

Chronic Pain Associated with Activation of Brain's Glial Cells

Patients with chronic pain show signs of glial activation in brain centers that modulate pain, according to results from a PET-MRI study.

“Glia appears to be involved in the pathophysiology of chronic pain, and therefore we should consider developing therapeutic approaches targeting glia,” Dr. Marco L. Loggia from Massachusetts General Hospital, Harvard Medical School, Charlestown, Massachusetts, told Reuters Health by email.

“Glial activation is accompanied by many cellular responses, which include the production and release of substances (such as so-called ‘pro-inflammatory cytokines’) that can sensitize the pain pathways in the central nervous system,” he explained. “Thus, glial activation is not a mere reaction to a pain state but actively contributes to the establishment and/or maintenance of persistent pain.”

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Pain is Not Just a Matter of Nerves

The sensation of pain occurs when neural pathways conduct excitation generated by tissue damage to the spinal cord, where the nociceptive information is extensively pre-processed. From there, the information is transmitted to the human brain, where the sensation of “pain” is finally created.

This is the general belief. However, researchers from the Division of Neurophysiology at MedUni Vienna's Center for Brain Research have now discovered that pain is not just a matter of nerves but that non-neuronal cells, the glial cells, are also involved in clinically relevant pain models and their activation is sufficient to amplify pain. The study has now been published in the leading journal "Science".

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