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Gamma Knife surgery for convexity, parasagittal, and falcine meningiomas.

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Abstract

Object The aim of this study was to evaluate the outcomes in patients with convexity, parasagittal, or falcine meningiomas treated using Gamma Knife surgery (GKS) and to determine management strategy considering a risk of radiation-induced edema. Methods One hundred twelve patients who harbored 125 convexity, parasagittal, or falcine meningiomas were assessed. Forty-six patients underwent GKS as the initial treatment. The median tumor diameter was 25 mm, and median tumor volume was 8 cm(3). The median maximum and margin doses were 30 and 16 Gy, respectively. Results The median follow-up period was 72 months. The actuarial 5- and 10-year progression-free survival rates were 78% and 55%, respectively. The actuarial 5- and 10-year local tumor control rates were 87% and 71%, respectively. Of 29 tumors that developed postradiosurgical edema, 7 were symptomatic. The actuarial symptomatic radiation-induced edema rate was 7%. The incidence of this complication was significantly higher in patients who underwent GKS as the initial treatment. Six of 46 patients for whom GKS was the initial treatment had preradiosurgical edema. Of these 6 patients, 4 developed severe panhemispheric edema after GKS (2 patients with parasagittal tumors, 1 with a falx tumor, and 1 with a convexity tumor). Conclusions Gamma Knife surgery is an effective treatment for convexity, parasagittal, and falcine meningiomas as the initial or adjuvant treatment. However, GKS should be restricted to small- to medium-sized tumors, particularly in patients with primary tumors, because radiation-induced edema is more common in convexity, parasagittal, and falcine meningiomas than skull base meningiomas.

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