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The effects of gamma knife radiosurgery for Trigeminal Neuralgia

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Gamma knife surgery (GKS) has been used for treating intractable pain control, such as trigeminal neuralgia (TN). However, little is known about an objective evaluation and side effects on senses other than pain. The purpose of this study was to examine the period of time necessary for complete pain relief of patients from TN using GKS and to assess the side effects on other somatic senses induced by GKS. Nine patients with TN were investigated by a questionnaire for the symptoms and visual analog scale (VAS) of pain, and were examined for their thresholds of touch sensation using Semmes-Weinstein monofilaments and cold cotton wool pads before and after GKS. MR and CT images were obtained after a Leksell head frame was applied to the head parallel to the trigeminal and the retro Gasserian area was correctly marked on the images. All patients were irradiated a maximum dose of 90 Gy at the retro Gasserian area using a 4mm collimator. The mean value of the scale for pain for nine patients was 8.5±1.4 (SD) and seven of them had facial paresthesia before GKS. Three months after GKS, pain completely disappeared in seven patients. All patients experienced significant pain reduction without side effects on the peripheral nerves within six months after GKS. Allodynia, facial paresthesia or cold sensation numbness disappeared after GKS due to complete pain relief. These results suggest that GKS is not only useful for treatment of TN, but also may greatly contribute to treatments of various diseases.

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