



Optimizing Treatment for Elderly and Very Elderly Patients with Intracranial Meningioma

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The incidence of meningioma, the most common intracranial tumor, increases with age, ranging from 25–30 per 100,000 patients 65–69 years of age to 50 per 100,000 patients >85 years old.¹ The median age of diagnosis for meningiomas is 66, and approximately 15.2% of patients are >75 years old.² Age is an important determinant of treatment responsiveness, as interventions that benefit younger patients such as surgery or radiation could be harmful for elderly patients due to their fragility. Despite the increasingly aging population, studies focused on understanding the best treatment options for elderly (65–80 years old) and very elderly (>80 years old) patients are scarce. This article synthesizes existing evidence regarding treatment options for meningioma in elderly and very elderly patients.

First-line treatment of symptomatic meningioma is surgical resection. Using the National Cancer Database (NCDB), Tang et al.³ demonstrated that gross total resection provided survival advantage in both elderly and very elderly cohorts with World Health Organization grade II atypical meningioma. Contrary to some popular assumptions, very elderly patients could still benefit from aggressive surgical management. Similarly, Buhl et al.⁴ found that elderly patients, especially patients with few comorbidities, had good postoperative outcomes, with the conclusion that advanced age alone should not be a contraindication to operative intervention. Using the Surveillance, Epidemiology, and End Results (SEER) database, the findings of Feng et al.⁵ also supported the utility of surgical resection for elderly patients with high-grade meningioma, but the authors noted that gross total resection did not provide additional benefits compared with subtotal resection, likely due to increased postoperative complications in the more operatively aggressive cohort. Ahmeti et al.⁶ reported that most elderly patients experienced significant improvement in neurological status postoperatively, although they were also more likely to experience complications (e.g., bleeding, pneumonia, renal insufficiency). Rautalin et al.⁷ showed that very elderly patients with meningioma of any grade who were treated surgically tended to have higher short-term mortality within 1 year postoperatively compared with their younger counterparts, but there

was no difference in cumulative mortality. Taken together, the evidence suggests that surgery with careful monitoring of complications could be beneficial for elderly patients with meningiomas, whereas optimal extent of resection warrants further investigation.

Radiotherapy is also an important treatment modality for meningioma. Patients may receive radiotherapy alone or adjuvant radiotherapy following surgical resection, with radiotherapy alone typically prescribed in cases where surgical resection is not advisable. Hallak et al.⁸ demonstrated that stereotactic radiosurgery achieved better tumor control compared with surveillance alone in elderly patients with meningioma. Findings for the role of adjuvant radiotherapy for meningioma (especially high-grade meningioma) have been inconclusive. Tang et al.³ showed that adjuvant radiotherapy provides significant survival benefits for very elderly patients compared with elderly patients (hazards ratio 0.51) with high-grade meningioma; however, currently only 14.13% of very elderly patients receive adjuvant radiotherapy compared with 26.50% of elderly patients. The efficacy of adjuvant radiotherapy is further supported by the work of Karabacak et al.⁹ using the same national database. Hence, very elderly patients with high-grade meningioma could benefit from increased prescription of adjuvant radiotherapy.

Systemic therapies are rarely prescribed for meningiomas. They are typically used as a last resort for patients with aggressive metastatic or recurrent disease.¹⁰ Most studies on the efficacy of systemic therapy for meningioma are limited by small sample sizes.

Emerging evidence suggests that, similar to younger patients, elderly and very elderly patients with intracranial meningioma could still benefit from surgical resection and radiotherapy. However, it is worth noting that most current evidence is retrospective. There is a need for more prospective studies and randomized clinical trials focused on elderly patients with meningioma to corroborate the current retrospective evidence. Additionally, treatment plans for elderly patients should be individualized taking into consideration patients' comorbidities, quality of life, and goals of care.

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