SPECIAL SLIDE SEMINAR – CASE 3

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Clinical data

- Female
- 43 years old

- 3 month history of fatigue, drowsiness, tension headache aggravated by movement, gait abnormalities and loss of visual field and visual acuity

MRI

- expansive solid-cystic tumor in the right parieto-occipital region, measuring 58 x 46 mm
- compressing the occipital horn of the right lateral ventricle
- partial contrast enhancement
Pushing borders
Pseudopapillary pattern
Perivascular orientation
Microcystic change
Vimentin
ASTROBLASTOMA
Astroblastoma

- WHO 2007 – rare glial neoplasm composed of GFAP-positive cells with broad processes radiating towards central blood vessels that often demonstrate sclerosis
- 0.45 – 2.8% of primary brain gliomas

- “In the absence of sufficient clinico-pathologic data it is premature to establish a WHO grade at this time”

- The concept of astroblastoma as distinct, unified entity remains controversial
Epidemiology, localization, imaging

- Most frequent in children, adolescents and young adults
- Due to lack of uniform criteria – definitive epidemiological data are not available

- 3 published series – total 40 cases:
  - Age range 1 – 58 years
  - 30 F: 10 M

- Typically involve, but are not restricted to, the cerebral hemispheres
- CT/MRI: large, well-demarcated, non-calcified, nodular or lobulated masses with frequent cystic change and conspicuous contrast enhancement
Histopathology

- Should be circumscribed at the histologic level

- cannot contain elements of diffusely infiltrating astrocytoma, gemistocytic astrocytoma or conventional ependymoma

- Lack of fibrillarity is an essential feature in distinguishing astroblastomas from other glial neoplasms

- Characteristic pushing margin, although a narrow rim of infiltration can be seen
Histopathology

- **Cartwheel** - Perivascular orientation of the neoplastic cells, which have unipolar short, broad processes anchored to stromal blood vessels
- **Pseudopapillary appearance** - areas of perivascular structuring can be solid or loosely textured
- Progressive **hyalinization of blood vessel walls** is regularly seen

![Histopathology images](image-url)
Immunohistochemistry

- cytoplasmic immunoreactivity for
  - vimentin
  - GFAP
  - S100

- variable cell membrane immunoreactivity for
  - EMA

- Ki67 labelling 1 – 18%
Differential diagnosis

- **Ependymoma**
  - Majority infratentorial and centered within or adjacent to the ventricles
  - Fibrillary background
  - Astroblastoma – broad-based perivascular processes
  - Marked hyalinization of vessels usually not seen in ependymoma

- **Papillary meningioma**
  - GFAP negative
Histogenesis

- Histogenesis is controversial
- Entity is not universally accepted
  - The term was applied to diffuse astrocytomas with focal expression of an astroblastic pattern
  - Whether such tumors are an entity or merely a variant of ependymoma remains to be seen
- Tanycyte - a cell with features intermediate between astrocytes and ependymal cells, has been suggested as a cell of origin on the basis of ultrastructural observations
Prognosis

- The demarcation of the lesion, both in well-differentiated and malignant forms, permits **gross total resection** in most cases.
- Gross total resection, even with high-grade astroblastoma, may result in a **favorable** outcome.
- In one study, only a single recurrence was noted in 14 cases treated by gross total resection at a mean follow-up of 24 months.
- Most patients with high-grade tumors have been treated with radiotherapy, but only a short survival periods of 1 to 2 years were noted.
Thank you!