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Mast cells in arthritis

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Keywords

Animal model, autoantibodies, mast cells, rheumatoid arthritis

Context

Increased numbers of mast cells (MCs) are found in the synovial tissues of patients with rheumatoid arthritis (RA), and at sites of erosion. Degranulation and activation of MCs has been observed in RA synovium, but the contribution of MCs to the pathogenesis of RA remains unknown. Upon activation, MCs release potent mediators (including TNF-α) with multiple functions in inflammation and tissue damage. Using genetically deficient mice, this study investigates the potential participation of MCs in arthritis.

Significant findings

In two strains of mice deficient in mast cells, W/Wv and Sl/Sld, the development of joint inflammation in response to arthritogenic autoantibodies from K/BxN mice was abrogated. Susceptibility was restored in the W/Wv strain by MC engraftment, and development of arthritis was preceded by MC degranulation.

Comments

The authors provide evidence on the potential of MCs to cause inflammatory and destructive arthritis. They suggest that this is an early and probably direct effect of autoantibodies or immunocomplexes on the MC Fcγ Receptor, suggestive of an Arthus reaction. Chronic arthritis in the K/BxN model is fully transferred by serum and seems highly dependent on autoantibodies. However, the participation of local or systemic autoantibodies and immunocomplexes in the pathogenesis of human RA is not as clear as in

this model. It is important to note that serum transfer leads only to transient arthritis. The authors need to repeat these experiments in MC deficient animals that have been back-crossed onto the K/BXN background. It will be interesting to confirm whether the observed MC degranulation in human RA is due to autoantibodies or immunocomplexes, and the relative importance of such phenomenon in the complex cellular events contributing to rheumatoid joint destruction.

Methods

Serum transfer from K/BxN to W/Wv and Sl/Sld MC deficient mice, clinical and histopathological analysis, MC transfer

References

1. Lee DM, Friend DS, Gurish MF, Benoist C, Mathis D, Brenner MB: Mast cells: a cellular link between autoantibodies and inflammatory arthritis. Science. 2002, 297: 1689-1692.