A103 MAST CELLS CONTRIBUTE TO SYNOVIAL INFLAMMATION IN NON-PSORIATIC AND PSORIATIC SPONDYLOARTHRITIS

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Objective The authors recently observed a striking synovial infiltration with cells positive for C-kit, a marker for mast cells, in psoriatic arthritis (PsA). As mast cells have potent inflammatory functions including the production of tumour necrosis factor (TNF), the authors performed a systematic analysis of C-kit positive cells in different forms of chronic inflammatory arthritis.

Materials and Methods Synovial tissue biopsies from active rheumatoid arthritis (RA), non-psoriatic spondyloarthritis (SpA) and PsA were stained by immunohistochemistry and double immunofluorescence. Synovial fluid (SF) from RA, SpA and PsA was analysed by ImmunoCap and ELISA. The effect of C-kit inhibition by imatinib mesylate on proinflammatory cytokine production was tested in vitro on fresh SpA synovial biopsies.

Results C-kit positive mononuclear cells were found in the synovial sublining in all disease groups but were significantly increased in SpA and PsA vs RA, despite similar levels of global inflammation as reflected by CD3, CD20 and CD68 staining. Double stainings confirmed that C-kit positive cells were not haematopoietic stem cells but mast cells. Synovial infiltration by mast cells was not purely inflammation-driven as it persisted in SpA synovial biopsies taken after 12 weeks of successful treatment with tumour necrosis factor (TNF) blockers. SF levels of factors involved in chemotaxis and differentiation of mast cells such as SCF, interleukin (IL)3 and IL33 were similar in all groups but sST2, the soluble decoy receptor for IL33, was significantly decreased in SpA. As to the function of mast cells in synovial inflammation, double staining of the C-kit positive cells with toluidine blue and antitryptase and SF analysis for mast cell products did not show evidence of enhanced degranulation in SpA vs RA synovitis. However, C-kit inhibition in vitro strongly reduced the production (mRNA by qPCR) and secretion (protein by ELISA) of IL6 and IL8 by synovial biopsies, suggesting that mast cells contribute to the ongoing inflammatory process.

Conclusion There is increased synovial infiltration of C-kit positive mast cells in non-psoriatic and psoriatic SpA. Inhibition of C-kit in vitro leads to a reduction in proinflammatory cytokine production by synovial biopsies. These data suggest a role for mast cells in driving and/or sustaining synovial inflammation in SpA.

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