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Stereotactic Radiosurgery for Cranial and Spinal Hemangioblastomas: A Single-Institution Retrospective Series

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Abstract
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Abstract

Objectives:

Stereotactic radiosurgery (SRS) has been an attractive treatment modality for both cranial and spinal hemangioblastomas, especially for multiple lesions commonly associated with von Hippel-Lindau (VHL) disease. This study aims to provide the largest long-term analysis of treatment efficacy and adverse effects of SRS for cranial and spinal hemangioblastomas at a single institution.

Methods:

We evaluated the clinical and radiological outcomes of patients with hemangioblastomas treated with CyberKnife SRS at our institute from 1998 to 2022. The follow-up data were available for 135 hemangioblastomas in 35 patients. Twenty-eight patients had 123 hemangioblastomas associated with VHL, and 7 had 12 sporadic hemangioblastomas. The median age was 36 years, and the median tumor volume accounted for 0.4 cc. The SRS was administered with the median single-fraction equivalent dose of 18 Gy to the 77% median isodose line.

Results:

At a median follow-up of 57 months (range: 3-260), only 20 (16.2%) of the VHL-associated and 1 (8.3%) sporadic hemangioblastomas progressed. The 5-year local tumor control rate was 91.3% for all hemangioblastomas, 91.7% among the sporadic lesions, and 92.9% in patients with VHL. SRS improved tumor-associated symptoms of 98 (74.8%) of 131 symptomatic hemangioblastomas, including headache, neck pain, dizziness, visual disturbances, dysesthesia, ataxia, motor impairment, seizures, and dysphagia. Two patients developed radiation necrosis (5.7%), and 1 of them required surgical resection.

Conclusion(s):

SRS is a safe and effective treatment option for patients with hemangioblastomas in critical locations, such as the brainstem, cervicomedullary junction, and spinal cord, and in patients with multiple hemangioblastomas associated with VHL disease.