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Finding ways for overcoming myelin sheath degeneration

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Myelin sheath is called the insulating layer of the axon (it is a very thin part of the neuron, which transmits the received nerve impulses to the other neuron), which allows nerve impulses to transmit quickly and efficiently along with the nerve cells. It is an important part of the neuron and is made up of proteins and fatty substances. Degeneration or loss of myelin sheath is known as demyelination that causes neurodegenerative autoimmune diseases, which include multiple sclerosis, neuromyelitis optia, encephalomyelitis, transverse myelitis, leukodystrophy, charcot marine, etc. Demyelination occurs when the body's own immune system attacks the myelin sheath; certain other medical conditions can also damage the myelin sheath but some causes are still unknown. This condition is usually seen at the beginning of middle age where early symptoms, such as blurred vision, bladder or bowel problems, unusual nerve pain and fatigue are witnessed. As the condition worsens, numbness of some body parts, loss of reflexes and uncoordinated movements, poorly controlled blood pressure, anaemia, loss of hearing, loss of vision, dizziness, heartbeat palpitations, memory problems, loss of bladder and bowel control, and overall fatigue is experienced, sometimes leading to very fatal conditions. There is no cure for diseases that have myelin sheath degeneration; regrowth of myelin may occur in the damaged areas but it is usually very thin and not effective. Research is going on by surgically implanting oligodendrocyte precursor cells along with myelin repair antibodies which have shown encouraging results in mice but the results of replacing the same technique in humans are unknown. Research is still going on with cholinergic treatments and there is evidence, which shows that myelin can be regrown with thyroxine hormone but the therapies exhibit unacceptable side effects. Researchers are still looking into ways to increase the body’s ability to grow myelin sheath, which requires a lot of research. A technique involving stem cells might regenerate healthy myelin in the future, for which extensive research is being carried out.

Keywords: Demyelination, Neurons, Multiple sclerosis, Leukodystrophy, Cholinergic treatments

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