Spontaneous Rupture of Intracranial Dermoid Cyst Mimicking a Primary Psychiatric Disorder

Primer Bir Psikiyatrik Bozukluğu Taklit Eden Spontan Rüptüre İntrakraniyal Dermoid Kist

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ABSTRACT

We discussed the case of a 14-year-old patient with acute onset of psychiatric symptoms for two months who had been examined and different antipsychotic drugs had been prescribed by several psychiatrists without any neuroradiological imaging. Because of unresponsiveness to the antipsychotic drugs, computed tomography and magnetic resonance imaging were performed which revealed a ruptured intracranial dermoid cyst. The patient underwent surgery and antipsychotic medications were withdrawn in short time. The emphasis of this case is that intracranial lesions can present with neuropsychiatric symptoms and findings only without any neurological deficit or signs. (*Archives of Neuropsychiatry 2014; 51: 181-183*)

Key words: Dermoid cyst, intracranial tumor, magnetic resonance imaging, psychiatric disorder

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ÖZET

On dört yaşında yaklaşık olarak 2 aydır akut başlangıçlı psikiyatrik semptomları olan, herhangi bir nöroradyolojik görüntüleme yapılmaksızın farklı kliniklerde çeşitli antipsikotik ilaçlar başlanan olguyu tartıştık. Antipsikotik ilaçlara yanıt alınamaması üzerine çekilen bilgisayarlı tomografi ve manyetik rezonans görüntülemelerde intrakraniyal rüptüre dermoid kist tanısı konuldu. Cerrahi tedavi uygulandı ve kısa bir süre içerisinde antipsikotik ilaçları kesildi. Olguda intrakraniyal lezyonların belirgin bir nörolojik defisit veya bulgu olmaksızın sadece nöropsikiyatrik semptom ve bulgularla başvuruabilecekleri vurgulanmıştır. (*Nöropsikiyatri Arşivi 2014; 51: 181-183*)

Anahtar kelimeler: Dermoid kist, intrakraniyal tümör, manyetik rezonans görüntüleme, psikiyatrik bozukluk

Çıkar çatışması: Yazarlar bu makale ile ilgili olarak herhangi bir çıkar çatışması bildirmemişlerdir.

Introduction

Intracranial dermoid cysts (IDC) are benign, rare, slow growing lesions and they arise from inclusion of ectodermally committed cells at the time of closure of the neural groove between the third and fifth week of embryonic life, thus usually located along the midline (1). Various clinical aspects, such as presentation with increased intracranial pressure, hydrocephalus, epileptic seizures, aseptic meningitis (Mollaret's meningitis), focal neurological deficits, and also rarely neurobehavioral symptoms have been reported (2,3,4). A 14-year-old male patient presented with acute-onset neuropsychiatric symptoms for two months. He had been examined and different antipsychotic drugs had been prescribed by several psychiatrists without any neuroradiological imaging. In our clinic, because of unresponsiveness to antipsychotic drugs, computed tomography (CT) and magnetic resonance imaging

(MRI) of the brain were performed which revealed ruptured IDC. We have discussed the importance of modern neuroradiological modalities in patients presenting only with neuropsychiatric symptoms for the exclusion of possible organic brain pathologies or space-occupying lesions.

Case

A 14-years-old male patient with a 2 month history of psychosis presented to our outpatient neurosurgery clinic complaining of continued amnesia, irritability, aggression, insomnia, social withdrawal, and mild headache. There was no history of head trauma, cranial surgery or epileptic seizures. Neurological examination was normal. Laboratory tests and electrocardiogram were normal. CT scans revealed a huge hypodense lesion (-70

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Hounsfield Unit) measuring 26x21x35 mm in the suprasellar, left temporolimbic and parahippocampal regions. In addition, multiple small hypodense disseminated possible fat droplets were seen in the subarachnoid space (Figure 1). To confirm the ruptured IDC, MRI (T1, T2, FLAIR and diffusion-weighted imaging-DWI-) was taken and mainly hypointense and laterally non-homogeneously iso-to hyperintense signal of dermoid cyst adherent to the optic chiasm, cavernous sinus and also spilling of fatty particles into the subarachnoid space were seen (Figure 1). Neuropsychiatric consultation revealed agitation, anhedonia, impulsive behaviors, aggression, and insomnia despite the use of antipsychotic medications, such as olanzapine, risperidone and sertraline for two months. To prevent the chemical meningitis risk, dexametasone sodium phosphate 8 mg/day was administered by intravenous injection. Transcranial surgery was performed through pterional approach. The entire cyst was dissected carefully from the optic chiasm and cavernous sinus after Sylvian fissure dissection, but the calcified capsule of the cyst was removed subtotaly. The remnants of the tumor capsule were left behind because of the risk of injury to these functional structures. The contents within the tumor cyst consistently included hair follicles, fat and sebaceous glands (Figure 2). At surgery, fat droplets within the subarachnoid space were not removed. Postsurgically, the patient had no seizures or neurological deficit. Pathology confirmed the diagnosis of dermoid cyst (Figure 2). Decrease in neuropsychiatric symptoms and signs was seen obviously just after the surgery and all medications stopped gradually within one week. Intravenous steroid was administered for one week and the patient was discharged uneventfully. MRI performed four weeks surgery after showed minimal residue in the suprasellar region and, hyperintense fat droplets were also present throughout the subarachnoid spaces (Figure 3).

Discussion

Dermoid cysts that represent 0.04%-0.6% of all intracranial tumors are benign lesions of embryological origin and rupture of these tumors is very rare (5,6). These slow-growing tumors are usually located in the midline and most often found in supra and parasellar, frontobasal and temporobasal regions (7,8). Radiological scans in our patient showed temporobasal location.

Dermoid cysts are composed of coarse-fibrous capsule enclosing a thick viscous greenish-brown fluid, macroscopically. This fluid contains lipid metabolites, cholesterol crystals, hair follicles and calcified areas (9). Based on lesion localization, hearing loss, tinnitus, trigeminal neuralgias, hormonal changes, diplopia, blurred vision, visual field defects, hydrocephalus, and epileptic seizures have been reported (10). Despite the adherence of lesion to the optic chiasm and cavernous sinus in this case, there was no neuro-ophthalmological sign detected in physical examination.

Modern radiological techniques such as CT and MRI have revolutionized the diagnosis of these type of tumors. Heterogeneous appearance is usually seen due to mixed composition of the cyst. On CT scans, dermoid cysts, fatty portion of the tumor and fat droplets in the subarachnoid space appear hypodense and calcified regions are seen hyperdense.

Figure 1. Pre-operative computed tomographic (CT) and magnetic resonance imaging (MRI) scans of patient. (a) Sagittal CT scan showing a hypodense lesion in the suprasellar, left temporolimbic and parahippocampal region. Small droplets of hypodensity (white arrows) in the subarachnoid space are also seen. (b) Sagittal contrast-enhanced T1-weighted MRI scan shows mainly hypointense and laterally non-homogeneously iso-to hyperintense signal of dermoid cyst with adherent to the optic chiasm, cavernous sinus and also spilling of fatty particles (white arrows) into the subarachnoid space

Figure 2. Intraoperative photograph and histopathological analysis (a) Macroscopic picture showing removal of cystic contents of the dermoid comprised of fatty debris, desquamated skin and hair. (b) Histopathological analysis showing sebaceous glands, sweat glands, adipose tissue and hair follicles consistent with a dermoid cyst (H&E; X200)

Figure 3. Post-operative sagittal MRI scan 1 month after surgery showed minimal residue in the suprasellar region and hyperintense fat droplets were also present throughout the subarachnoid spaces (white arrows)

On MRI scans, dermoid cysts usually appear hyperintense on T1-weighted images consistent with fat content; but, some may appear more heterogenous with minimal enhancement because of the presence of calcifications, hair follicles, epithelial debris and sebaceous secretion. Disseminated lipid droplets in the subarachnoid space or ventricles appear hyperintense on T1-weighted images which are sensitive for the diagnosis of a ruptured dermoid cyst. On T2-weighted imaging, the fat components turn slightly hypointense similar to subcutaneous fat tissue (11). Although both CT and MRI are sensitive, MRI has some distinct advantages such as multiplanar imaging, evaluation of the associated vascular displacement and mass effect on adjacent structures. In addition, exact extend of the mass and its relation to the skull base can be more easily evaluated because of the lack of bone artifacts.

Surgery is the main treatment for dermoid cysts and gross total resection should be aimed. Recurrence is rare but is more common if there are retained portions of tumor wall because the active living part is the capsule (12,13). In this patient, due to adherence to the vital structures, such as cavernous sinus and optic chiasm, we could not resect the capsule of the tumor totally to avoid possible additional neurologic complications. Rupture of the ICD is usually non-fatal and persistence of fat droplets in the subarachnoid spaces may last asymptotically for years, but malignant transformation has been reported in a few cases (14). Hence, patients with subtotally resected tumors should be followed by long-term monitoring with serial MRI scans and clinical examinations to detect possible recurrence or malignant transformation.

Whereas patients with brain neoplasms characteristically have focal neurologic disturbances, it was well recognized before neuroimaging became available that some intracranial space-occupying lesions manifest with neurobehavioral or psychiatric features (15,16). On the other hand, in the last quarter of the twentieth century, Andersson and Cole have reported that only 3% of institutionalized psychiatric patients had intracranial lesions (17,18). Orakcioglu et al. have reported a patient with neurological symptoms associated with acute onset of paranoid-psychotic-type attacks in a series of seven cases of intracranial dermoid cyst (4). Filley et al. also reported increased rates of associated neurobehavioral disorders in brain tumors with chronic late-onset symptoms, especially after the fourth decade and more common in temporal and frontal lobe lesions (19). In our case, the location of the lesion, although defined in the risk zone, young age and the acute onset of neuropsychiatric symptoms were remarkable. Detweiler and et al. have reported a patient with a history of chronic neuropsychiatric symptoms for 36 years. The patient presented with new onset auditory and visual phenomena

because of ruptured intracranial dermoid cyst and, mild residual anxiety have been reported after surgery (3). In our case, neuropsychiatric symptoms completely disappeared in about a week after surgery and there was no need for any antipsychotic medication. Based on this result, early diagnosis and treatment is important for the continuity of social life.

Intracranial lesions can mimic neuropsychiatric diseases or disorders without any neurological symptoms and findings in patients with acute onset of psychiatric symptoms, thus, it should be kept in mind to prevent misdiagnosis. It is reasonable to include intracranial ruptured dermoid cysts in the differential diagnosis for treatment-resistant psychiatric symptoms and findings without any focal deficit.

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