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Brain functional connectivity changes on fMRI in patients with chronic pelvic pain treated with the Neuro Emotional Technique: a randomised controlled trial

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Abstract

Background: Chronic pelvic pain is a substantial clinical challenge that profoundly impacts quality of life for many women. The Neuro Emotional Technique (NET) is a novel mind-body intervention designed to attenuate emotional arousal of distressing thoughts and pain. This study evaluated functional connectivity changes in key areas of the brain in patients with chronic pelvic pain receiving the NET intervention. The goal was to assess whether the NET intervention was associated with functional connectivity (FC) changes in the brain related to reductions in emotional distress and pain, particularly in the limbic areas, sensory/pain regions, and cerebellum.

Methods: This is a prospectively designed study that included twenty-six patients with a diagnosis of chronic pelvic pain who were randomised to either the NET intervention or a waitlist control. To evaluate the primary outcome of neurophysiological effects, all participants received resting state functional blood oxygen level dependent (BOLD) magnetic resonance imaging (rs-fMRI) before and after the NET intervention or waitlist control period. Pain, mood, anxiety, and quality of life also were assessed.

Results: Compared to the control group, the NET group demonstrated significant improvements in pain interference and pain intensity, and in emotional measures such anxiety and depression. Functional connectivity in the NET group compared to controls, was significantly decreased in the amygdala, cerebellum, and postcentral gyrus. There were also significant correlations between FC changes and changes in clinical measures.

Conclusions: This study is an initial step towards describing a neurological signature of reducing emotional distress in women with chronic pelvic pain. Specifically, FC changes between the cerebellum and the amygdala and sensory areas appears to be associated with a reduction in pain and the effects of that pain. Future, larger clinical trials are warranted to further evaluate these mechanisms and NET as a potential therapeutic intervention in patients with chronic pelvic pain.

Plain language summary

Chronic pelvic pain is a serious problem that can make everyday activities like sitting, driving, and even intimate moments very difficult. Chronic pain can also lead to feelings of anxiety and depression, which can make the pain feel worse. The Neuro Emotional Technique (NET) is a type of therapy focusing on emotional distress, often a big part of chronic pain that lowers quality of life. This study looked at whether NET could help people with chronic pelvic pain by reducing their pain, lowering emotional distress, and improving how their brain handles pain. The results showed that people who had NET felt less anxious and depressed. They also had changes in the parts of their brain that deal with pain and emotions, and were linked to less pain and better emotional coping. This study suggests that NET might be a helpful treatment for people dealing with chronic pelvic pain.

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