WHO Grade 1 Meningioma

see also WHO Grade 2 Meningioma and WHO Grade 3 Meningioma

WHO Grade 1 meningiomas are the most common and least aggressive subtype of meningiomas. They are classified as **benign tumors** based on histopathological and biological criteria defined by the World Health Organization (WHO).

Definition

A **WHO Grade 1 meningioma** is a slow-growing, well-differentiated tumor that originates from the meningothelial (arachnoid cap) cells of the dura mater. It typically shows no brain invasion and has a low risk of recurrence following complete surgical resection.

Histological Subtypes

WHO Grade 1 includes the following subtypes:

- **Meningothelial**
- **Fibrous (fibroblastic)**
- **Transitional (mixed)**
- **Psammomatous**
- **Angiomatous**
- **Microcystic**
- **Secretory**
- **Lymphoplasmacyte-rich**
- **Metaplastic**

Histopathological Features

- Low mitotic index (<4 mitoses per 10 HPF)
- Absence of brain invasion
- Uniform nuclei, minimal pleomorphism
- Absence of necrosis and prominent nucleoli
- May contain psammoma bodies (calcifications)

Clinical Behavior

- **Growth**: Typically slow-growing
- **Location**: Most often supratentorial (convexity, parasagittal, sphenoid ridge), but may occur anywhere along the meninges
- **Symptoms**: Related to mass effect—headache, seizures, focal neurological deficits
- **Recurrence**: Low after Simpson grade I or II resection

Treatment

- **Surgical resection** is the treatment of choice
- **Simpson grade I–III** resection aims to minimize recurrence
- **Adjuvant radiotherapy** is not routinely indicated but may be considered in subtotal resection or recurrence

Prognosis

- **Excellent prognosis** with complete resection
- **5-year recurrence-free survival** >90% for totally resected tumors
- Long-term follow-up recommended for subtotal resections

References

- WHO Classification of Tumours Editorial Board. *WHO Classification of Tumours of the Central Nervous System*. 5th ed. IARC, 2021.
- Goldbrunner R, et al. EANO guidelines for the diagnosis and treatment of meningiomas. *Lancet Oncol*. 2016.

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