

Traumatic Interhemispheric and Tentorial Subdural Haematoma

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Abstract: Interhemispheric subdural hematoma is a rare form of traumatic intracranial hemorrhage. Presentation is usually in the form headache, vomiting and irritability. Large hematomas may present with classical "falx syndrome". While CT is diagnostic, management is essentially conservative. Eight such cases, five adults and three children are reported.

Keywords: Head injury, interhemispheric, intracranial hematoma, subdural hematoma.

Introduction

Interhemispheric subdural hematoma (ISDH), a collection of blood within the falx cerebri, is one of the rare forms of intracranial hemorrhage following head injury. It usually indicates severe acceleration-deceleration injury to the brain. Few cases could be diagnosed in the pre CT era and the usual management used to be immediate craniotomy and evacuation of the hematoma. With the advent of CT and MRI, the condition can be diagnosed and monitored, and emergency surgery may not always be indicated. Eight such cases of ISDH (three of them with tentorial SDH as well) who were managed conservatively, are reported. Relevant literature is reviewed.

Clinical Material

There were eight patients (five adults and three children) with ISDH seen over a period of five years in two Armed Forces Neurosurgical Centers. Two of the three children were girls, each aged 3 years. All the adults were between 22 and 47 years of age. Presentation was non-specific in all, in the form of headache and vomiting. Sensorium was impaired (as evidenced by altered GCS) in three adults and one child. All patients were evaluated by CT brain at the time of admission (Figs 1-7). One of the adults had significant supratentorial injury in the form of hemorrhagic contusion of left frontal lobe, which required surgical intervention. No surgical intervention was carried out for ISDH or tentorial SDH in any of the patients. All the patients showed recovery with conservative management, and there were no residual neurological sequelae. Clinical profile, CT findings and outcome are shown in table I.

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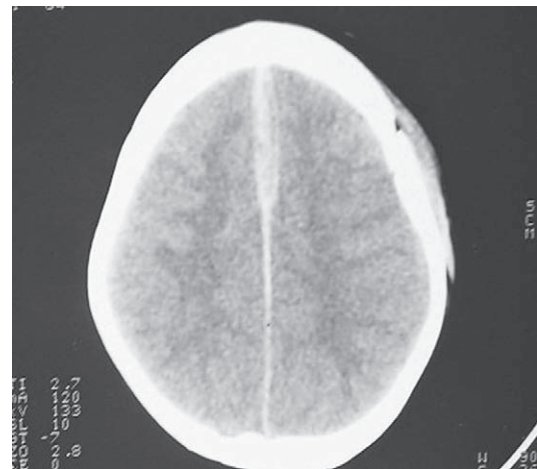


FIGURE 1. CT showing ISDH involving anterior falx

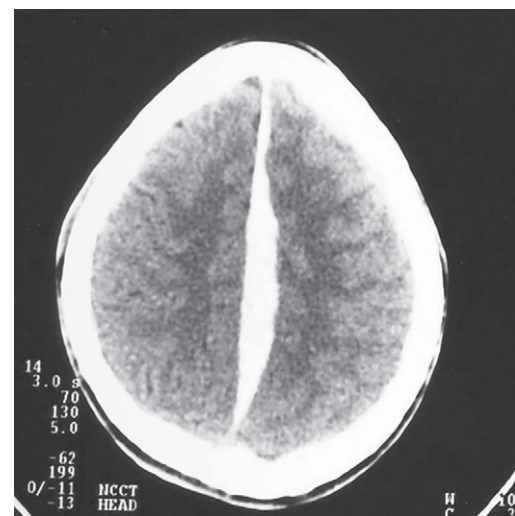


FIGURE 2. CT showing ISDH involving the entire falx

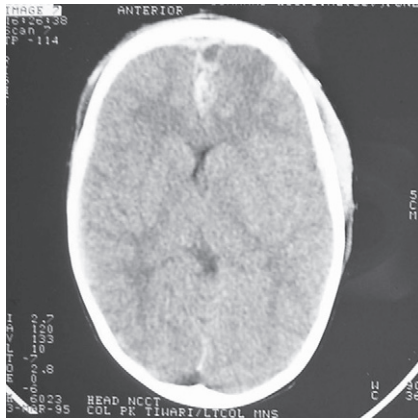


FIGURE 3. CT showing ISDH involving anterior falx and frontal pole

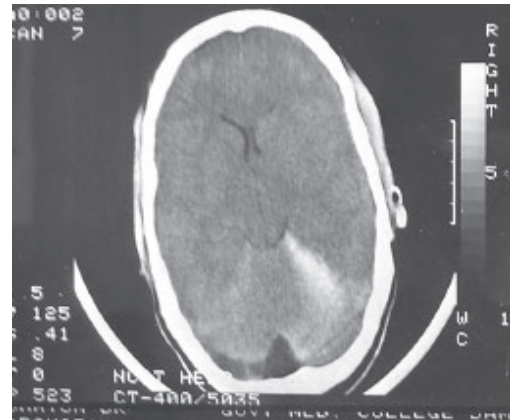


FIGURE 6. CT showing tentorial ISDH

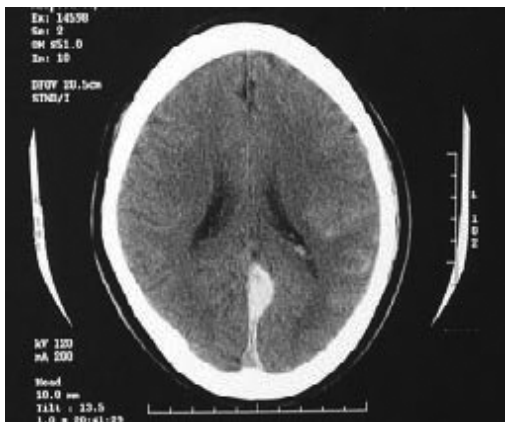


FIGURE 4. CT showing ISDH involving posterior third of falx

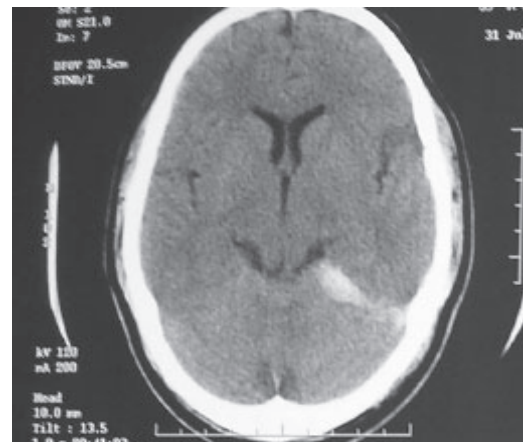


FIGURE 7. CT showing tentorial SDH

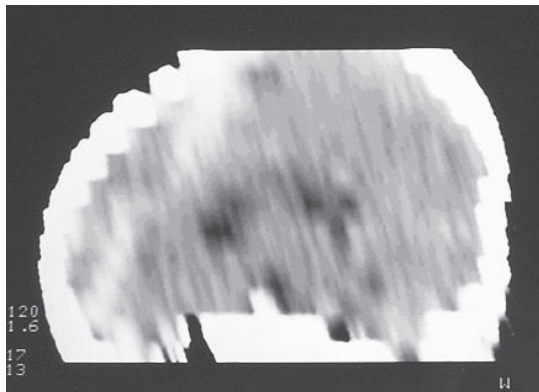


FIGURE 5. CT (sagittal reconstruction) showing ISDH in the falx

DISCUSSION

ISDH is a rare entity, first described by Aring & Evans¹, in an autopsy of a patient who had died after head injury. Jacobson² described the first case in a live patient. The entity has thereafter been sporadically described in medical literature. Children are the usual sufferers. ISDH usually occurs following blunt trauma to the head in anteroposterior

axis as the brain is relatively mobile in childhood, leading to torn bridging veins between the cerebral cortex and superior sagittal sinus. Bridging veins between the occipital lobe and transverse sinus could be torn in similar acceleration-deceleration or shearing trauma, leading to tentorial SDH. Other causes of ISDH are indirect injury by vigorous head shaking as in child abuse³, coagulation abnormalities⁴, aneurismal rupture of pericallosal artery⁵, traumatic laceration of pericallosal artery⁶. Although ISDH may occur after major trauma, often the injury is a trivial one⁷. It must however be remembered that though the injury may appear to be trivial and the ISDH and tentorial SDH may appear small, the cerebral damage can be severe, especially in children⁸.

In ISDH, hemorrhage gets limited by the firmly adherent arachnoid trabeculations⁹. Thus the hematomas are usually unilateral, but sometimes extend onto the cerebral convexity^{10,11}. Bilateral ISDH is extremely rare¹².

Classical presentation of “falx syndrome” of contralateral monoparesis of the leg, or hemiparesis where

S. No	Age/ Gender	Mode of injury	Symptoms	Clinical picture	CT findings	Outcome
1.	4/M	Fall from cot	Headache vomiting	GCS 15/15	ISDH mid & post third falx	Recovered
2.	3/F	RTA	Headache vomiting	GCS 10/15	ISDH ant third falx	Recovered
3.	3/F	Fall	Vomiting	GCS 15/15	ISDH post third falx & # occipital bone	Recovered
4.	45/M	RTA	Headache vomiting	GCS 10/15	ISDH post third falx & tentorium	Recovered
5.	38/M	Fall	Headache vomiting	GCS 15/15	ISDH ant third falx	Recovered
6.	33/M	RTA	Headache vomiting	GCS 15/15	ISDH ant, mid and third falx	Recovered
7.	47/M	RTA	Headache vomiting	GCS 7/15	Tentorial, (L) frontal contusion	Optd for contusion recovered
8.	22/M	RTA	Headache	GCS 12/15	tentorial	Recovered

Abbreviations : GCS – Glasgow Coma Score, ISDH – interhemispheric subdural hematoma, RTA – Road Traffic Accident

contralateral lower limb is weaker than the upper limb, may be seen in extensive hematomas. More commonly, limited involvement of anterior or posterior falx, or of tentorium, is manifested by non-specific features of headache, vomiting, seizures or altered sensorium⁹.

ISDH was diagnosed in the pre-CT era by carotid angiography. There is displacement of callosomarginal artery from pericallosal artery in anteroposterior projections; the pericallosal artery, anterior cerebral arteries and the internal cerebral veins retain their position². CT scan (especially sagittal reconstruction) provides ready diagnosis and defines the extent of ISDH, in addition to demonstrating other brain lesions. The ISDH assumes the sickle shape of falx, or the fan like shape of tentorium. In our third case, the tentorial SDH was continuous with an ISDH in the posterior and superior aspects of the interhemispheric fissure. ISDH usually occurs in the posterior and superior aspects of the interhemispheric fissure¹³. Anterior extension of ISDH is less common. It has to be differentiated from interhemispheric subarachnoid hemorrhage: in the latter, the hemorrhage appears zigzag owing to seepage of blood into the sulci. In adults and elderly, ISDH has to be differentiated from falx calcification. In children, hyperdensity of falx and tentorium invariably means hemorrhage, as there is no calcification¹⁴.

Earlier, prompt surgical intervention was recommended as the only safe and acceptable method of treatment¹⁵, but with the availability of CT this may not be true. Most of these hematomas are small and resolve spontaneously. Sometimes, the hematoma shifts to the convexity, in which

case it would be easier to treat them by the burr hole or craniotomy. Even in the case of large hematomas with stabilized neurological status, conservative management can be tried¹⁶. With this mode of treatment, patients' intracranial pressure and neurological status should be closely monitored, and surgery should be carried out only in case of persistently low Glasgow Coma Score (9 or below), or neurological deterioration while on conservative management.

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