Epidermoid Cyst Located in Facies Convexa Cerebri with Atypical Images

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To the Editor: Epidermoid cyst, was first described by an artist in a French medical school in 1807,[1] is a kind of congenital disease characterized by a stratified epithelial capsule and laminated keratin debris contents. It accounts for approximately 1% of all intracranial tumors and commonly locates in the cerebellopontine angle, parasellar region, and the fourth ventricle. Cerebrospinal fluid density on magnetic resonance imaging (MRI) with nonenhancing is their typical images. However, epidermoid cysts occurring in an uncommon location with atypical MRI may cause the difficult diagnosis. While the radiological and pathological features of atypical epidermoid cysts have still been unclear, we reported an epidermoid cyst that was located in facies convexa cerebri and presented with atypical images.

A 17-year-old girl was experienced for few minutes' unconsciousness, three times in recent 3 months. Each time before faint, she could feel intermittent numbness in both lower limbs, developing from distal to proximal, following some moderate to intense exercise. No positive family history was obtained. Physical examination revealed that the only neurological positive sign was hypoesthesia in her left lower extremity. Lesion showed block mass in parietal lobe closed to the parietal bone with iso- or hypo-intensity on T1-weighted MRI, and hyperintensity on T2-weighted MRI. There was no empty shadow in the lesion due to the absence of vascular flow and the boundary remained clear. Middle structure shifting was not found. Simultaneously, remarkable enhancing was not discovered after Gd-diethylenetriamine pentaacetic acid administration [Figure 1a-1c]. Lesion also showed the hyperintense signal on diffusion-weighted imaging (DWI). Meanwhile, magnetic resonance spectroscopy (MRS) showed low creatine, choline, N-acetylaspartate (creatine and N-acetylaspartate were obvious), and inverted peak of lactate.

The patient underwent surgery by right parietal approach to the parietal lobe. Tumor with pearly appearance, approximately 3 cm × 3 cm × 3 cm, was in facies convexa cerebri. Taking attention to protecting superior sagittal sinus and avoiding rupture of the cyst, the neurosurgeon totally resected the tumor. Yellow and cheese-like cyst contents emerged after splitting the tumor. Intraoperative frozen pathology declared keratosis and squamous epithelium with the consideration of epidermoid cyst.

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Slight numbness in the left leg was left over without any other neurological deficits after operation. During the hospitalization, unconsciousness was not relieved. The patient was discharged on the 7th day after surgery without any neurological deterioration. On the day of discharge, postoperative pathology also confirmed diagnosis of epidermoid cyst according to remarkable keratosis and squamous epithelium. Moreover, it showed hemorrhage in tumor as arrows pointing [Figure 1d]. Followed up for 6 months, the symptom of the patient had improved without any unconsciousness.

Intracranial epidermoid cysts are slow-growing benign tumors, arising from the inclusion of ectodermal tissue during the neural tube closure or formation of the secondary cerebral vesicles. So far, this is the first case of epidermoid cyst that was located in the facies convexa cerebri with atypical images. In preoperative MRI, iso- or hypo-intensity on T1-weighted and hyperintensity on T2-weighted without conspicuous enhance offered little hint of actual diagnosis. Nevertheless, with the help of histopathology, we speculated that atypical MRI was due to hemorrhage in the epidermoid cyst. In general, atypical MRI in intracranial epidermoid cysts may be attributed to factors of high proteinaceous content or abundance of polymorphonuclear leukocytes in the cyst, creamy texture or nonsolid of the cyst contents, and calcification and hemorrhage within the cyst.[2] Hemorrhage of epidermoid cyst can lead to atypical images in the form of variable signal intensity on MRI, according to the age of the bleed.[2] In 2013, Ren *et al*.[3] verified hemorrhage in 21 patients of 24 atypical intracranial epidermoid cysts. Accordingly, we confirmed that atypical MRI rests ascribable to spontaneous hemorrhage in the case.

Moreover, we also conducted MRS and DWI before operation. DWI images showed markedly restricted diffusion with high signal intensity, the same as typical DWI findings. MRS

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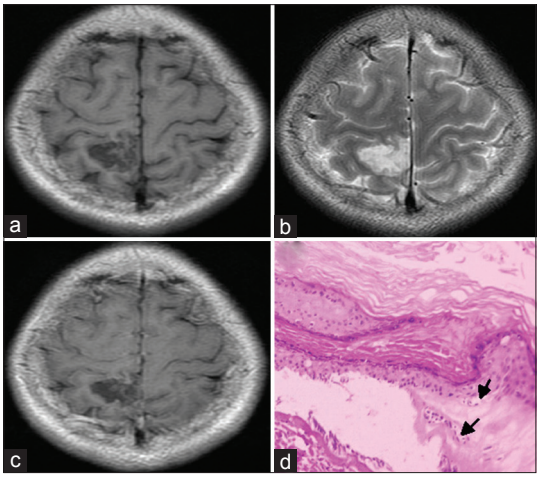

Figure 1: (a) Axial view showed lesion in parietal lobe with iso- or hypo-intensity on T1-weighted magnetic resonance imaging, (b) Hyperintensity on T2-weighted magnetic resonance imaging. (c) No remarkable contrast enhancement on T1-weighted magnetic resonance imaging after contrast-medium administration. (d) Remarkable keratosis and squamous epithelium with hemorrhage in tumor as arrows pointing in routine pathology (H and E staining, magnification, ×20).

images demonstrated low creatine, choline, N-acetylaspartate (creatine and N-acetylaspartate were obvious), and inverted peak of lactate, differing with widely accepted typical spectrum of an intracranial epidermoid cyst, which presents with a high lactate peak at 1.3 ppm with a virtual absence of the normal brain metabolites (N-acetylaspartate, creatine, and choline).[4] In 2013, Schoors *et al*.[5] described that glycolysis had influence on activating and restraining pathological neovascularization. As MRS images prompted reduced glycolysis, we inferred the lesion had pathological neovascularization in the progress of this case.

In intracranial epidermoid cyst, total removal of lesion is the definitive and ideal treatment. Simultaneously, to reach none chemical inflammation and better outcome, clearing free pieces of tumor and protecting important vessels and functional region become indispensable. As a result, a good outcome of our patient was affirmed in follow-up.

In brief, epidermoid cyst presenting with atypical images located in facies convexa cerebri is very rare. Atypical magnetic resonance findings can be caused by hemorrhage within epidermoid cysts. Fluctuation of lactate in lesion gives hint of pathological neovascularization. To achieve good outcome, thorough preoperative magnetic resonance examination and intraoperative total resection become necessary in similar cases.

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Conflicts of interest
There are no conflicts of interest.

References
1. Grant FC, Austin GM. Epidermoids: Clinical evaluation and surgical results. J Neurosurg 1950;7:190-8. doi: 10.3171/jns.1950.7.3.0190.
2. Savardekar AR, Singh H, Gupta SK, Rane S, Radotra BD. Atypical features of a midline pre-pontine epidermoid cyst. Br J Neurosurg 2013;27:390-2. doi: 10.3109/02688697.2012.741734.
3. Ren X, Lin S, Wang Z, Luo L, Jiang Z, Sui D, *et al*. Clinical, radiological, and pathological features of 24 atypical intracranial epidermoid cysts. J Neurosurg 2012;116:611-21. doi: 10.3171/2011.10.JNS111462.
4. Nguyen JB, Ahktar N, Delgado PN, Lowe LH. Magnetic resonance imaging and proton magnetic resonance spectroscopy of intracranial epidermoid tumors. Crit Rev Comput Tomogr 2004;45:389-427. doi: 10.3109/10408370490903543.
5. Schoors S, De Bock K, Cantelmo AR, Georgiadou M, Ghesquière B, Cauwenberghs S, *et al.* Partial and transient reduction of glycolysis by PFKFB3 blockade reduces pathological angiogenesis. Cell Metab 2014;19:37-48. doi: 10.1016/j.cmet.2013.11.008.