Case report

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Acute hypodense hemorrhage in an organized chronic subdural hematoma causing sudden neurological deterioration in a severely anemic patient

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Abstract: A 60-year-old male presented with the history of generalized weakness of 7-day-duration. He had a seizure episode, followed by deterioration. CT showed acute-on-chronic subdural hematoma. Biochemical parameters revealed chronic renal failure. Although the clot was evacuated in emergency he continued to be vegetative.

Keywords: acute-on-chronic subdural hematoma; anemia; chronic subdural hematoma; hypodense subdural hematoma; organized chronic subdural hematoma

INTRODUCTION

Organized chronic subdural hematomas, although uncommon lesions but are well described in literature[1-9]. We report an unusual case of acute hypodense hemorrhage in an organized chronic subdural hematoma causing sudden neurological deterioration in a severely anemic patient and discuss the relevant imaging and intra-operative findings.

CASE REPORT

A 60-year-old male, a known hypertensive on irregular treatment, and habituated to alcohol, presented with generalized weakness of 7 days duration and breathing difficulty of one day duration. There was no history of fever, cough or hemoptysis. On examination the patient had was dehydrated and pale. Chest examination revealed crepitations in the middle zone of left lung. There was no hepato-splenomegaly. Following admission, he had an episode of seizure with neurological deterioration and decerebration. His Glasgow coma scale was E1V1M2, pupils were dilated and reacting sluggishly to light. An emergency CT scan showed heterogeneous concavo-convex lesion in the left fronto-temporo-parietal region with significant mass effect and midline shift (Fig 1). Further details from the relatives reveled that he had a fall in bathroom two months back. Hematological profile showed severe microcytic hypochromic anemia (Hb- 4.8 gm%), total leukocyte count of 7000 cells/ mm^3, with 79% polymorphs. His serum creatinine was 9.34 mg%, urea was 197mg%, with normal electrolytes. Total bilirubin was 0.7 mg%, SGPT was 44 IU/L and Alkaline Phosphatase was 411 IU/L. Other biochemical and coagulation parameters were within normal limits. The patient underwent left temporo-parietal craniotomy and evacuation of the organized subdural hematoma. Dural opening showed thick organized clot with gray, yellow-green paste like material, yellowish fluid and thick altered

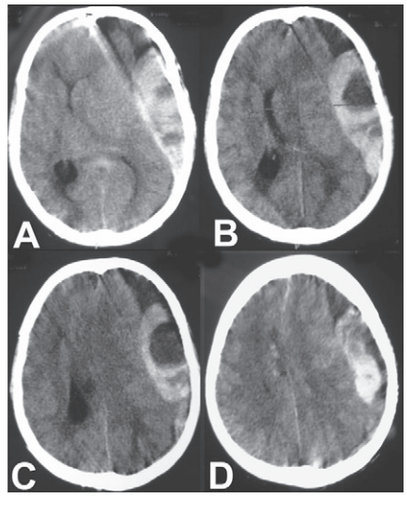

Fig 1: Computed tomography (CT) of the brain showing heterogeneous density of the lesion in the left fronto-temporo-parietal region with marked mass effect and midline shift (note the odd point that there was hypodense collection in the hyperdense collection contrary to classical hyperdense collection in the relative isodense or hypodense collection in cases of acute hemorrhage in chronic subdural hematoma

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blood clot within it (Fig 2). The organized blood clot with evidence of fresh hemorrhage was retrieved from the subdural space (Fig 3). The organized part was corresponding with the hyperdense area on CT scan and fresh clotted blood was corresponding with the hypodense areas on CT scan. Yellowish fluid was corroborating with the hypodense collection all around the clot in CT scan. In post-operative period he did not have spontaneous respiration and was kept on elective venation. Neurologically his GCS remained E1V1M1, pupils remained dilated and fixed and extra-ocular movements were restricted. In spite of adequate hydration he had urine output of 200 ml in 24 hours, and died five days later.

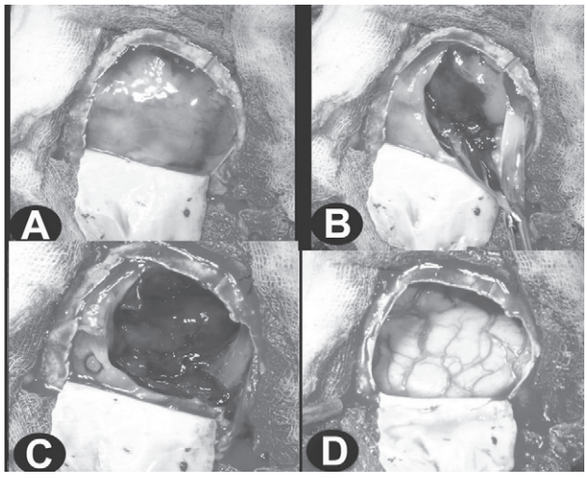

Fig 2: Intra-operative images showing (A) thick yellowish mass after opening the dura, (B) the mass was firm and fleshy in consistency, (C) inside the mass there was collection of freshly clotted jelly like blood and (D) clear subdural space after removal of the clot

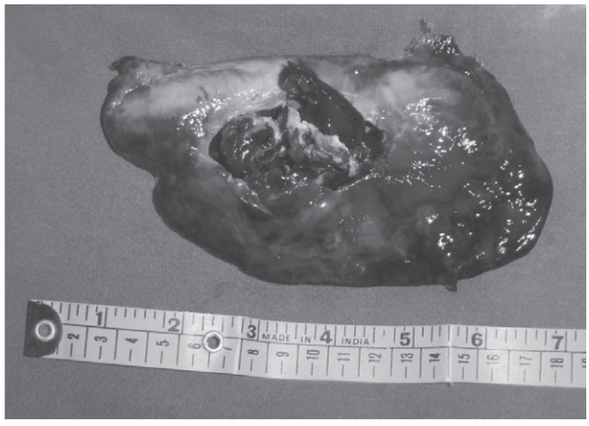

Fig 3: Gross specimen showing organized hematoma (15x10 cm in size) with evidence of recent hemorrhage

DISCUSSION

Organized chronic subdural hematoma is composed of thick, fibrous, collagenous neomembrane and old thrombosis-like clot consisting of a large amount of fibrin. If it sufficient of age it may contain deposits of calcium, hemosiderin, and cholesterin in the neomembranes and trabeculae[1,2,4]. The CT appearance of the organized or partially calcified CSDH is not very specific and on CT scan appears as heterogeneous moderate high density[2], sometimes mixed density with high density inner margins[1], or it can appear as a homogeneous low density area[6,8]. The characteristics of these lesions on magnetic resonance (MRI) images have not yet been clarified but a combination of the CT scan and MRI will help in suspecting the preoperative diagnosis[1,8]. When we correlated the imaging and intra-operative findings it was found that hyperdense lesion on CT scan was the thick organized blood clot and contrary to our suspicion the hypodense collection was recently clotted blood in the specimen (Figs 1, 2 and 3). This hypodense appearance of the freshly clotted blood can be explained by the severe anemia in the patient. Systemic illness can complicate the CT appearance of acute hemorrhage in the cranial cavity[10-13] and subdural hematoma may appear as isodense to hypodense in patients with severe anemia[11-16].

MANAGEMENT

Although we suspected a diagnosis of acute-on-chronic subdural hematoma and performed the craniotomy, in cases where a pre-operative diagnosis of organized CSDH can be suspected a craniotomy is recommended[1,2,6,8,9,17].

REFERENCES

1. Fujioka M, Okuchi K, Miyamoto S, Sakaki T, Tsunoda S, Iwasaki S. Bilateral organized chronic subdural haematomas: high field magnetic resonance images and histological considerations.
Acta Neurochir (Wien) 1994; 131:265-9.

2. Imaizumi S, Onuma T, Kameyama M, Naganuma H. Organized chronic subdural hematoma requiring craniotomy-five case reports.
Neurol Med Chir (Tokyo) 2001; 41:19-24.

3. Isobe N, Sato H, Murakami T, Kurokawa Y, Seyama G, Oki S. [Six cases of organized chronic subdural hematoma].
No Shinkei Geka 2008; 36:1115-20.

4. Rocchi G, Caroli E, Salvati M, Delfini R. Membranectomy in organized chronic subdural hematomas: indications and

technical notes.
Surg Neurol 2007; 67:374-80.

5. Fukazawa K, Sakakura M, Niwa S, Yamamoto J, Kuraishi K, Mouri G. [A case of organized chronic subdural hematoma showing an early recurrence after craniotomy].
No Shinkei Geka 2005; 33:389-94.

6. Kuwahara S, Miyake H, Koan Y, Fukuoka M, Ono Y, Moriki A, Mori K, Mokudai T, Uchida Y. [A case of organized chronic subdural hematoma presented with transient neurologic deficits].
No To Shinkei 2004; 56:355-9.

7. Rodziewicz GS, Chuang WC. Endoscopic removal of organized chronic subdural hematoma.
Surg Neurol 1995; 43:569-72; discussion 72-3.

8. Nagasaka M, Omata T, Miyazawa N, Kaneko M, Fukamachi A, Nukui H. [Organized chronic subdural hematoma; report of two cases].
No Shinkei Geka 1991; 19:861-5.

9. Kuwahara S, Miyake H, Fukuoka M, Koan Y, Ono Y, Moriki A, Mori K, Mokudai T, Uchida Y. Diffusion-weighted magnetic resonance imaging of organized subdural hematoma—case report.
Neurol Med Chir (Tokyo) 2004; 44:376-9.

10. Deb S, Bhaumik S, Pal H. Isodense acute subdural haematoma in anaemic patients.
Neurol India 2000; 48:298-9.

11. Smith WP, Jr., Batnitzky S, Rengachary SS. Acute isodense subdural hematomas: a problem in anemic patients.
AJR Am J Roentgenol 1981; 136:543-6.

12. New PF, Aronow S. Attenuation measurements of whole blood and blood fractions in computed tomography.
Radiology 1976; 121(3 Pt. 1):635-40.

13. Norman D, Price D, Boyd D, Fishman R, Newton TH. Quantitative aspects of computed tomography of the blood and cerebrospinal fluid.
Radiology 1977; 123:335-8.

14. Boyko OB, Cooper DF, Grossman CB. Contrast-enhanced CT of acute isodense subdural hematoma.
AJNR Am J Neuroradiol 1991; 12:341-3.

15. Vincent FM. Acute subdural hematomas may appear isodense in anemia.
Neurology 1985; 35:140-1.

16. Kasdon DL, Scott RM, Adelman LS, Wolpert SM. Cerebellar hemorrhage with decreased absorption values on computed tomography: a case report.
Neuroradiology 1977; 13:265-6.

17. Mori K, Maeda M. Surgical treatment of chronic subdural hematoma in 500 consecutive cases: clinical characteristics, surgical outcome, complications, and recurrence rate.
Neurol Med Chir (Tokyo) 2001; 41:371-81.