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OLGU SUNUMU/CASE REPORT

A Rare Complication of Frequent Sphenoid Sinusitis Is Subdural Empyema: Case Report

Sık Görülen Sfenoid Sinüzitin Nadir Görülen Bir Komplikasyonu Subdural Ampiyem: Olgu Sunumu

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ABSTRACT

Subdural empyema is a fluid collection between dura and arachnoid layers and can develop secondary to states like meningitis, middle ear infection, paranasal sinus infection, trauma or cranial surgery. It can develop secondary to paranasal sinus infections which are rare observed and lead to a life-threatening situation. Early diagnosis and treatment cause a decrease in mortality and morbidity. As well as nonspecific symptoms and signs might cause, the most common symptom triad of fever, headaches and vomiting. Computerized tomography is the first choice for the diagnosis; however Magnetic Resonance İmaging is more efficient and useful. Broad spectrum antibiotherapy is chosen for the treatment, in most cases surgical drainage becomes necessary. In this paper, we aimed to present a rarely seen subdural empyema case secondary to frequently seen sphenoid sinusitis.

Keywords: Sphenoid sinusitis; subdural empyema; magnetic resonance imaging.

ÖZ

Subdural ampiyem; dura ve araknoid zarlar arasındaki sıvı toplamasıdır ve menenjit, orta kulak enfeksiyonu, paranazal sinüs enfeksiyonu, travma veya kafa cerrahisi gibi durumlara sekonder gelişebilir. Paranazal sinüs enfeksiyonlarına sekonder nadiren hayatı tehdit eden komplikasyonlar gelişebilir. Erken tanı ve tedavi, mortalite ve morbiditede azalmaya neden olur. Ateş, baş ağrısı ve kusma gibi en sık rastlanan semptom triadının yanı sıra spesifik olmayan belirtiler ve işaretler ortaya çıkabilir. Bilgisayarlı tomografi tanı için ilk seçenektir; ancak Manyetik Rezonans Görüntüleme daha etkili ve kullanışlıdır. Tedavi için geniş spektrumlu antibiyoterapi seçilir, çoğu vakada cerrahi drenaj gerekir. Bu yazıda sık görülen sfenoid sinüzit sonrası enfeksiyona sekonder olarak gelişen subdural ampiyem olgusunu sunmayı amaçladık.

Anahtar kelimeler: sfenoid sinüzit, subdural ampiyem, manyetik rezonans görüntüleme.

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INTRODUCTION

Frequently seen paranasal sinus infections may rarely lead to suppurative intracranial infections like meningitis, intracranial abscess, subdural empyema and a subdural abscess. Subdural empyema is the collection of purulent fluid between dura and arachnoid layers and develops usually secondary to meningitis (1). Nonspecific symptoms and findings might cause a delay in the diagnosis and treatment and an increase in the mortality and morbidity consequently (2). The most commonly observed symptom triad is fever, headache and vomiting. The first choice diagnostic imaging method is Computerized Tomography (CT), but the findings might be unclear. Magnetic Resonance imaging (MRI) is used as a secondary and more efficient imaging method. In this paper, a case with subdural abscess which are rarely seen secondary to sphenoid sinusitis was presented.

CASE REPORT

Fifteen-year-old male patient who were on the treatment for his sore throat and headache applied to the emergency department with persistent headache. In the CT scan of the patient who has a normal neurological examination apart from headache, high density subdural air containing fluid collection in his anterior temporal lobe in the right middle cranial fossa was observed (Figure 1a-b). Subdural empyema secondary to sinusitis was the possible diagnosis in the patient who had distinct soft tissue density in sphenoid sinus. Thus, thin section CT of the paranasal sinuses was planned to evaluate the sphenoid sinus more precisely. Thinning of the bone and defective images were observed in the right lateral wall of the sphenoid sinus (Figure 1c-d). In the contrast-enhanced MR images of the patient which was performed to evaluate the soft tissue planes and subdural empyema better, fluid collection with circumferential contrast enhancement, air-fluid level and accompanying peripheral vasogenic edema was detected (Figure 2a-c). Findings firstly increased the diagnostic possibility of the subdural empyema. The patient who had surgical drainage (Figure 3a-b) and antibiotic therapy was taken into follow up.

Figure 1. Fluid collection with air density and peripheral contrast enhancement (dural contrast enhancement) which is consistent with subdural-epidural empyema in the right middle cranial fossa, vasogenic edema region around the fluid collection in brain parenchyma in the axial and sagittal sections of the contrast-enhanced CT (1a & 1b), Erosions and defective regions in the bony structure of the right wall of sphenoid sinus in axial and coronal sections of paranasal thin section CT scan (1c & 1d).

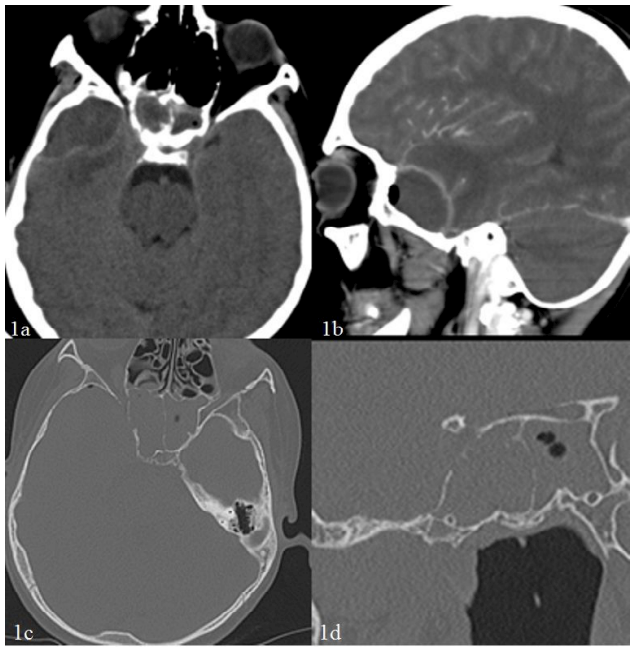


Figure 2. Fluid collection with fluid-debris level and circumferential peripheral edema in the right middle cranial fossa in the axial T2A section (2a), Dural contrast enhancement around fluid collection in the right middle cranial fossa in contrast enhanced T1 axial, sagittal and coronal sections (2b & 2c & 2d).

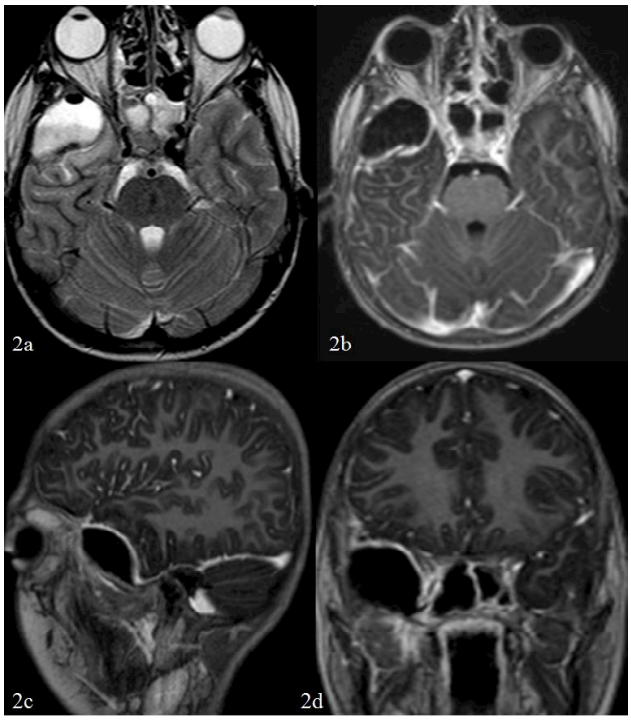
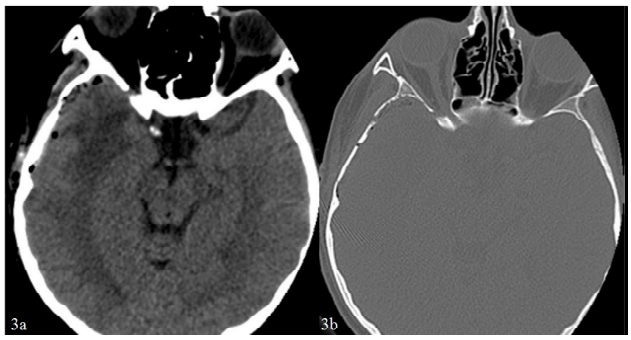


Figure 3. Craniotomy area related with the operation in the temporal bone where the subdural-epidural empyema was evacuated is shown in the post operational parenchymal and bone window axial sections of CT (3a & 3b).



DISCUSSION

Subdural empyema is an urgent neurosurgical situation which is related with high mortality and morbidity (3, 4). Meningitis, paranasal or mastoid sinus infection, middle ear infection, hematogenous dissemination from distant sites, head trauma and postcranial surgery are among the causes of subdural-epidural empyema (5-7). Intracranial complications secondary to sinusitis being rare, their mortality and sequel rates are decreasing with early diagnosis and treatment. However, the mortality rate of the patients secondary to subdural empyema who had antibiotherapy together with surgical treatment was reported to be between 15-30%.

Clinically the patients might present with fever, headache, vomiting, neck stiffness and neurological findings or might be asymptomatic. For an early diagnosis, these findings should be alarming in the presence of a predisposing situation (8). When our patient applied to the hospital for the second time due to persistent headache, air containing subdural fluid collection in the right middle cranial fossa and sphenoid sinusitis drew our attention and the diagnosis of subdural empyema secondary to sinusitis was considered.

CT scan being the first-choice diagnostic modality might give normal findings in 50% of all subdural empyema cases (9). Subdural empyema is observed as fluid collection with a crescent shaped rim-like peripheral contrast enhancement on the cerebral convexity in CT (10). The sensitivity of MRI is 93% and it is the best imaging method for the diagnosis of subdural empyema (11). Fluid collection, meningeal contrast enhancement and brain parenchyma are visualized better with MRI. Diffusion MRI is more reliable for the differentiation of the subdural

empyema from subdural hematoma and effusion. Restriction of diffusion is observed during inflammation. When subdural empyema or effusion is detected in a patient with a worsening clinical picture, diffusion MRI can be performed to make the differential diagnosis faster. In the MRI of our patient, fluid collection with peripheral contrast enhancement and circumferential vasogenic edema was observed in the anterior temporal lobe of his middle cranial fossa.

Even though broad spectrum antibiotherapy is chosen for the treatment, in most cases surgical drainage becomes necessary (12,13). 6-8 weeks of parenteral antibiotherapy is emphasized as the duration of the treatment (13). Our patient was treated with antibiotic together with surgical drainage.

In conclusion, subdural empyema is a rare complication of the sphenoid sinusitis and delay in the diagnosis and treatment might lead an increase in the mortality and morbidity. In the early diagnosis, radiological imaging is very important with suspicion in the clinical findings and physical examination. Diagnosis in the early period of the disease increases the survival of the patients.

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