

Introduction

Primary treatment of trigeminal neuralgia with gamma knife radiosurgery (GKRS) is an accepted and effective modality, but is associated with a significant failure rate. Many of the patients ultimately require additional treatment for adequate pain relief. The present paper discusses the long term outcome of this group of patients who are treated with either repeat GKRS or microvascular decompression (MVD) as a secondary procedure.

Methods

Using the retrospective database, the clinical data was analyzed of the patients who underwent GKRS at our institute between January 2000 and June 2016. The initial GKRS plan included median prescription dose of 80 Gy at a single iso-center using 4mm collimator. The patients who did not improve after initial therapy and maximal medication dosage were offered either repeat radiosurgery or MVD. Repeat radiosurgery included a similar plan but a reduced median prescription dose of 40 Gy. Long term pain relief was measured using Marseille's score. Multiple factors including demographic factors, the type of pain, post GKRS facial numbness, treatment

Results

In the study preriod, a total of 198 patients underwent GKRS for trigeminal neuralgias. Among these patients 42 (21.2%) patients had treatment failure and required additional treatment. The median interval of subsequent interventions was 16 months (range 2months to 154 months). Six patients (14.2%) required repeat treatment after 5 years of initial treatment. Out of 42 failed GKRS patients, 15 (35.7%) underwent repeat radiosurgery and 27 (64.3%) underwent MVD. The mean follow up duration was 4.3 years. Overall, 34 patients (81 %) improved and had adequate pain relief (Marseille's score III or better) after the second procedure. The rate of adequate pain relief after repeat GKRS and microvascular decompression were 86.6% and 77.7% respectively ($p=0.68$). Univariate analysis failed to reveal any significant predictor for pain relief after second treatment.

Conclusions

Repeat GKRS and MVD both are valid treatment options after failed initial radiosurgery, with no difference in long term outcome. Unless specifically indicated, repeat GKRS being noninvasive, may be considered over