PERSPECTIVE

Glial cells as a second information system within the central nervous system

by Hans Georg Brecklinghaus
Advanced Certified Rolfer

The brain has about 10 million neurons (nerve cells) and approximately 100 million glial cells (connective tissue cells of the brain). During the development of the brain the nerve cells conduct the glial cells to their places and decide which type of neuron these become. In addition to that they feed the neurons in the CNS, are involved in the immune defense and are fundamentally engaged in the transmission of impulses from neuron to neuron. Newer studies (M.D. Helmut Kettenmann of the Max-Delbrueck-Centrum for Molecular Medicine, Germany) attribute a role in learning and memory functions to the connective tissue of the CNS (neuroglia). Glial cells seem to understand the chemical language of neurons and are even able to switch themselves on for communication with neurons. Glial cells form a network denser than that of neurons and have, like neurons, receptors for neurotransmitter. They can receive impulses. Astrocytes (a group of glial cells) can also respond to impulses. When an astrocyte is stimulated the concentration of calcium, which splashes like a wave through the neighboring astrocytes and neurons, is increased. Besides the transmitter molecule, calcium is a second messenger substance in the transmission of messages. The glial cells apparently influence the neural transmission of impulses decisively. Dr. Kettenmann's conclusion: Next to the neural information system there seems to be a second one, the glial information system. For that reason he describes the nervous system as "a combination of two cell systems." For us Rolfers these newer researches, which were done on cultures with cells, are a further explanation of the far-reaching results of Rolfing®, and of the role of connective tissue in different body functions. Beyond this, these findings can have far-reaching consequences for the therapy of neurological illnesses. One suspects that a transplant of glial cells in a case of multiple sclerosis, Parkinson's disease and Alzheimer's disease can help to get a regeneration of damaged nerve cells. Almost all brain tumors have to be put down to an unchecked proliferation of glial cells.

SOURCES

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