

1: Minim Invasive Neurosurg. 2005 Apr;48(2):91-6.

Image-guided stereotactic radiosurgery with the CyberKnife for pituitary adenomas.

Kajiwara K, Saito K, Yoshikawa K, Kato S, Akimura T, Nomura S, Ishihara H, Suzuki M.

Department of Neurosurgery, Yamaguchi University School of Medicine, Ube, Japan. koji@yamaguchi-u.ac.jp

This study demonstrates the clinical usefulness of image-guided fractionated stereotactic radiosurgery with the CyberKnife system. Twenty-one patients with pituitary adenomas received image-guided stereotactic radiosurgery with the CyberKnife, and were followed up for more than 18 months. The patients consisted of 14 with non-functioning adenomas, 3 with prolactinomas, 2 with acromegaly, and 2 with ACTH-producing tumors. In 20 cases, fractionated radiosurgery was performed. The change in the tumor volume, visual acuity, hormonal function, and complications by this therapy were analyzed in each case. The volume of the tumors ranged from 0.2 cm (3) to 34.9 cm (3) (mean +/- SD: 11.3 +/- 9.2 cm (3)). The mean volumes of the non-functioning and functioning adenomas were 13.3 cm (3) and 7.5 cm (3), respectively. The marginal irradiation dose ranged from 6.4 Gy to 27.7 Gy (mean: non-functioning adenomas 12.6 Gy, functioning adenomas 17.5 Gy), as a dose of a single fraction. The follow-up periods ranged from 18 months to 59 months (mean +/- SD: 35.3 +/- 10.7 months). The tumor control rate was 95.2 %. In 1 case, visual acuity worsened due to cystic enlargement of the tumor. Hormonal function improved in all of the 7 functioning adenomas. The hormone level normalized in 1 prolactinoma, and decreased to less than normal in 1 ACTH-producing adenoma. In 2 cases, hypopituitarism occurred after the therapy. Image-guided stereotactic radiosurgery with the CyberKnife is effective and safe against relatively large pituitary adenomas. Careful long-term follow-up of the patients is necessary because of delayed cystic enlargement of the tumor in rare cases.

PMID: 15906203 [PubMed - indexed for MEDLINE]