Case Report

Rapid spontaneous resolution of acute subdural hematoma associated with a contralateral arachnoid cyst: A case report and review of the literature

Aslam Perwez, Waleed Abdelfattah Azab, Suryapratap Singh[1]

Department of Neurosurgery, Ibn Sina Hospital, Kuwait, [1]Trauma Surgery, Sehore, Bhopal, Madhya Pradesh, India

ABSTRACT

Rapid resolution of post-traumatic acute subdural hematoma is infrequently reported. We report a case of rapid spontaneous disappearance of post-traumatic acute subdural hematoma in one patient who was discovered to have a contralateral middle cranial fossa arachnoid cyst. The previously reported mechanisms responsible for the rapid spontaneous disappearance of post-traumatic acute subdural hematoma are reviewed and the contribution of the middle cranial fossa arachnoid cyst to the disappearance of the pos-traumatic acute subdural hematoma that has taken place in our case is discussed. To the best of our knowledge the association between spontaneous disappearance of post-traumatic acute subdural hematoma and arachnoid cysts has not been previously reported.

Key Words: Arachnoid, cyst, hematoma, subdural

INTRODUCTION

Acute subdural hematoma is frequent among patients with closed head trauma and represents a challenging pathological condition in view of its high mortality rate and poor outcomes.[1]

Although infrequently reported, rapid spontaneous resolution of acute subdural hematomas may be underestimated.[2]

We report one patient with a middle cranial fossa arachnoid cyst in whom rapid spontaneous disappearance of a contralateral post-traumatic acute subdural hematoma occurred.

Access this article online	
Quick Response Code:	Website: www.ijsronline.com
	DOI: 10.4103/2230-7095.113832

CASE REPORT

A 15-month-old female patient presented with head injury after a fall from downstairs. She immediately lost consciousness for a brief period and then generalized tonic–clonic epileptic fits started until she was transferred to the emergency room. After initial resuscitation and seizure control, the patient was sleepy with no focal neurological deficits noted on neurological examination. A CT scan of the brain revealed a left fronto-temporo-parietal acute subdural hematoma with no midline shift [Figures 1 and 2]. A right middle cranial fossa Type II arachnoid cyst was also noted in addition to moderate cerebral atrophy [Figure 2]. Conservative management with administration of dehydrating measures and close observation was decided based on the good clinical condition of the patient and the absence of focal neurological deficits and midline shift. A follow-up CT scan, done 12 h later [Figures 3, 4 and 5], revealed almost complete resolution of the hematoma. The patient was discharged 2 days later in a fit condition.

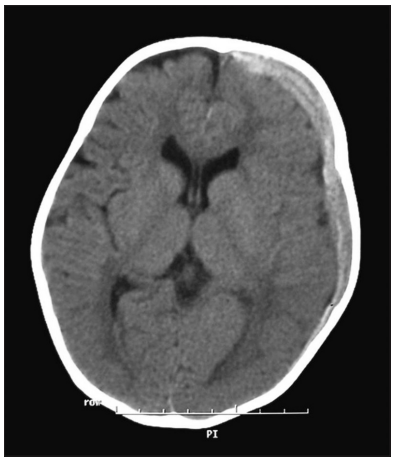

Figure 1: CT image obtained early after trauma reveals left frontotemporoparietal acute subdural hematoma. No midline shift is present. Note the low density band between hematoma and the inner wall of the skull bone

ADDRESS FOR CORRESPONDENCE:

Dr. Aslam Perwez, Department of Neurosurgery, Ibn Sina Hospital, P.O Box: 25427 Safat 13115 Kuwait. E-mail: dr.parwez.ns@gmail.com

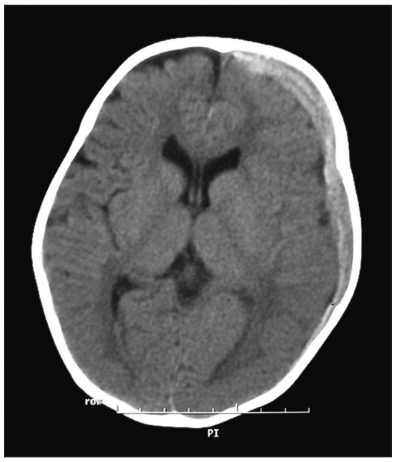

Figure 2: A right middle cranial fossa Type II arachnoid cyst was found with moderate cerebral atrophy

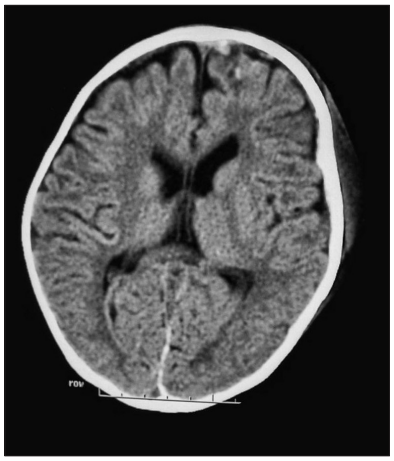

Figure 3: A follow-up CT scan 12 h post injury with almost complete resolution of the hematoma

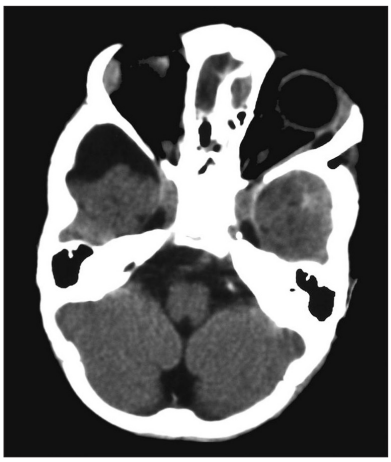

Figure 4: Early CT scan demonstrating acute subdural hematoma seen as hyperdensity at the level of the left middle cranial fossa skull base with contralateral arachnoid cyst

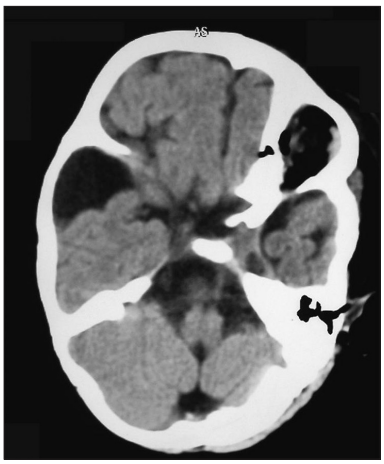

Figure 5: Resolution of the hematoma as seen in the basal cuts at the level of the middle cranial fossa skull base

DISCUSSION

In addition to our case, several other reports of ASDH that diminished or disappeared spontaneously have been published.[2-7] Several mechanisms of rapid spontaneous resolution of ASDH were hypothesized. Redistribution and dispersal of the hematoma is thought to be the underlying mechanism by many authors.[3-5,7] A tear in the arachnoid membrane with CSF leaking into the subdural space is speculated to play an important role in washing out the hematoma.[8] Pulsatile flow of CSF through the tear results in redistribution and dispersal of the hematoma with subsequent retrograde flow into the subarachnoid space. Suzuki *et al.* described a characteristic low density band between the hematoma and the inner wall of the skull bone seen in early CT scan images that correlates with this process.[7] A similar finding was noted in our case [Figure 1]. However, redistribution of the blood rather than actual disappearance of the hematoma was demonstrated by magnetic resonance imaging despite apparent complete disappearance on CT scan images.[4,6] The effect of dehydrating measures together with cerebral atrophy possibly contributes to dilution and redistribution of blood with hematoma disappearing in CT scans.[9]

In one report, AIDS-related cerebral atrophy was speculated to have favorably influenced the spontaneous resolution of an acute subdural hematoma.[10]

We think that dehydrating measures administered to our patient in addition to cerebral atrophy notable in her CT images were, at least partially, responsible for the rapid resolution of the subdural hematoma. Another proposed mechanism is acute cerebral swelling that is speculated by some authors to compress the haematoma leading to its redistribution.[11]

Matsuyama *et al.* however, considered acute cerebral swelling not a necessary condition for rapid disappearance of the hematoma.[5]

In our patient, a Type II right middle cranial fossa arachnoid cyst was found on CT imaging. Middle cranial fossa arachnoid cysts are classified into three types. Type I cysts are located in the sylvian fissure, posterior to the sphenoid ridge without any mass effect; these freely communicate with the subarachnoid space. Type II cysts are larger, rectangular, and localized in the proximal and middle parts of the sylvian fissure. These slowly communicate with the subarachnoid space. Type III cysts are the largest and lenticular shaped; they generally cause midline shift without communication to the subarachnoid space.[12-14] According to their relation to the subarachnoid space, arachnoid cysts are classified as communicating or non-communicating.[15-17] Marked fluid motion and jet flow between middle cranial fossa cysts and the cisterns are found in communicating cysts, while only slight fluid motion is found in isolated cysts.[18]

We speculate that CSF jet flow between arachnoid cyst and subarachnoid space might have contributed to the rapid disappearance of the hematoma in our patient through a more vigorous CSF motion resulting in a more effective dispersal and washout of the hematoma.

REFERENCES

1. Domenicucci M, Strzelecki JW, Delfini R. Acute posttraumatic subdural hematomas:" Intradural" computed tomographic appearance as a favorable prognostic factor. Neurosurgery 1998;42:51-5.
2. Mirzai H, Yaldiz C, Eminoglu M, Orguc S. Ultra fast resolution of acute post-traumatic subdural haematoma. J Neurol Neurosurg Psychiatry 2005;76:1738.
3. Inamasu J, Nakamura Y, Saito R, Kuroshima Y, Mayanagi K, Ohba S, *et al*. Rapid resolution of traumatic acute subdural hematoma by redistribution. Am J Emerg Med 2002;20:376-7.
4. Kato N, Tsunoda T, Matsumura A, Yanaka K, Nose T. Rapid spontaneous resolution of acute subdural hematoma occurs by redistribution. Two case reports. Neurol Med Chir (Tokyo) 2001;41:140-3.
5. Matsuyama T, Shimomura T, Okumura Y, Sakaki T. Rapid resolution of symptomatic acute subdural hematoma: Case report. Surg Neurol 1997;48:193-6.
6. Polman CH, Gijsbers CJ, Heimans JJ, Ponssen H, Valk J. Rapid spontaneous resolution of an acute subdural hematoma. Neurosurgery 1986;19:446.
7. Suzuki Y, Kawamata T, Matsumoto H, Kunii N, Matsumoto K. A resolving sign of acute subdural hematoma: from report of two cases. Neurol Surg 1998;26:1025-9.
8. Niikawa S, Sugimoto S, Hattori T, Ohkuma A, Kimura T, Shinoda J, *et al*. Rapid resolution of acute subdural hematoma-report of four cases. Neurol Med Chir (Tokyo) 1989;29:820-4.
9. Fernández-Portales I, Gómez-Perals L, Cabezudo JM, Giménez-Pando J, Figueroa JA, Yagudüe LG. Rapid spontaneous resolution of acute subdural hematoma. Neurocirugia (Astur) 2002;13:491.
10. Cohen JE, Eger K, Montero A, Israel Z. Rapid spontaneous resolution of acute subdural hematoma and HIV related cerebral atrophy: Case report. Surg Neurol 1998;50:241-4.
11. Kuroiwa T, Tanabe H, Takatsuka H, Arai M, Sakai N, Nagasawa S, *et al*. Rapid spontaneous resolution of acute extradural and subdural hematomas: Case report. J Neurosurg 1993;78:126-8.
12. Arai H, Sato K, Wachi A, Okuda O, Takeda N. Arachnoid cysts of the middle cranial fossa: Experience with 77 patients who were treated with cystoperitoneal shunting. Neurosurgery 1996;39:1108-13.
13. Callaway MP, Renowden SA, Lewis TT, Bradshaw J, Malcolm G, Coakham H. Middle cranial fossa arachnoid cysts: Not always a benign entity. Br J Radio 1998;71:441-3.
14. Galassi E, Tognetti F, Gaist G, Fagioli L, Frank F, Frank G. CT scan and metrizamide CT cisternography in arachnoid cysts of the middle cranial fossa: Classification and pathophysiological aspects. Surg Neurol 1982;17:363-9.
15. Crisi G, Calò M, De Santis M, Angiari P, Merli GA. Metrizamide-enhanced computed tomography of intracranial arachnoid cysts. J Comput Assist Tomogr 1984;8:928-35.
16. Galassi E, Tognetti F, Pozzati E, Frank F. Extradural hematoma complicating middle fossa arachnoid cyst. Childs Nerv Syst 1986;2:306-8.
17. Gentry LR, Menezes AH, Turski PA, Smoker WR, Cornell SH, Ramirez L. Suprasellar arachnoid cysts: 2. Evaluation of CSF dynamics. AJNR Am J Neuroradiol 1986;7:87-96.
18. Eguchi T, Taoka T, Nikaido Y, Shiomi K, Fujimoto T, Otsuka H, *et al*. Cine-magnetic resonance imaging evaluation of communication between middle cranial fossa arachnoid cysts and cisterns. Neurol Med Chir (Tokyo) 1996;36:353-7.

Cite this article as: Perwez A, Azab WA, Singh S. Rapid spontaneous resolution of acute subdural hematoma associated with a contralateral arachnoid cyst: A case report and review of the literature. Int J Stud Res 2013;3:26-8.

Source of Support: Nil, **Conflict of Interest:** Nil.