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Neuronal Plasticity and New Insights Into Chronic Pain

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Abstract

Objective

Chronic pain is the result of the complex bidirectional neuronal signaling, neuroinflammation, neural transmission cascades, and other factors including the balance between ascending and descending pain pathways. Our objective was to explore maladaptive neuronal plasticity and its role in chronic pain syndromes.

Methods

The authors did a literature search and created a narrative review with emphasis on clinical studies with various pharmacologic interventions for addressing maladaptive neuronal plasticity in the context of pain.

Results

There are numerous drug targets and pharmacological agents, including tumor necrosis factor alpha blocker, monoclonal antibodies, ketamine, opioids, and others that may help reduce neuroinflammation, block pain, or help address chronic pain. The recognition of nociplastic pain in 2016 is an important step forward in recognizing the role neuronal plasticity plays in how individuals process pain.

Conclusion

Chronic pain is not a monolithic entity nor is it the same in all patients. The recognition that there is no “pain center” in the brain or dedicated pain neurons demonstrates that pain is highly complex and can be individualized. Thus, individualized treatments using a broad array of pharmacologic interventions may offer the best hope to solve the crisis of untreated or under-treated chronic pain.

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Abstract
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