CD70: probably being a therapeutic target in human multiple sclerosis

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Multiple sclerosis (MS) is an immune-mediated chronic inflammatory demyelinating disease of the CNS in humans characterized by organs fibrosis, predominantly encroaches on skin, blood vessel, and internal organs, and consequently results in a series of pathology and physical changes. Although etiology of MS is not clarified yet, the key mechanisms in the pathogenesis of MS appear to involve the breakdown of immune self-tolerance and subsequent demyelination in the CNS and inflammation [1].

Recently, Aktas et al. and Yanagisawa et al. [2, 3] have reported that function of tumor necrosis factor (TNF) family played an particular immune role in the incidence of MS. CD70, the ligand of CD27, which was constitutively expressed on naive and memory T cells as well as on subsets of NK cells, activated B cells, and hematopoietic progenitor cells, is tightly regulated [4, 5]. Experiment on mice injected with TMEV, which can cause CNS disease in mice, results in chronic, progressive demyelinating disease characterized histologically by perivascular inflammatory cell infiltrates and primary demyelination of the CNS, and then treating the mice with anti-CD70 mAb in effector phase markedly prevented the development of TMEV-IDD. Moreover, CD70–CD27 interaction has been shown to be significantly important for modulating both costimulation and target cell death in the course of autoimmune demyelination, commencing Th1 differentiation of CD4⁺ T cells, which enhances IFN- γ , TNF- α , and IL-2 production. Therefore, inhibition of CD70–CD27 interaction affected the development of IFN- γ -producing Th1 cells and accumulation of Th1 cells in the spinal cord. As is known,

TMEV-IDD is considered to be the Th1 disease, which is involved in human MS. Furthermore, persistent CD70 expression also characterizes the human rheumatoid arthritis and systemic lupus erythematosus [6, 7]. Consequently, such autoimmune diseases with the similar pathogenesis to MS exhibited that controlled CD70 appears a novel therapeutic target in human multiple sclerosis.

Conflict of interest The author states that there is no conflict of interest.

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