osteoarthritis. Serum YKL-40 was 80 micrograms/l in healthy children (n = 476) and 102 micrograms/l in healthy adults (n = 260). No age or sex differences were found in serum YKL-40 in subjects younger than 70 yr, but thereafter serum YKL-40 increased significantly. Patients with late-stage osteoarthritis of the knee (n = 37) had significantly higher serum YKL-40 (1.5-fold; $P < 0.01$) compared to healthy age-matched subjects, whereas patients with early-stage osteoarthritis of the knee or recent torn cruciate ligaments or menisci did not have elevated serum YKL-40. The level of YKL-40 in serum and synovial fluid correlated significantly, and 10-fold higher values were found in synovial fluid. YKL-40 levels in serum and synovial fluid of patients with acute severe synovial inflammation were significantly higher ($P < 0.05$ - $P < 0.001$) than those in patients with no, light or moderate synovitis of the knee joint. Furthermore, YKL-40 correlated significantly ($P < 0.01$) with the amino-terminal propeptide of type III procollagen, but not with serum C-reactive protein. Our data indicate that YKL-40 in synovial fluid and serum may reflect human articular cartilage degradation and the degree of synovial inflammation in the knee joint.

The British Journal of Rheumatology, Vol 35, 553-559