Neurosurgical Forum LETTERS TO THE EDITOR

Pain outcomes for trigeminal neuralgia

TO THE EDITOR: We read with great interest the multicenter retrospective study by Mureb et al.¹ on radiosurgery for type 1 trigeminal neuralgia (TN) published in the *Journal of Neurosurgery* in July 2020 (Mureb M, Golub D, Benjamin C, et al. Earlier radiosurgery leads to better pain relief and less medication usage for trigeminal neuralgia patients: an international multicenter study. *J Neurosurg*. Published online July 3, 2020. doi:10.3171/2020.4.JNS192780). In this study the authors concentrated on analyzing pain outcomes, focusing on the time interval between the diagnosis of TN and radiosurgery.

It is well known that in TN unresponsive to pain relief medications, radiosurgical treatment results in a high initial success rate, with 80%–90% pain relief at 90 days.^{2,3} The authors showed that patients who received radiosurgery within 4 years of TN diagnosis achieved significantly faster pain relief and higher pain relief rates at 90 days than those who received radiosurgery after 4 years; more specifically, pain relief occurred at a median of 21 days versus 30 days after treatment, and pain relief at 90 days was recorded in 83.8% versus 73.7% of cases.

On the contrary, the frequent lack of success in obtaining durable pain relief is probably one of the main weaknesses of this treatment. Why the rate of pain recurrence is so high is still unclear. At 5 years, the following rates of maintained pain relief were reported: Regis et al., 64.9%;² Kondziolka et al., 46%.⁴ The authors investigated another detail of this phenomenon, that earlier radiosurgical treatment (within 4 years from TN diagnosis), as well as a higher maximum dose, is predictive of patients being pain free at treatment follow-up. This finding confirms the results already published by Lee et al.⁵ and Mousavi et al.⁶ in case series with smaller cohorts of patients.

Recently, several studies focused on brain MRI in patients affected by TN. Both gray and white matter changes over time were analyzed. Obermann et al.⁷ and Li et al.⁸ demonstrated some changes in gray matter volume and cortical thickness in several brain regions (primary and secondary somatosensory areas, insula, cingulate, hippocampus, amygdala, and thalamus) involved in pain perception and modulation in patients with chronic TN. Furthermore, DeSouza et al.⁹ conducted white matter analysis

and reported some abnormalities in both the trigeminal nerves and the central nervous system. These investigators reported abnormalities in the areas involved in the sensory and cognitive-affective dimensions of pain, attention, and motor function, including the corpus callosum, cingulum, posterior corona radiata, and superior longitudinal fasciculus.

The authors suggested that the duration of the TN may be a critical factor associated with these brain alterations.^{7,9}

It could be hypothesized that neuromodulation from radiosurgical treatment differs in patients with a more recent TN diagnosis compared with patients with an older diagnosis, possibly because of the aforementioned cerebral modifications that occur in patients with long-lasting TN. Further studies should therefore be conducted in this field.

We congratulate the authors for their interesting paper.

Overall, we agree with the authors that radiosurgical treatment should be recommended sooner rather than later in patients with type 1 medically refractory TN to improve treatment effectiveness and to avoid the need for increases in the numbers and/or dose frequencies of drugs (and the resulting well-known negative side effects) to achieve adequate pain relief.

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Disclosures

The authors report no conflict of interest.

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Response

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