Post-traumatic painful trigeminal neuropathy (13.1.2.3-ICHD-3) following misguided gamma knife surgery: A case of diagnostic oversight with lasting consequences

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Objetives

Trigeminal neuralgia (TN) is a debilitating facial pain disorder commonly associated with neurovascular compression (NVC), a frequent radiological finding that is often asymptomatic and insufficient for diagnosis without clinical correlation. Current diagnostic criteria do not support invasive interventions based solely on imaging. We present a case in which Gamma Knife radiosurgery (GKRS) was performed for presumed TN based solely on incidental imaging findings, leading to the development of trigeminal neuropathy.

Materials

50-year-old male with two self-limited episodes of right facial nerve palsy was found, on MRI, an incidental right trigeminal nerve vascular contact and underwent GKRS in March 2024, despite no classic trigeminal neuralgia symptoms. By July 2024, he developed progressive right-sided trigeminal hypoesthesia and dysesthesia involving the ophthalmic and maxillary divisions and, few months later, severe paroxysmal, electric shock-like pain in the right frontal, periorbital, and genian regions, occurring up to five times daily. Brain MRI in December 2024 demonstrated a small enhancing lesion in the cisternal segment of the right trigeminal nerve and mild T2-FLAIR hyperintensity near the root entry zone.

Pharmacologic treatment with carbamazepine, lamotrigine, propranolol, and duloxetine did not provide significant benefit.

Fig. 1

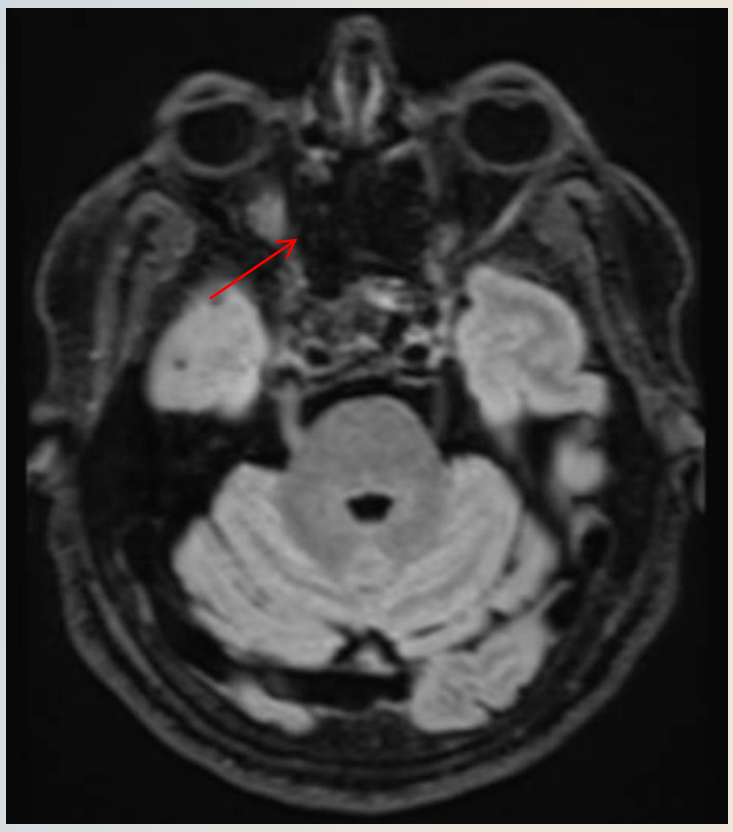

Fig. 2

Fig. 1 Gamma knife targeting performed at another institution
Fig. 2: Brain MRI – Axial T2 FLAIR sequence

Results

The absence of prior symptoms involving the trigeminal regions, the temporal association of symptom with the procedure, and the lack of alternative neuroimaging findings strongly support an iatrogenic etiology. Secondary causes – for example neoplasms, multiple sclerosis, neuroborreliosis, - were excluded by clinical and laboratory evaluation.

Discussion and Conclusions

This case underscores the potential harm of relying solely on imaging findings without corresponding clinical features. GKRS should be reserved for patients with clear symptomatic TN who are refractory to medical therapy and not suitable for microvascular decompression. The patient's case is consistent with a radiosurgery-induced trigeminal neuropathy, fulfilling the criteria for post-traumatic painful trigeminal neuropathy (ICHD-3 code 13.1.2.3). This report highlights the importance of clinical evaluation in facial pain syndromes. Overreliance on radiologic findings without adequate clinical correlation may result in misdiagnosis and unnecessary, potentially harmful interventions.

References

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