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Emerging cell-targeted biologic therapies in rheumatoid arthritis

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The field of stem cell research is increasing exponentially and encompasses a wide range of topics-from deepening our understanding of cellular development to applying these findings to repair and create organs. Fundamental to the use of any stem cell therapy is a clear understanding of the immunology for allotransplantation as well as autotransplantation for malignancies and immunologically mediated diseases such as rheumatoid arthritis (RA). There has been a long-standing interest in manipulating cells of the immune system to achieve control of RA. Because of the prominence of T lymphocytes in rheumatoid synovitis, early attempts focused on the depletion of this cell population in the hope of ameliorating the disease. Interestingly, the T cells persisted in the synovial membrane despite profound peripheral lymphopenia. A host of other T cell–depleting strategies were associated with either unacceptable toxicity or modest efficacy or both. More recently, interest has focused on modulating T cell function rather than depleting large number of T cells or subsets of T cells. The important role of costimulation in the activation of T cells is now well understood, and this process has been targeted therapeutically with the cytotoxic T lymphocyte-associated antigen 4-Ig fusion protein, which interferes with costimulation without depletion of T cells. In contrast to T cells, B cells had largely been ignored in RA pathogenesis until recently. After a period of prolonged indifference, the potential therapeutic utility of manipulating B cells in RA has been explored in recent years. These cells are well known to be responsible for producing rheumatoid factors (RF) and other RA-associated autoantibodies such as anti-cyclical citrullinated peptide. Importantly, B cells, which are abundant in the synovium of most patients with well-established RA, also act as highly efficient antigen-presenting cells (APC) to T cells and thus may play an important role in synovial T cell activation. It has thus been postulated that depletion of B cells or modulation of their function may be associated with clinical benefit in RA. Biologic therapies targeting T cells and B cells have been developed and evaluated in well-designed clinical trials in patients with rheumatoid arthritis.

Biography

Ravendra P.S. Chauhan holds a Master of Science in Biotechnology from Amity University, UP, India. He has been working in the area of herbal research at Amity University since December 2011. He has published one article in peer reviewed international journal and several abstracts in reputed international conferences. He has presented several posters in various national and international conferences and symposia.

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