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Treatment of Chronic Subdural Hematoma with Arachnoid Cyst

Ho Kyu Paik, MD, Seung-Hwan Yoon, MD, Chong-Oon Park, MD and Dong-Keun Hyun, MD

Department of Neurosurgery, Inha University Hospital, Incheon, Korea

Arachnoid cyst is a relatively common congenital intracranial lesion and often accompanies with chronic subdural hematoma. In case of coexisting with chronic subdural hematoma, arachnoid cyst is easily confused to hematoma, which may need surgical exploration. We report a case of chronic subdural hematoma accompanied with arachnoid cyst which was treated by trephination only. In addition, we report the radiologic features of this patient. (J Kor Neurotraumatol Soc 2010;6:150-153)

KEY WORDS: Chronic subdural hematoma · Arachnoid cyst · Trephination.

Introduction

Arachnoid cyst is a congenital intracranial lesion that caused by abnormal development of meninges. It represent about 1% of all intracranial space-occupying lesion.[1,11,24] In 2.43% of patient who has chronic subdural hematoma or hygroma, arachnoid cyst is observed at middle cranial fossa.[21] In young aged patients, because of the possibility of cyst membrane rupture, arachnoid cyst is a risk factor of chronic subdural hematoma.[16] In this situation it is considered that craniotomy is required to remove the hematoma inside of the cyst. We report a case that was accompanied with chronic subdural hematoma and arachnoid cyst. The patient was well treated by trephination only. We will report this case with a review of the radiological findings.

Case Report

A nineteen year old man was admitted to our hospital because of the 3 day lasting vomiting and headache that developed after mild head trauma during exercise 2 months ago. The patient was alert, and did not show any neurological deficit. The brain computed tomography (CT) showed chronic subdural hematoma on the left hemisphere and arachnoid cyst was observed ipsilateral temporal lobe (Figure 1). The brain magnetic resonance image (MRI) of both lesions showed similar signal intensity. So we concluded that the arachnoid cyst was accompanied with the chronic subdural hematoma (Figure 2). We considered craniotomy but, since the patient's age was young and showed no neurological deficit, we decided to execute trephination first. Additional craniotomy was considered if the hematoma does not resolve even after the trephination.

On the CT image immediately after operation, the hematoma inside the arachnoid cyst showed similar density with the cerebrospinal fluid. And two days after then, the CT image showed even more similar density with the cerebrospinal fluid (Figure 3).

Headache was improved and he discharged from hospital without any neurological deficit, at eighth day after the operation. MRI follow-up image after two years later, arachnoid cyst size was decreased and intracystic signal intensity was same as cerebrospinal fluid signal intensity (Figure 4). Nowadays he is doing well without any problem 3 years after the operation.

Discussion

Several studies reported that craniotomy is necessary for removing the hematoma in case of subdural hematoma accompanying with arachnoid cyst.[3,5,6,23,26]

Auer et al.[3] removed chronic subdural hematoma and

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Address for correspondence: Dong-Keun Hyun, MD
Department of Neurosurgery, Inha University Hospital, 7-206 Shinheung-dong 3-ga, Jung-gu, Incheon 400-711, Korea
Tel: +82-32-890-2948, Fax: +82-32-890-2947
E-mail: dkhyun@inha.ac.kr

hematoma in the arachnoid cyst by craniotomy in nine patients who suffered from chronic subdural hematoma accompanied with arachnoid cyst. Hong et al.[13] also performed craniotomy and fenestration of the cyst in patients who suffered from chronic subdural hematoma accompanied with arachnoid cyst.

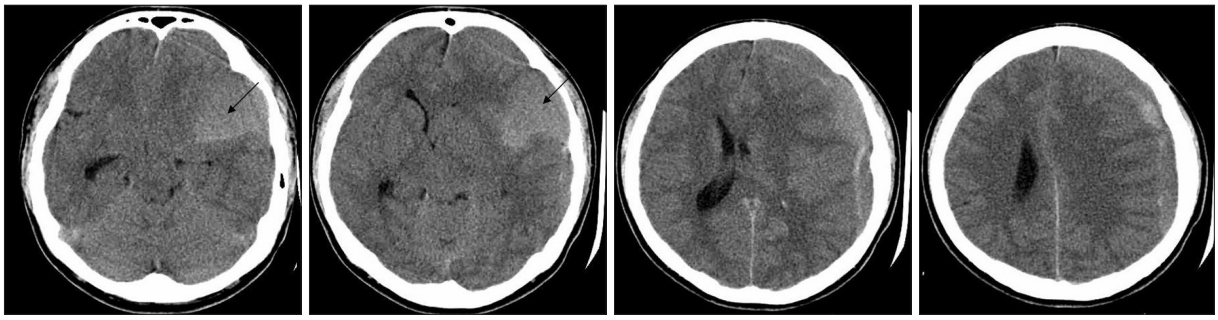

FIGURE 1. Large chronic subdural hematoma is located in left cerebral hemisphere, with underlying associated arachnoid cyst (arrows) in left temporal lobe and superimposed hematoma.

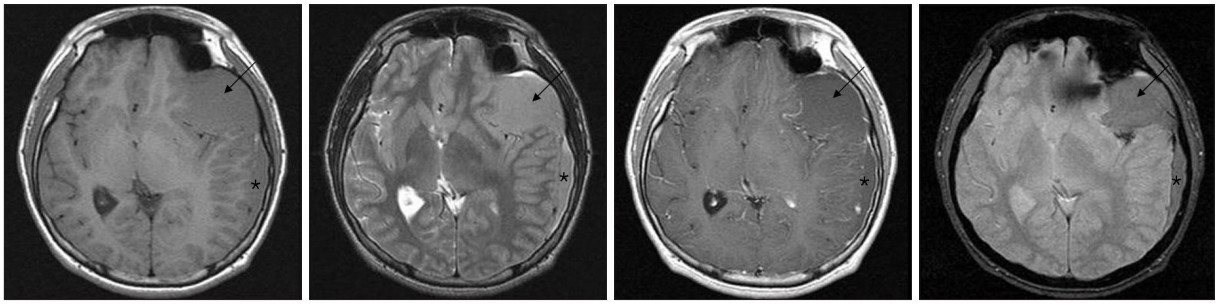

FIGURE 2. Before operation, magnetic resonance image shows multi-staged chronic subdural hematoma in left cerebral hemisphere with hemorrhagic arachnoid cyst in left temporal lobe. It reveals iso-signal intensity with subdural hematoma and arachnoid cyst. The arrows demonstrate the location of the arachnoid cyst and asterisks indicate chronic subdural hematoma.

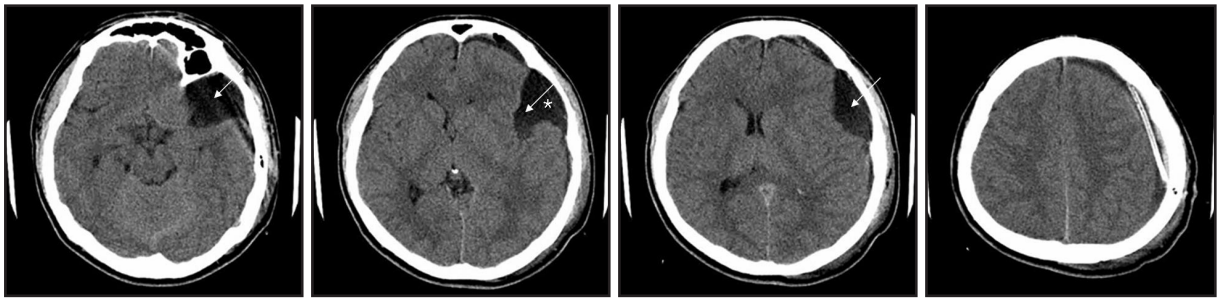

FIGURE 3. Post-operative computed tomography image shows decreased amount of chronic subdural hematoma. Arachnoid cyst density was changed to cerebrospinal fluid density. The arrows indicate arachnoid cyst and asterisk demonstrates the border between two lesions.

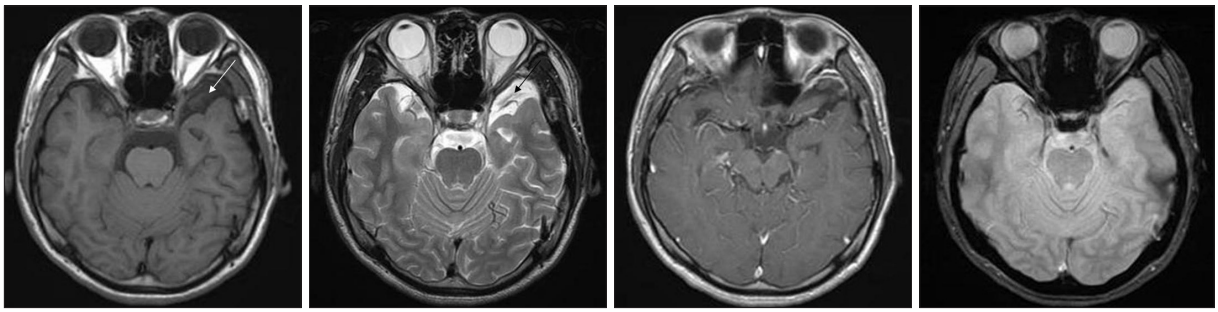

FIGURE 4. This figure shows magnetic resonance image which was taken two years after the operation. Chronic subdural hematoma was nearly disappeared, but still remained small amount of subdural hematoma in left cerebral hemisphere. And arachnoid cyst (arrows) with hemorrhage in left temporal lobe was decreased. Intracystic signal intensity is same as cerebrospinal fluid signal intensity.

But many other studies, including Domenicucci, performed trephination only and successfully completed treatment in patients who had chronic subdural hematoma accompanied with arachnoid cyst.[4,9,18)]

Even though the both lesions are anatomically divided, radiological image finding of both lesions show similar signal intensity. It seems like that the blood product of chronic subdural hematoma could be infiltrated to arachnoid cyst and micro-material could be exchanged between both lesions.[8)] Also, the reason that the radiological image of the cyst changing to that of the cerebrospinal fluid right after the surgery seems to be the same mechanism.

As explained above, relation of the two lesions makes it possible to remove the hematoma in the cyst by trephination only without any other additive surgery.

Considering that the incidence of complication and the mortality caused by the craniotomy is much higher than that of the trephination, the first treatment of the chronic subdural hematoma accompanied by arachnoid cyst should be trephination.[2,10,14,17,19,22,24,25)] If this treatment is not good enough to complete the treatment, it means that intracystic hematoma was not originated from subdural hematoma. Therefore, in that situation, craniotomy could be considered as a secondary treatment.[3,7,12,14,15,19,20,24,25)]

Conclusion

In case of chronic subdural hematoma is accompanied with the arachnoid cyst, both lesions may be anatomically devided. But, considering the microscopic structure of both lesions, infiltration of blood material between the two lesion seems to be possible.[8)] Because of this reason, the first treatment choice of the chronic subdural hematoma accompanied by arachnoid cyst could be trephination only. If this treatment is not good enough to complete the treatment, craniotomy might be considered as a secondary treatment.

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