Large Parenchymal Perianeurysmal Cyst: A Case Report

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Abstract
Parenchymal perianeurysmal cysts are rare. We report a case of a 50-year-old woman who presented with persistent headaches and episodes of vomiting for the last 2 months. Magnetic resonance imaging of the brain showed a well-defined solitary cystic lesion with a mural nodule measuring 5.4 × 5.2 × 4.6 cm in the right basifrontal region. The mural nodule was cortically based. It was hypointense on T2-weighted fluid-attenuated inversion recovery and showed intense contrast enhancement with few nonenhancing areas—no evidence of diffusion restriction. The cyst wall was nonenhancing, and magnetic resonance angiogram was unremarkable. Differential diagnoses included intra-axial gliomas such as ganglioglioma and pleomorphic xanthoastrocytoma. Right pterional craniotomy and a transcortical approach were made. Subtotal excision of cyst and clipping of right middle cerebral artery bifurcation thrombosed aneurysm were done. After 6 months of follow-up, patient is stable without any deficits. A parenchymal perianeurysmal cyst is a rare entity; it is crucial to be considered a differential diagnosis in any cystic lesion with the mural nodule.

Keywords
- intracranial
- aneurysm
- perianeurysmal cyst
- surgery

Introduction
Cyst formation is seen in various intracranial pathologies ranging from congenital or acquired to infectious or tumor related. Occasionally, cyst formation is also seen in cavernous angiomas and arteriovenous malformation. However, the development of cyst in the cerebral aneurysm is rare. We report a case of a fully thrombosed right middle cerebral artery (MCA) aneurysm with parenchymal perianeurysmal cyst with features of mass effect.

Case Report
A 50-year-old woman presented to the emergency ward with a history of persistent headache and vomiting episodes. A computed tomography scan of the brain disclosed a right frontal hypodense cystic lesion with isodense intracystic nodule with specks of hyperdensity at the nodule’s periphery. The lesion was causing compression of frontal horn and foramen of Monro with dilatation of the contralateral occipital horn with subfalcine herniation (►Fig. 1A, B). Magnetic resonance imaging (MRI) and magnetic resonance angiography (MRA) of the brain were done to rule out the malignant space-occupying lesion. MRI showed a well-defined solitary cystic lesion with a mural nodule measuring 5.4 × 5.2 × 4.6 cm in the right basifrontal region. The mural nodule was cortical based in the basifrontal region. It was hypointense on T2-weighted fluid-attenuated inversion recovery and showed intense contrast enhancement with few nonenhancing areas with no diffusion restriction evidence. The cyst wall was nonenhancing, and MRA was unremarkable. Differential diagnosis included...
intra-axial glioma such as ganglioglioma, pleomorphic xanthoastrocytoma (►Fig. 1C–F).

Because of a large cystic lesion causing subfalcine herniation and vomiting episodes with persistent headache, the patient was taken up urgently for surgery. Under general anesthesia, subtotal excision of the cyst was done by the right pterional and transcortical approaches. We found clear fluid in the cyst and no apparent communication between the subarachnoid space and cyst. Inside the cyst, a complete thrombosed MCA aneurysm (1.32 cm) was found. The aneurysm neck was clipped, and the aneurysm was excised (►Fig. 1G, H). Histopathological examination confirmed the lesion to be the aneurysm (►Fig. 2A, B). On review, after 3 months, the patient is stable without any neurological deficits (►Fig. 1I).

Discussion
Sato et al defined a perianeurysmal cyst (2000)7 as a structure with signal intensity and attenuation characteristics

![Fig. 1](image-url)
eventually causes exudation through a largement of cyst. CSF entrapment around aneurysm, leading to gradual abnormal cerebrospinal fluid (CSF) circulation causes local CSF entrapment around aneurysm, leading to gradual enlargement of cyst. But none of these theories satisfactorily explained all the cases reported before.

Perianeurysmal cyst formation has also been seen in postendovascular-treated patients. In many patients, perianeurysmal cyst formation was associated with thrombosed aneurysm, which is present in our case as well. Different methods were employed for the management of cyst. Due to the rarity of the entity, no definitive protocol for management has been described yet.

Conclusion
Perianeurysmal cyst requires treatment. We wish to increase awareness regarding a rare possible differential diagnosis of cystic lesions with the mural nodule so that inadvertent consequences could be avoided during surgical management of such cases in centers where exposures to such cases are limited.

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Conflict of Interest
None declared.

References
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