Increased perivascular spaces mimicking frontal lobe tumor


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Prominent perivascular spaces are well-known phenomena; they are usually small and mimic lacunar infarction. Large lesions causing mass effect and subfalcine herniation have not been reported in the neurosurgical literature.

A 51-year-old woman presented with spontaneous onset of weakness and numbness in her left upper and lower limbs that resolved 12 hours following admission. Magnetic resonance images of her brain revealed a multilocular cystic lesion in the medial right frontal lobe with some mass effect and subfalcine herniation (Fig. 1). The differential diagnosis included prominent perivascular spaces, dysembryoplastic neuroepithelial tumor or ganglioglioma, encysted encephalomalacia, low-grade glioma, and inflammatory or infective cystic lesion.

Craniotomy and resection were performed via an interhemispheric approach. The pathological specimen obtained at surgery consisted of cerebral cortex and white matter, and measured 30 × 30 × 15 mm following formalin fixation. The cortex appeared to be variably narrowed and the white matter contained cystic spaces, which extended up to 15 mm in maximum dimension. Histological examination revealed variable cortical compression and some cellular mural thickening of the walls of small cortical blood vessels. No cortical dysplasia was identified. The white matter was rarefied and gliotic, and corpora amylacea were present. The spaces were lined by a flattened layer of cells, and most spaces contained one or more small blood vessels (Fig. 2). The vessel walls were unremarkable. No evidence of neoplasia was found. The pathological diagnosis was increased perivascular spaces in white matter.

Perivascular or Virchow–Robin spaces normally surround perforating arteries to a variable extent; commonly, there are areas of dilation surrounding these vessels in deep cerebral white matter or basal ganglia. Dilated perivascular spaces have frequently been reported to mimic lacunar infarction; however, a lesion as large as this one is rarely encountered. Although Mascabelli, et al., presented a case of a large lesion, it "did not exert mass effect." In contrast, our case is significant in that mass effect and subfalcine herniation were present.

References