JEM Reports 2 (2023) 100039

Contents lists available at ScienceDirect

JEM Reports

journal homepage: www.journals.elsevier.com/jem-reports

Acute interhemispheric subdural hematoma with neuroimagings of two trauma cases in the emergency department

Begum Calp [a,*], Bahadır Taslidere [b], Ertan Sonmez [b], Gokce Deniz Uzunoglu [c]

[a] Department of Emergency Medicine, Darıca Farabi Training and Research Hospital, Kocaeli, Turkey
[b] Department of Emergency Medicine, Bezmialem Vakif University, İstanbul, Turkey
[c] Department of Radiology, Faculty of Medicine, Bezmialem Vakif University, İstanbul, Turkey

ARTICLE INFO

Keywords:
Interhemispheric
Subdural
Hematoma
Trauma

ABSTRACT

Backround: Subdural hematomas are clinically important in that they occur commonly in elderly trauma patients and cause a high mortality. Since interhemispheric subdural hematoma is rare among cases of subdural hematoma and is a diagnosis that can be missed in the emergency department, it is aimed to discuss this condition with two case reports and the relevant neuroimages which were overlooked initially.

Two case reports: The first report of neuroimages of two geriatric patients with head trauma was reported as normal. The images were re-evaluated due to persistent headache during the emergency observation. An overlooked interhemispheric subdural hematoma was diagnosed.

Why should an emergency physician be aware of this?: We aimed to contribute to the literature with these two cases, because an acute interhemispheric subdural hematoma may be overlooked on CT images, because it is in proximity to the falx and is usually a small lesion.

1. Introduction

Acute interhemispheric subdural hematoma (AISH) is clinically important in that it is underdiagnosed in emergency departments and has a high mortality (ranging between 24 and 27%), though it occurs rarely [1]. In the presence of a worsening neurological condition, prompt surgical evacuation of hematoma is mandatory [2].

Here, we report two cases of AISH that were overlooked initially in accompaniment with computed tomography (CT) and magnetic resonance imagings (MRI) of the brain. Both patients were symptomatic and were in the geriatric age group. CT scans were performed regardless of the severity of the trauma and initially reported to be normal. For the patients who were re-evaluated during clinical observation in the emergency department, an expert radiologist's opinion was requested due to the persistence of the symptoms. We aimed to contribute to the literature with these two cases, because AISH is poorly characterized clinically, and it also may be overlooked on CT images, because it is in proximity to the falx and is usually a small lesion. We wished to emphasize its clinical importance in terms of underdiagnosis in emergency departments.

2. Case 1

A 72-year-old male patient with known hypertension and diabetes was admitted to the emergency department due to headache and dizziness as a result of falling from the same level and hitting his head. Vital signs were normal (blood pressure: 132/68 mmHg; heart rate: 64 bpm). Glascow coma scale was 15. Light reflex was bilaterally positive and isochoric pupils were present. Neurological examinations did not reveal any pathological signs. Routine blood tests were unremarkable (white cell count: 8,100/µL; hemoglobin: 12.4 g/dL; platelet count: 186,000/µL; prothrombin time: 14.1 seconds; activated partial thromboplastin time: 30.0 seconds). The non-contrast brain CT performed on the description of headache in the occipital region was initially reported to be normal. Since the patient's headache and dizziness continued during the clinical observation period in the emergency department, CT imagings were re-evaluated and a radiologist was interviewed. Neurosurgery consultation was requested for the patient who had a subdural hematoma with a thickness of 6mm in the midline at the level of the falx cerebri anteriorly which extended posteriorly to the right tentorium in the interhemispheric area (Fig. 1). Conservative approach was planned for the patient without urgent surgical intervention and follow-up in hospital ward was

* Corresponding author. Darıca Bağlarbaşı Mahallesi, Erenler Sokak No:21 Daire:6, Kocaeli, Turkey.
E-mail addresses: begumcalp@gmail.com (B. Calp), drbahadir@yahoo.com (B. Taslidere), ertansnmz@gmail.com (E. Sonmez), denuzu@gmail.com (G.D. Uzunoglu).

https://doi.org/10.1016/j.jemrpt.2023.100039
Received 15 March 2023; Accepted 15 May 2023
Available online 20 May 2023

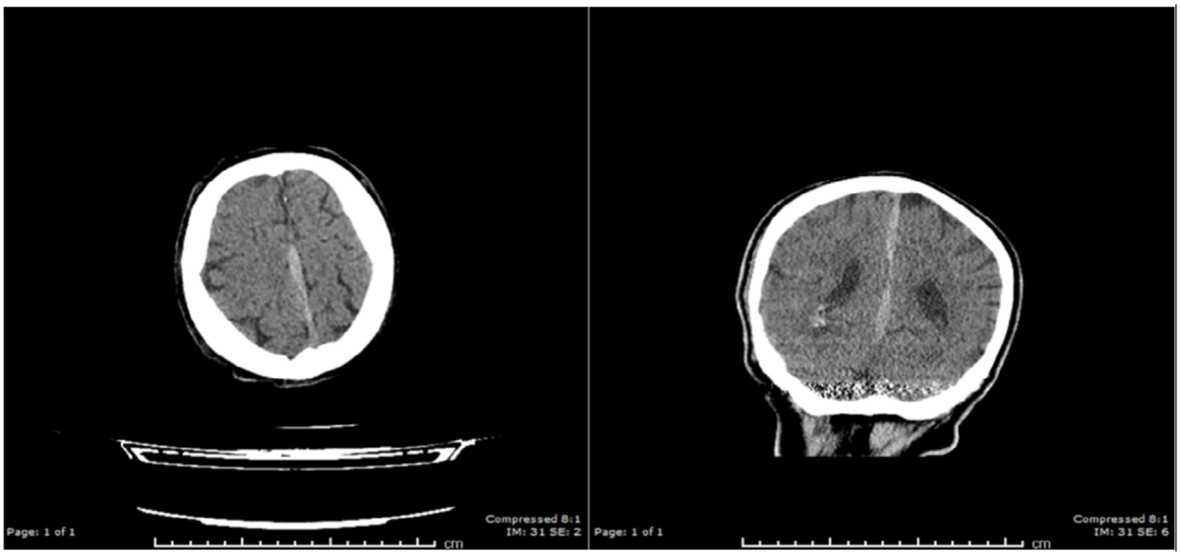

Fig. 1. CT images of the subdural hematoma Case1.

deemed appropriate. Follow-up CT scans showed no further enlargement of the hematoma. The patient discharged after three days of hospital stay with almost complete resorption of the hematoma (Fig. 2).

3. Case 2

A 92-year-old female patient with known hypertension and coronary artery disease presented to the emergency department with a head injury after falling from the same level while going to the toilet at 2 a.m. Mild headache, nausea and swelling in the right parietal region were present. She had not been taken her medication for a month. Her vital signs were as follows; blood pressure: 176/68 mmHg; heart rate: 80 bpm. Glascow coma scale was 15. Physical examination revealed a subcutaneous hematoma in the right parietal region and positive nuchal rigidity. Routine blood tests were unremarkable (white cell count: 8,100/µL; hemoglobin: 11.8 g/dL; platelet count: 215,000/µL; prothrombin time: 15.6 seconds; activated partial thromboplastin time: 28.7 seconds). Neither neurological deficit in physical examination nor acute pathology on brain CT was reported. Her complaints of headache and nausea continued. Neurology consultation was requested and MRI was planned. Diffusion MRI showed a smear subdural hematoma in the parasagittal area in the right fronto-parietal region and in the right occipital region (Fig. 3). The neurosurgeons planned conservative treatment and follow-up. Control CT scans showed no further enlargement of the hematoma and the patient was discharged after two days of hospital stay with complete resorption of the hematoma (Fig. 4).

4. Discussion

AISH, which is also a part of 'Shaken Baby Syndrome' in childhood, has the highest incidence in adults between the 6th and 8th decades [3, 4]. AISH is rare among cases of acute subdural hematomas, and head trauma accounts for 80-90% in its aetiology [5]. These hematomas caused by laceration of parafalcine or para-sagittal bridging vessels resulting from linear brain acceleration during trauma, are confined to the interhemispheric region due to the firm adherence of the arachnoids

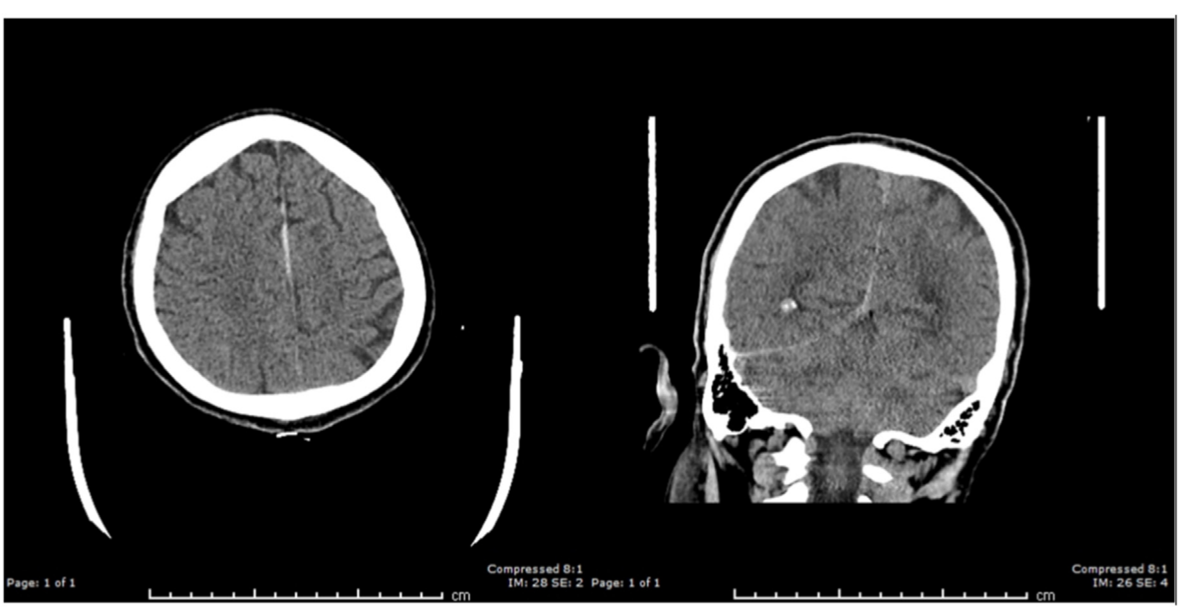

Fig. 2. Follow up CT images of Case1 with almost resolution.

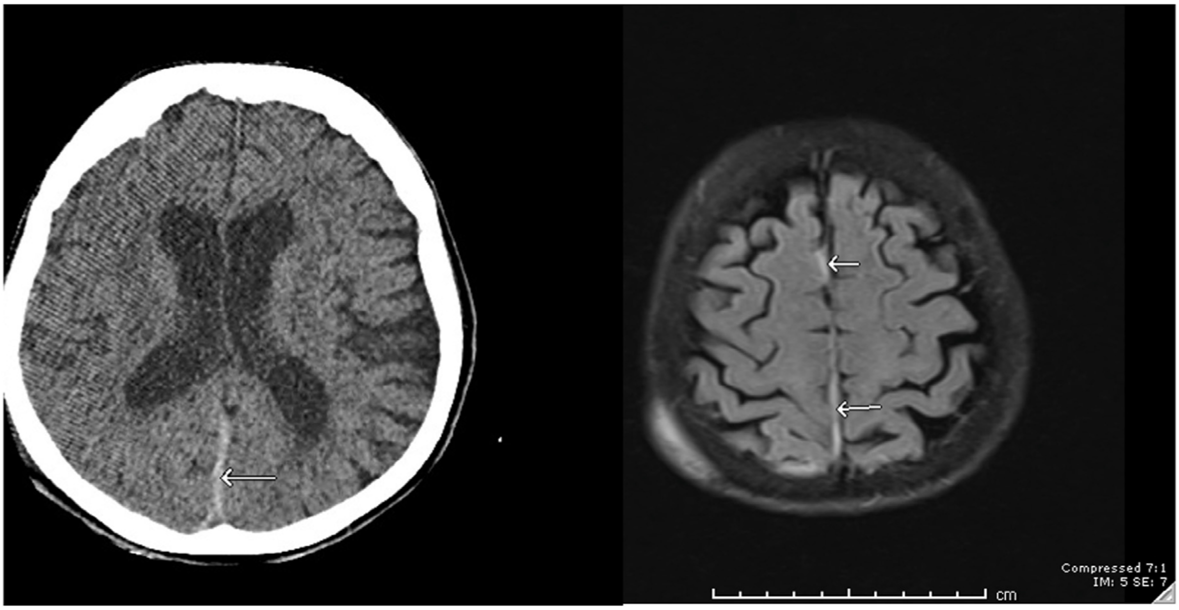

Fig. 3. CT and MRI images of the subdural hematoma Case2.

Fig. 4. Follow up CT images of Case2 with almost resolution.

together with the draining veins [3]. The direction and amount of trauma that could produce an AISH occurring from the bridging veins is unclear [6]. In the first case, there was a sign of impact from the occipital region, and in the second case, from the right parietal region.

The clinical presentation of AISH is usually contralateral leg monoparesis or leg-dominant hemiparesis, known as falx syndrome [3, 4]. Even though falx syndrome has been reported as the most characteristic manifestation, an atypical clinical picture is more frequent, leading to an under-diagnosis of this clinical entity [3]. In the respect of our cases, the fact that falx syndrome was not observed in our two patients may be due to the hematoma size being smaller than 1 cm [4]. Careful interpretation of neuroimaging is important in the detection of AISH in trauma patients without neurological deficits or altered consciousness, since headache is the most common symptom among variable symptoms [7,8].

CT and MRI of the brain are important neuroradiological techniques for the accurate diagnosis of AISH. The absence of beam-hardening and multiplanar imaging makes MRI more advantageous than CT [9]. Although MRI is not often used for acute trauma or hemorrhages in the emergency department, abnormalities on T1-and T2-weighted MR images help confirm bleeding [10]. As noted in the second case, bleeding was detected by MRI.

Current subdural hematoma management guidelines do not include ISH [11]. Due to the low number of reported cases and the deficiencies in its clinical course, uncertainties prevail in terms of conservative approach or ideal operation indication in the treatment and management of ISH [12]. Since AISH is usually a small lesion and progresses with mild symptoms, conservative treatment is recommended [5,13]. Although most patients with interhemispheric subdural hematoma exhibit neurological deficits at the initial presentation, the appearance of such deficits may be delayed by a few hours to 10 days. There is no consensus on the ideal management of AISH [1]. Conservative treatment may be followed in those who are neurologically stable or have concurrent risk factors. Serial CT scans are recommended in these cases, but there is no consensus on the interval of follow-up imagings. In both of our cases, a decision of conservative approach was made and a good outcome occurred.

Albeit rarely, an operation may be required in case of impaired consciousness or change in Glasgow Coma Scale score due to the mass effect of ISH [11,14].

The incidence of poor outcomes in traumatic interhemispheric subdural hematomas is 29%. Isolated AISH is thought to have a more benign nature with good recovery compared to common subdural hematomas (SDH). ISH, accounting for approximately 6% of all traumatic SDH, is a rare complication of head trauma [5]. In fact, we think the reason for the low incidence is that cases are likely to be missed and many of them can already recover with conservative treatment.

5. Why should an emergency physician be aware of this?

Since interhemispheric hematomas are small lesions and can be overlooked as a rare complication, discharging patients with intracranial hemorrhage due to head trauma from the emergency department with normally reported neuroimagings is a critical issue in terms of possible malpractice suits. For this reason, radiological images should be carefully examined, second-opinion radiological consultation should be requested, and the duration of observation and discharge should be planned in the emergency department, accompanied by evaluation and early management guidelines [15] in cases of head trauma. Also, more research is needed to develop algorithms that will guide the treatment and management of ISH in terms of conservative approach or ideal operation indication.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

[1] Interhemispheric subdural hematoma presenting with falx syndrome after trauma. J Kor Neurotraumatol Soc 2010;6:158–61. https://doi.org/10.13004/jknts.2010.6.2.158. 2010.
[2] Bek S, Üniversitesi M. Acute interhemispheric subdural hematoma [Online]. Available: https://www.researchgate.net/publication/287590591.
[3] Psaltis A, Lath R, McDonald M. Acute interhemispheric subdural haematoma. J Clin Neurosci Jun. 2004;11(5):546–8. https://doi.org/10.1016/j.jocn.2003.09.013.
[4] Baykan N, Durukan P, Salt Ö, Yakar Ş, Kaymaz ND, Kavalcı C. Patient with post traumatic İnterhemispheric subdural hematoma: a case report. Gazi Med J 2018; 29(2):148–9. https://doi.org/10.12996/gmj.2018.42.
[5] Takeuchi S, Takasato Y, Masaoka H, Hayakawa T, Yatsushige H, Sugawara T. Traumatic interhemispheric subdural haematoma: study of 35 cases. J Clin Neurosci Dec. 2010;17(12):1527–9. https://doi.org/10.1016/j.jocn.2010.03.055.
[6] Interhemispheric acute subdural hematomas. Iran Red Crescent Med J 2011;13(4): 289–90. https://doi.org/10.3109/026. ©Iranian Red Crescent Medical Journal.
[7] Ahn J-M, Lee K-S, Shim J-H, Oh J-S, Shim J-J, Yoon S-M. Clinical features of interhemispheric subdural hematomas. Korean J Nutr 2017;13(2):103. https://doi.org/10.13004/kjnt.2017.13.2.103.
[8] Uchio N, Miyano R, Matsumoto H. Symmetrical interhemispheric subdural hematoma. Cureus; Mar. 2021. https://doi.org/10.7759/cureus.13711.
[9] Sogut O, et al. Interhemispheric acute subdural hematoma: a distinct entity of subdural hematoma. J Clin Med Res 2016;8(2):178–9. https://doi.org/10.14740/jocmr2427w.
[10] Romano VA, Toffol GJ. Emergency radiology confirmation of traumatic interhemispheric subdural hematoma by magnetic resonance lmaging. 1994.
[11] Léveillé E, Schur S, Alazri A, Couturier C, Maleki M, Marcoux J. Clinical characterization of traumatic acute interhemispheric subdural hematoma. Can J Neurol Sci Jul. 2020;47(4):504–10. https://doi.org/10.1017/cjn.2020.44.
[12] Llamas L, Ramos-Zúñiga R, Sandoval L. Acute interhemispheric subdural hematoma: two case reports and analysis of the literature. Minim Invasive Neurosurg Mar. 2002;45(1):55–8. https://doi.org/10.1055/s-2002-23574.
[13] Rispoli R, Mastrostefano R, Koumpouros N, Blasetti AG, Coletta RP. Acute interhemispheric subdural haematoma A case report [Online]. Available: www.centauro.it; 2009.
[14] Ahn J-M, Lee K-S, Shim J-H, Oh J-S, Shim J-J, Yoon S-M. Clinical features of interhemispheric subdural hematomas. Korean J Nutr 2017;13(2):103. https://doi.org/10.13004/kjnt.2017.13.2.103.
[15] Head injury: assessment and early management Clinical guideline [Online]. Available: www.nice.org.uk/guidance/cg176; 2014.