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Letter to the Editor

Anterior Temporal Lobe Perivascular Spaces: A Case Report Highlighting Diagnostic Challenges and Clinical Implications

Ön Temporal Lob Perivasküler Boşlukları: Tanısal Zorlukları ve Klinik Uygulamaları Vurgulayan Bir Olgu Sunumu

Ahmet Bozer[1], Yeliz Pekçevik[2,3]

[1]Izmir City Hospital, Department of Radiology, Izmir, Turkey
[2]University of Health Sciences, Turkey, Izmir Tepecik Training and Research Hospital, Department of Radiology, Izmir, Turkey
[3]University of Health Sciences, Turkey, Izmir Faculty of Medicine, Department of Radiology, Izmir, Turkey

Perivascular spaces, also known as Virchow-Robin spaces, are interstitial fluid-filled spaces surrounding cerebral vessels, covering the penetrating arterioles along variable distances with the piamater. When perivascular spaces are significantly enlarged, they are termed as tumefactive perivascular spaces. Tumefactive perivascular spaces are commonly identified in the basal ganglia, convexity white matter, mesencephalon, and occasionally in the cerebellum. Recognizing tumefactive perivascular spaces is essential as they can easily be mistaken for neoplasms, and the rarely resulting local mass effect can lead to complications.

Anterior temporal lobe perivascular spaces, also known as opercular perivascular spaces, are a specific variant of tumefactive perivascular spaces that can mimic cystic tumors with surrounding edema (1,2).

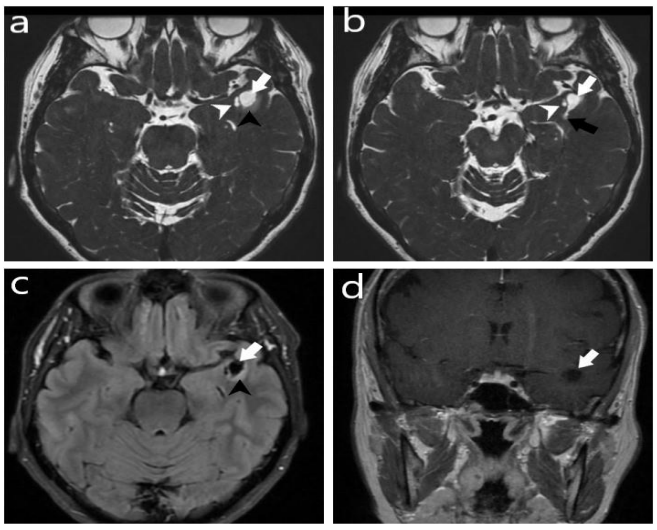
A 58-year-old female patient visited the outpatient clinic with complaints of tinnitus. Temporal magnetic resonance imaging (MRI) was conducted on the patient following a normal clinical examination to investigate the etiology of tinnitus. Incidentally discovered during the MRI, imaging revealed a non-contrast-enhancing cystic lesion exhibiting perilesional T2-weighted (T2W) and FLAIR hyperintensity in the anterior segment of the left temporal lobe, accompanied by adjacent millimetric cysts (Figure 1).

Axial 3D Cube T2-weighted (T2W) images (a,b), axial FLAIR (c), and post-contrast coronal T1-weighted (T1W) (d) images show a non-enhancing enlarged perivascular space (white arrow) in the white matter of the left anterior temporal lobe. Smaller perivascular spaces are also visible (white arrowheads). Perilesional hyperintensity is seen in images (a) and (c) (black arrowheads), and a cerebrospinal fluid intensity tract extending to the lesion is shown in image (b) (black arrow).

the middle cerebral artery (MCA) branch and a cerebrospinal fluid intensity tract extending to the cystic lesion were observed in this area. These radiological findings and lesion location are typical of anterior temporal lobe perivascular spaces.

Diagnosis can sometimes be challenging due to perilesional T2W/FLAIR hyperintensity. Studies in the literature have reported cases where lesions were misinterpreted as tumors (1), resulting in unnecessary surgeries or biopsies. These lesions have been mistakenly reported with preliminary diagnoses such as neuroepithelial cyst, low-grade glioma, DNET (dysembryoplastic neuroepithelial tumors), and choroid fissure cyst.

Figure 1: Magnetic Resonance imaging findings of an incidentally detected anterior temporal lobe perivascular space in a 57-year-old female patient.



Corresponding Author: Ahmet Bozer
Izmir City Hospital, Department of Radiology, Izmir, Turkey
E-mail: drahmetbozer@gmail.com
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In the literature, these lesions have been noted to be stable in the long-term follow-up (3). The severity of perilesional T2W/FLAIR hyperintensity can fluctuate over time (4). They are asymptomatic, occur across all age groups, and are generally reported in females, as in our case (1-4). The MRI findings are quite typical, highlighting the important role of radiologists. Recognizing these lesions accurately is crucial to avoid unnecessary interventions.

Anterior temporal lobe perivascular spaces, unlike tumefactive perivascular spaces elsewhere in the brain, typically have surrounding edema that can range from mild to extensive. Additionally, they are often associated with a branch of the MCA and focal cortical thinning. The cerebrospinal fluid intensity tract extending to the lesion supports the diagnosis.

When correctly diagnosed, no treatment is necessary. Despite being a newly identified lesion, these lesions can be categorized as "do not touch" lesions. Detailed information about the approach to these lesions will be provided with extensive case series and long-term follow-ups in the literature. Biopsy may be required in some cases, especially when there is an increase in perilesional edema, to rule out other conditions. However, biopsy can be confusing in this context, as it can be mistaken for reactive astrogliosis, resembling a glial tumor, leading to more surgical and treatment interventions, especially when the tissue is naturally IDH wildtype.

Author's Contribution

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Written consent was obtained from the patient that her medical data could be published.

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