

# ELEVATED LEVELS OF PLASMA COLLAGEN TRIPLE HELIX REPEAT-CONTAINING (CTHRC1) PROTEIN CORRELATES WITH INCREASED GRANULOCYTOPOIESIS AND HIGHER RHEUMATOID ARTHRITIS DISEASE SEVERITY SCORE

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**Introduction:** Monitoring and suppressing activity of the pathological granulating pannus tissue is essential for Rheumatoid Arthritis (RA) management. Synovial joints pain and tissue destruction is a derivative of the pannus activity. In a mouse model for RA we found CTHRC1, a secreted and circulating protein, to be inducible in arthritis and correlated with the disease severity. We performed a clinical investigation to ascertain the role of CTHRC1 in the progression of the disease.

**Materials and methods:** Phlebotomy vein blood samples were collected from RA (n=40) and osteoarthritis (OA) (n=39) patients of Republican Diagnostic Center, Astana, Kazakhstan. The blood samples from healthy patients were used as a reference. Diagnoses were confirmed with MRI and X-ray. DAS28 disease activity score, complete blood counts, rheumatoid factor (RF), C-reactive protein (CRP), anti-cyclic citrullinated peptide antibodies (ACPA), and CHRC1 were assayed.

**Results and discussion:** RA and OA cohorts were of comparable age of 52 versus 56 (RA vs. OA), but significantly different in RF (26 vs. 8.9 u/ml) and in ACPA (35.6 vs. 0.3 u/ml). Circulating CTHRC1 levels were significantly higher both in RA and in OA when compared to normal individuals, with a trend to be higher in RA versus OA. CTHRC1 positively correlated with DAS28 and RF, and with neutrophil and eosinophil counts in RA, but these associations were weak or absent in OA patients.

**Conclusions:** CTHRC1 was found earlier to be produced by stromal cells and also as a metastasis-promoting protein. We expand its role into pathology of inflammatory and degenerative arthritides. Peripheral CTHRC1 is highly differentiating between healthy individuals and RA and OA patients with indication of the control of granulocytopoiesis.

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