Trigeminal neuropathy

Trigeminal neuralgia and deafferentation neuropathic pain, or trigeminal neuropathy, are different symptomatologies, rarely reported to present together.

Trigeminal neuropathy (TNs) is a well-recognized disorder characterized and manifesting as skin and mucosal numbness in the region innervated by the trigeminal nerve. Facial numbness indicates trigeminal sensory alteration affecting the trigeminal system. TNs always pose differential location difficulties as multiple diseases are capable of producing them: they can be the result of traumatism, tumors, or diseases of the connective tissue, infectious or demyelinating diseases, or may be of idiopathic origin. Their importance is explained by the fact that TN may represent the first manifestation of tumor disease, or of relapse in patients with prior neoplastic processes. As such, these manifestations are ominous, and patient life expectancy is often short. The clinical exploration reveals a loss of sensitivity in the cutaneous territory corresponding to the affected nerve, which can be partial (hypoesthesia) or complete (anesthesia). The sensory defect is occasionally associated with hyperesthesia (i.e., the patient suffers a decrease in sensory perception, but when sensation is perceived, it may cause considerable discomfort). Complementary studies are needed to establish the etiologic diagnosis, with laboratory tests to discard the possible causative diseases underlying the trigeminal neuropathy, and the opportune radiographic examinations in the form of plain X-rays or a routine cranial computed tomography scan [1)].

Trigeminal neuropathy (TGN) can occur as a presenting feature of vestibular schwannoma (VS) or as an adverse effect of radiosurgery.

Galloway et al. designed a study to evaluate a treatment algorithm for presenting symptoms of TGN in patients with VS, and a new radiosurgery dosimetric tolerance to avoid TGN after treatment. Outcome was measured after microsurgery (MS), stereotactic radiosurgery (SRS), hypofractionated stereotactic radiotherapy (HSRT), and fractionated radiotherapy (FRT).

A prospectively held VS database was retrospectively analysed from 2011 to 2016 at a tertiary university hospital. All patients who underwent MS from 2011 and all patients who underwent radiotherapy (SRS, HSRT, FRT) from 2015 were studied. Patients on surveillance and neurofibromatosis type 2 patients were not included. Patient demographic data, tumour characteristics, presenting symptoms, and post-treatment outcomes were analysed.

Eighty-eight patients were included in the study (43 microsurgery, 45 radiotherapy). Twenty-seven (31%) patients presented with TGN symptoms. The median age of patients included was 56.5 (range 6-72 years), with a median follow-up for MS and SRS of 38 and 20 months, respectively (range 10-80 months). All 27 patients with TGN were offered MS as per protocol. Three patients declined, or were not fit for surgery, and received FRT. Complete resolution of TGN symptoms was achieved in all 24 patients who underwent MS and 33% (1/3) of patients with FRT. Eleven patients experienced transient post-operative complications (pseudomeningocele (6), meningitis (3), venous sinus thrombosis, cerebellar haemorrhagic contusion, and posterior fossa haematoma). Of the 45 patients in the radiotherapy cohort, 36 were suitable for SRS, of which 30 patients who met the dose-volume constraints for trigeminal nerve underwent single-fraction SRS and 6 patients who did not meet the constraints received HSRT. Nine patients (20%) received FRT including three patients with pre-

treatment TGN. None of the patients developed new TGN symptoms following SRS or HSRT.

This algorithm to select the optimal treatment modality appears to achieve comparable or better long-term outcome. Microsurgical resection in our cohort resulted in complete resolution of symptoms in all patients. None of our SRS- or HSRT-treated patients developed TGN during the follow-up period. The adherence to strict trigeminal nerve dose-volume constraints for SRS remains critical to minimise TGN post treatment. Fractionated radiotherapy is an alternative for patients who refuse surgery or those who are unfit for surgery [2].

Patients receiving > 13 Gy were significantly more likely to develop trigeminal neuropathy than those receiving < 13 Gy ($p < 0.001$) [3].

Case reports

A 65-year-old gentleman suffering from trigeminal neuralgia of the maxillary and mandibular division is reported. He first underwent an infraorbital neurectomy that was complicated by deafferentation neuropathic pain, whilst his mandibular neuralgia continued. He was treated successfully for both the neuropathic and neuralgic symptoms in the same session using ultra-extended euthermic pulsed radiofrequency treatment for the maxillary division (V2) and radiofrequency thermocoagulation for the mandibular division (V3). This report is novel in describing the use of dual modalities in the same session for two distinct coexisting clinical entities in two different divisions of the same cranial nerve. The use of ultra-extended pulsed radiofrequency treatment for neuropathic pain in this case is also unique. Nearly 2years after the procedure, the patient continues to have complete pain relief [4].

1)
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Last update: **2024/06/07 02:52**