

CyberKnife Radiosurgery as a First Treatment for Idiopathic Trigeminal Neuralgia: The Experience of the Besta Neurological Institute

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Objectives: Medically refractory trigeminal neuralgia (TN) has been treated with a variety of minimally invasive techniques, including radiosurgical rhizotomy. Clinical studies showed that radiosurgical procedures are safe and effective for patients not considered good surgical candidates. We present our preliminary experience with 28 cases of medically refractory TN treated only by Frameless CyberKnife System.

Methods: Between September 2004 and March 2006, 46 patients underwent radiosurgical rhizotomy with frameless CyberKnife (fCK). Twenty-eight out of 46 did not undergo previous surgical procedures and were included in the study. CT and MR were used to target the retrogasserian portion of the trigeminal nerve for a mean length of 4 mm. Radiation doses of 55-75 Gy prescribed to the 100% isodose using a 5 mm collimator were administered; the marginal doses ranged between 45 and 63 Gy (median 60). Patients were evaluated for the level of pain control by the Barrow Pain Scale, time to pain relief, occurrence of hypoesthesia, and time to pain recurrence.

Results: The median age at the treatment was 72 years, and the mean number of years with TN pain was eight years (range: one to 20). The median follow up time ranged between nine and 24 months (mean 14.2). All but two patients (92%) achieved a successful treatment outcome. Barrow Pain Scale before radiosurgery was III in one patient (3.5%); IV in seven patients (25%); V in 20 patients (71.5%). The median time to pain relief was three weeks. After radiosurgery, early or delayed facial numbness was not observed. Two cases were not responders. After radiosurgery, Barrow Pain Scale was I, II or III in 22 patients (78.5%). Pain recurrence was experienced in 28% of cases (eight patients) of our series. Recurrence was observed after a mean time of 7.5 months (range 2-14); all but one patient had, before radiosurgery, a Barrow Pain Scale of 5.

Conclusion: CyberKnife radiosurgery for TN allows pain relief at safe doses and is suggested for medically refractory TN. Higher prescribed doses were not associated with improvement in pain relief or recurrence rate.