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Beike Stem Cells for Multiple Sclerosis (MS)

What is the disease and how does it affect the body?

Multiple sclerosis (MS) is a common neurological disease and a major cause of disability, particularly affecting young adults. It is characterized by patches of damage occurring throughout the brain and spinal cord, with loss of myelin sheaths – the insulating material around nerve fibres that allows normal conduction of nerve impulses terial around nerve fibre cells that make myelin (oligodendrocytes)[1].MS affects over two million people worldwide and shows a clear gender bias, with women being affected twice as frequently as men[2].Etiology of MS is still unknown; it is generally thought that the disease will develop in genetically susceptible individuals as a result of an autoimmune response directed against components of myelin[2]. An environmental agent or event (virus, bacteria, chemicals, lack of sun exposure) has been hypothesized to act in concert with a specific genetic predisposition to result in immune dysfunction[3].

What happens to the body if the disease remains untreated?

MS affects principally young adults and leads to severe physical and cognitive impairment. MS follows a relapsing-remitting (RR) course in 85% and a primary progressive (PP) course in 15% of patients. In the majority of RR patients, secondary progression (SP) occurs after a median interval of 19 years, with persisting relapses in 40% of cases. Overall,MS patients loose the ability to walk independently at a median age of 63 years, but 1–3% of patients suffer from the malignant form of MS and reach this level of disability only in a few weeks or months[4,5].MS also leads to visual disturbances, loss of sensation, speech and swallowing dysfunction, bowel and bladder incontinence, erectile penile dysfunction.

What are the current treatments and its efficiencies?

MS is, at present, incurable. We do not know the cause of the disease.

We do not know the cause of genetic factors culminating in autoimmune attack within the brain and spinal cord (central nervous system, CNS) is generally the accepted synthesis, but what such environmental factors may be remains obscure. Immune treatments are therefore routinely used, and these can reduce individual relapses both in severity (steroids, given acutely) and in frequency (interferons, glatiramer, and more recently various monoclonal antibodies, taken regularly). However, immune treatments have no impact on patients with progressive disability pact on taken regale deficits continue relentlessly, to accumulate[1].

How stem cells help relieve the disease's symptoms?

Some published papers showed that Mesenchymal stem cell is potentially good for MS [1,6,-11].

Improvement:

Most MS patients Beike have treated, utilizing the combination of mesenchymal stem cell therapy and rehabilitation, showed visible signs of improvement: increasing muscle strength, decreasing muscle tone of spasticity, improving swallow ability, regaining eyesight, regaining motor development and coordination etc.

However, when discussing improvements, it is important to remember that improvements might greatly differ from one patient to another due to many factors, such as patient's medical duration, severity, complication, physical condition, age and so on. Therefore, improvement cannot be guaranteed.

Mechanism:

The mechanisms of mesenchymal stem cell for MS are probably based on the following aspects: (1)MSCs exert their immunomodulatory functions on numerous immune cells including T cells, B cell, NK cells and dendritic cells (DCs)[12],MSC on one side induced peripheral T cell tolerance to myelin proteins thus reducing migration of pathogenic T cells to the CNS and, on the other side, homed themselves to the CNS where they preserved axons and reduced demyelination [6].(2) MSC can protect axons and improve neuronal survival[13-15], possibly via anti-apoptotic effects[16], anti-oxidant effects[17], or the release of trophic factors[18]. (3)MSC can induce endogenous neurogenesis[19] and oligodendrogenesis[20-22].(4)MSC can decrease production of proinflammatory cytokines and chemokines[23] (5)MSCs also appear to reduce gliotic scar formation – gliosis representing a major barrier to spontaneous repair[20,24].

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