Sporadic Meningioma

A **sporadic meningioma** is a meningioma that arises **without a known hereditary or familial predisposition**. These tumors develop **de novo**, typically as **isolated lesions**, and account for the majority of meningioma cases in the general population.

Definition

A **meningioma** is a primary central nervous system tumor that arises from the **arachnoid cap cells** of the meninges. When it occurs **outside the context of genetic syndromes** such as neurofibromatosis type 2 (NF2), it is classified as **sporadic**.

Epidemiology

- Represents ~80–90% of all meningiomas.
- More common in **women**.
- Typically occurs in **middle-aged to older adults**.
- Risk factors may include **age**, **ionizing radiation**, and **hormonal influences**.

Molecular Features

- **NF2 gene mutation or 22q deletion**: common in sporadic **grade I and II** meningiomas.
- **Non-NF2 mutations**: TRAF7, KLF4, AKT1, SMO, and PIK3CA — associated with specific histological subtypes and locations.
- Typically lacks germline mutations found in familial syndromes.

Clinical Presentation

- Often asymptomatic, discovered incidentally.
- Symptoms depend on tumor size and location:
  - Headache
  - Seizures
  - Focal neurological deficits
  - Visual changes, depending on location

Diagnosis

- **Neuroimaging**: MRI with contrast (gold standard)
- **Histopathological confirmation** after surgical resection
- **Molecular profiling** increasingly used for classification and prognosis

⚕ Treatment

- Observation for small, asymptomatic tumors
- **Surgical resection** (Simpson grade I-II ideal)
- **Radiotherapy** (e.g., stereotactic radiosurgery) for residual or inoperable cases
- Ongoing trials for **targeted therapies** in selected molecular subtypes

🔍 Differential Diagnosis

- Familial or syndromic meningiomas (e.g., NF2-related)
- Hemangiopericytoma / Solitary fibrous tumor
- Dural metastasis

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