Treatment of Multiple sclerosis: mechanism of action of natalizumab and interferon-beta

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Multiple sclerosis (MS) is a chronic, inflammatory disease of the central nervous system. It is characterized by multifocal damage - demyelination of nerve cells, and it mainly affects young adults and may lead to significant disability over time. The treatment of relapsing remitting MS has experienced major progress since the first effective disease modifying treatment, interferon beta (IFNβ), became available in 1993. Interferons are naturally occurring cytokines possessing a wide range of anti-inflammatory properties. Various forms of IFNβ are used as a first-line treatment in relapsing forms of MS at present. The mechanism of action of interferon beta in MS is multifactorial and still poorly understood but it is proved that it reduces relapse rates by about 1/3 and reduces the appearance of new magnetic resonance imaging (MRI) lesions by about 2/3. One of the most remarkable new treatments has been natalizumab which is humanized anti-α4ß1 monoclonal antibody. It caused a decrease in the number of relapses and also for some people, within a two-year trial period, there was a slowdown of conduct disability. This mini-review succinctly summarizes clinical effects and possible mechanism of action of natalizumab and interferon beta.