



Radiosurgery

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Background

Hydrocephalus may present in patients with vestibular schwannoma (VS) at initial diagnosis, primarily due to the obstructive effects of tumor mass on cerebrospinal fluid (CSF) dynamics. Notably, occurrences of hydrocephalus following either radiosurgery or surgical interventions have also been documented in clinical literature.

Methods

We conducted a retrospective analysis of patients diagnosed with VS who underwent management via surgery or radiosurgery at Stanford Medical Center between 1998 and 2024, focusing on those who subsequently required shunt placement.

Results

A total of 30 patients with VS underwent shunt placement due to hydrocephalus after tumor treatment; 5 patients (16.7%) were managed with radiosurgery and 25 patients (83.3%) with surgery. The median age at treatment was 64 years versus 57 years for the radiosurgery and surgery groups, respectively. There were no significant differences in age, sex, tumor volume, largest diameter at treatment, and tumor Koos grades, between the two groups. Nonetheless, the median time from tumor treatment to shunt placement was significantly longer in the radiosurgery group compared to the surgery group (21.53 versus 1.17 months, p -value=0.002). Regarding CSF parameters, mean white blood cell (WBC) and red blood cell (RBC) counts prior to shunt placement was significantly higher in the surgery versus the radiosurgery group (WBC=83.6 versus 2.0/mm³, p -value=0.001, RBC=3453.4 versus 313.33/mm³, p -value=0.02). CSF protein and glucose were not significantly different between the groups.

Conclusions

The median time from VS treatment to shunt placement due to hydrocephalus was longer in the radiosurgery group compared to the surgery group. Furthermore, pre-shunt CSF WBC and RBC counts were higher in the surgery group. Future studies are needed to better understand treatment outcomes and optimize management strategies for these patients.