Journal of Pain Research

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LETTER

Pulsed Radiofrequency 2 Hz Preserves the Dorsal Root Ganglion Neuron Physiological Ca2+ Influx, Cytosolic ATP Level, Δψm, and pERK Compared to 4 Hz: An Insight on the Safety of Pulsed Radiofrequency in Pain Management [Letter]

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Dear editor

We read with great interest the article by Laksono et al[1] and believe this represents a fundamental advance in our understanding of not only the mechanisms of action of pulsed radiofrequency but the beginnings of optimization strategies based on strong translational work from bench to bedside.

In Figure 2, the graph of calcium influx through the dorsal root ganglion membrane was consistently positive both during and after pulsed radiofrequency neurotomy was applied at 2Hz. Interestingly, with 4Hz stimulation, there was a large initial increase in calcium influx during stimulus application, but there was a net calcium efflux after cessation of stimulation for the observation period up to 600 seconds. If this net calcium efflux with 4Hz stimulation persists for several minutes or hours, this could lead to a lack of overall adequate net calcium influx, which may be required to trigger the long-term neuroplasticity changes seen with pulsed radiofrequency neurotomy. This fact and the preservation of mitochondrial membrane potential in the 2Hz group would perhaps suggest that 2Hz 20milisecond pulsed radiofrequency neurotomy, as currently practiced clinically, may continue to be the best option for patients.

I would like to ask the authors their thoughts around this concept and any further thoughts they have around potential optimization of pulsed radiofrequency neurotomy parameters.

Disclosure

The author reports no conflicts of interest in this communication.

Reference

1. Laksono RM, SiswagamaTA, Nery FU, van der Weegen W, Halim W. Pulsed radiofrequency 2 Hz preserves the dorsal root ganglion neuron physiological Ca(2+) influx, cytosolic ATP level, deltapsim, and pERK compared to 4 Hz: an insight on the safety of pulsed radiofrequency in pain management. *J Pain Res*. 2023;16:3643–3653. doi:10.2147/JPR.S424489

Received: 20 November 2023
Accepted: 22 February 2024
Published: 27 February 2024

https://doi.org/10.2147/JPR.S450821