Results from the 2025 FPRF Scientific Symposium

Multiple Research Projects in TN and Other Facial Pain Were Reviewed

This is the second summary of many studies presented at the 2025 FPRF scientific symposium.

Dr. Mojgan Hodaie Explores the Whole-Brain Impact of Trigeminal Neuralgia

Dr. Mojgan Hodaie and her team at the University of Toronto are reshaping how we understand Trigeminal Neuralgia (TN). Rather than looking only at the nerves and neurons traditionally linked to facial pain, her research examines the entire brain **and the results are revealing just how complex TN truly is.**

At our recent Scientific Symposium, Dr. Hodaie shared key findings from her ongoing studies:

A Whole-Brain Perspective

Using advanced structural and neuroimaging tools, her team has uncovered distinct brain patterns in TN patients. These include changes in areas such as the hippocampus, amygdala, and white matter pathways, as well as measurable differences in the brain's outer structure (cortical morphology). Remarkably, some of these changes begin to normalize after successful surgery—showing how the brain can adapt and recover when pain is relieved.

Predicting Outcomes with AI

By applying machine learning to brain imaging data, the researchers can now predict which patients are more likely to benefit from surgery. Brain-based models have proven to be more accurate than nerve-based ones, paving the way for personalized, image-guided treatment plans.

Cognitive and Emotional Effects

Beyond pain, TN often affects memory, mood, and emotional wellbeing. Many patients experience "brain fog," anxiety, or social withdrawal. MRI studies reveal abnormalities in brain networks involved in memory and emotion, as well as signs of accelerated brain aging—especially in younger female patients. Dr. Hodaie's group is now exploring how these changes connect to biological markers like epigenetic aging.

Sex-Based Differences and Equity in Care

The research also highlights important sex-based differences: women with TN report higher pain levels, longer delays in receiving care, and more cognitive difficulties. These insights reinforce the need for equitable, sex-sensitive treatment approaches that address the full biopsychosocial impact of TN.

Dr. Hodaie's work shifts the conversation around Trigeminal Neuralgia—from a condition viewed narrowly as a nerve disorder to one understood as a complex, whole-brain disease. Her findings are opening new doors to more compassionate and effective care.

If you would like to support future research in facial pain therapeutic development, feel free to visit our donation page on our website!

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