Skull base meningioma case series

The combined unmatched cohort included 417 patients. Following propensity score matching for age, tumor volume, and follow-up 110 patients remained in each cohort. Tumor control was achieved in 98.2% and 61.8% of the SRS and active surveillance cohorts, respectively. SRS was associated with superior local tumor control ($p < 0.001$, HR = 0.01, 95% CI = 0.002-0.13) compared to active surveillance. Three patients (2.7%) in the SRS cohort and six (5.5%) in the active surveillance cohort exhibited neurological deterioration. One (0.9%) patient in the SRS-treated and 11 (10%) patients in the active surveillance cohort required surgical management of their meningioma during follow-up.

SRS is associated with superior local control of asymptomatic, skull-based meningiomas as compared to active surveillance and does so with low morbidity rates. SRS should be offered as an alternative to active surveillance as the initial management of asymptomatic skull base meningiomas. Active surveillance policies do not currently specify the optimal time to intervention when meningioma growth is noted. Our results indicate that if active surveillance is the initial management of choice, SRS should be recommended when radiologic tumor progression is noted and prior to clinical progression [1)].

2018

From a prospectively maintained database of 2022 meningioma patients who underwent Leksellstereotactic radiosurgery (SRS) during a 30-year interval, we found 98 patients with petroclival, 242 with cavernous sinus, and 55 patients with cerebellopontine angle meningiomas. Primary radiosurgery was performed in 245 patients. Patients included in this report had at least one CN deficit at the time of initial presentation and a minimum of 12 month follow up. Median age at the time of SRS was 58 years. Median follow up was 58 months (range 12-300 months), Median tumor volume treated with SRS was 5.9 cm3 (range 0.5-37.5 cm3), and median margin dose was 13 Gy (range 9-20Gy).

Tumor control was achieved in 229 patients (93.5%) at a median follow up of 58 months. Progression free survival rate (PFS) after SRS was 98.7% at 1 year, 96.4% at 3 years, 93.7% at 5 years, and 86.4% at 10 years Overall, 114 of the 245 patients (46.5%) reported improvement of CN function. Patients with CP angle meningiomas demonstrated lower rates of CN improvement compared to petroclival and cavernous sinus meningioma patients. Deterioration of CN function after SRS developed in 24 patients (10%). The rate of deterioration was 2.8% at 1 year, 5.2% at 3 years, and 8% at 10 years.

Primary SRS provides effective tumor control and favorable rate of improvement of preexisting CN deficit [2)].

Between May 2010 and November 2014, 110 Patients with skull base meningioma were treated with particle radiotherapy at the Heidelberg Ion Therapy Center (HIT). Primary localizations included the sphenoid wing (n = 42), petroclival region (n = 23), cavernous sinus (n = 4), sella (n = 10) and olfactory nerve (n = 4). Sixty meningiomas were benign (WHO °I); whereas 8 were high-risk (WHO °II (n = 7) and °III (n = 1)). In 42 cases histology was not examined, since no surgery was performed. Proton (n = 104) or carbon ion (n = 6) radiotherapy was applied at Heidelberg Ion Therapy Center (HIT) using raster-scanning technique for active beam delivery. Fifty one patients (46.4%) received

radiotherapy due to tumor progression, 17 (15.5%) after surgical resection and 42 (38.2%) as primary treatment.

Median follow-up in this analysis was 46,8 months (95% CI 39,9-53,7; Q1-Q3 34,3-61,7). Particle radiotherapy could be performed safely without toxicity-related interruptions. No grade IV or V toxicities according to CTCAE v4.0 were observed. Particle RT offered excellent overall local control rates with 100% progression-free survival (PFS) after 36 months and 96.6% after 60 months. Median PFS was not reached due to the small number of events. Histology significantly impacted PFS with superior PFS after 5 years for low-risk tumors (96.6% vs. 75.0%, p = 0,02). Overall survival was 96.2% after 60 months and 92.0% after 72 months from therapy. Of six documented deaths, five were definitely not and the sixth probably not meningioma-related.

Particle radiotherapy is an excellent treatment option for patients with meningiomas of the skull base and can lead to long-term tumor control with minimal side effects. Other prospective studies with longer follow-up will be necessary to further confirm the role of particle radiotherapy in skull base meningioma [3].

2011

Fourty-six patients harboring a skull base meningioma underwent an endoscope-assisted microsurgical resection. In 30 patients (65%), tumor parts which could not be visualized under the microscope were detected with the endoscope. In 26 patients (56%), these tumor remnants were removed under endoscopic view. Gross total resection was achieved in 35 patients (76%) and near-total resection in 11 (24%). There was no surgical mortality. The major complication was new cranial nerve deficit. The application of endoscopes was most useful in the small supraorbital craniotomies to look under the ipsilateral optic nerve and internal carotid artery as well as to visualize the diaphragm sellae and olfactory groove. In the retrosigmoid craniotomies, the endoscope was beneficial to inspect the internal auditory canal, to look into Meckel's cave, or to inspect areas hidden behind the jugular tubercle and tentorial edge. There was no obvious complication related to the application of the endoscope. Endoscope assistance is particularly of value when skull base meningiomas are to be removed via small craniotomies to inspect blind corners which cannot be visualized in a straight line with the microscope. In addition, there is a benefit of using endoscopes with various angles of view in standard craniotomies and skull base approaches to look around bony and dural corners or to look behind neurovascular structures, by which the amount of skull base drilling and retraction to expose the tumor can be reduced [4].

1)
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2)
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