

## CHRONIC SUBDURAL HAEMATOMA AND MENINGITIS

Amit Agrawal<sup>1</sup>, Lathika Shetty<sup>2</sup>, S. Teerthnath<sup>3</sup>, Bobby Varkey<sup>4</sup>

### ABSTRACT

Chronic subdural haematomas are relatively benign lesions and subdural empyema is not a common complication of chronic subdural haematoma. We describe a case of chronic subdural haematoma associated with features of meningitis in a case of base of skull fracture and correlate the clinical, radiological and pathological findings.

**KEY WORDS:** Chronic subdural haematoma, subdural empyema, leptomeningitis, meningitis, trauma.

Pak J Med Sci July - September 2007 Vol. 23 No. 4 647-649

### INTRODUCTION

Chronic subdural haematomas are relatively benign lesions with a mortality rate of 0.5-4.0%. These are defined as collection of altered blood in subdural space more than 4 weeks duration usually following trauma.<sup>1,2</sup> Subdural empyema in chronic subdural haematoma is a known and potentially fatal complication.<sup>1,3,4</sup> We describe clinical, radiological and histopathological findings in a case of chronic subdural haematoma presented with meningitis.

**Case Report:** A 37 years old gentleman from rural coastal area of South India presented with the history of fall two months back. He was apparently alright following fall until one week back when he was admitted with complaints of continuous fever of seven days duration associated with chills and rigors, altered sensorium and right sided weakness. There was no history of seizures or cerebrospinal fluid rhinorrhoea. He was treated at local hospital for two days and started on broad spectrum antibiotics (Inj. Ceftriaxone, Inj. Amikacin and Inj. Metrogyl). He was referred with CT scan showing bilateral fronto-temporo-parietal subdural collection more on the left side, moderate cerebral oedema and mass effect with midline shift to right side. It also showed fracture involving the cribriform plate and opacification of paranasal sinuses. At the time of admission he was febrile (100° F) and neurologically he was in altered sensorium with GCS of E1V1M5. Pupils were bilateral equal and reacting to light. He had right sided hemiplegia of grade 2/5 and mild facial weakness. Deep tendon reflexes were exaggerated on right side with bilateral extensor plantars. He had significant neck rigidity and Kerning's sign was positive. Blood parameters were normal except moderate hyponatremia (128meq/dL) that was corrected. A preoperative diagnosis of subdural empyema was made and he underwent left fronto-temporo-parietal craniotomy and

1. Dr. Amit Agrawal  
Associate Professor (Neurosurgery)  
Department of Surgery  
Datta Meghe Institute of Medical Sciences  
Sawangi (Meghe)  
Wardha- 442005,  
Maharashtra, India.
2. Dr. Lathika Shetty  
Assistant Professor in Radiology,  
Department of Radiology,
3. Dr. S. Teerthnath  
Associate Professor in Pathology  
Department of Pathology,
4. Dr. Bobby Varkey  
Tutor in Radiology,  
Department of Radiology,
- 2-4: K. S. Hegde Medical Academy,  
Mangalore,  
India.

#### Correspondence

Dr. Amit Agrawal,  
E-mail: dramitagrawal@gmail.com

- \* Received for Publication: October 12, 2006
- \* Revision Received: April 6, 2007
- \* Accepted: April 9, 2007

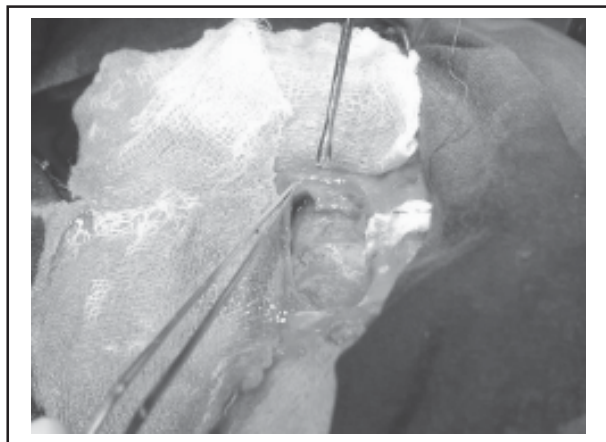


Fig-1: Intra-operative photograph showing outer subdural membrane, congested visceral membrane and brain surface and absence of purulent exudates.

evacuation of collection. During surgery dura was tense and congested. Thin, dark, altered blood was present in subdural space without any macroscopic evidence of pus or pus flakes (Figure-1) and it was irrigated thoroughly with saline. Subdural collection was submitted for culture and Gram's staining and outer subdural membrane was sent for histopathology. Broad spectrum antibiotics were continued. He recovered remarkably within 24 hours in his sensorium and neurological deficits. Fever also subsided by next day. Blood and subdural fluid culture were reported sterile. Contrast CT scan performed on second postoperative day

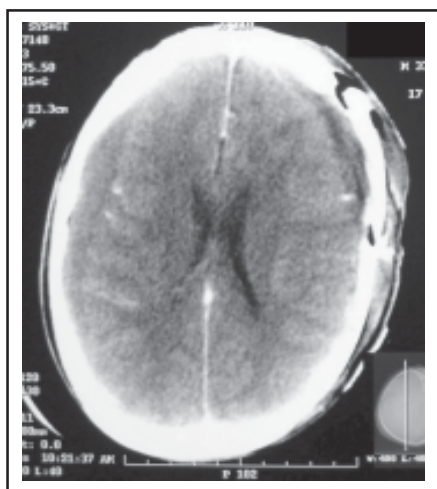


Fig-2: Postoperative contrast CT scan showing resolving left sided haematoma and persisting collection on right side however mass effect and cerebral oedema is reduced.

showed resolving subdural collection on left side, reduced cerebral oedema and mass effect. However right side collection was persisting and there was no enhancement with contrast (Figure-2). Patient and relatives did not agree for surgical intervention on right side in spite explaining the inherent risks. Histopathology of subdural membrane showed loose collagen fibers, large capillaries, smooth muscle cells, and florid inflammatory granulation tissue with purulent exudates suggestive of organizing subdural membrane and suppuration (Figure-3). He was discharged after a two weeks course of broad spectrum antibiotics. At follow up after eight weeks he was doing well and contrast CT scan showed total resolution of subdural collection on both sides (Figure-4).

## DISCUSSION

Subdural macroscopic collection of pus is termed as subdural empyema and characteristically presents with fever, altered sensorium and focal deficits and clinically it is difficult to differentiate between meningitis and subdural empyema.<sup>4,5</sup> Characteristically on CT scan subdural empyema appears as a thin rim of fluid slightly hyperdense to cerebrospinal fluid and hypodense to parenchyma with peripheral enhancement, adjacent disproportionate cortical edema and effacement of cortical sulci an appearance almost similar to chronic subdu-

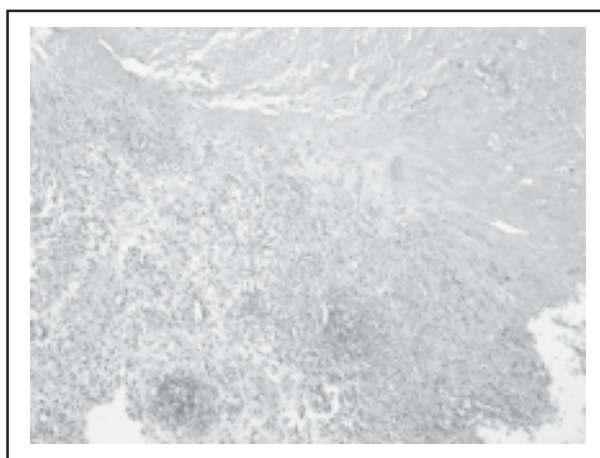


Fig-3: Histopathology of subdural membrane (H&E stain) showing loose collagen fibers, large capillaries, smooth muscle cells, florid inflammatory granulation tissue.

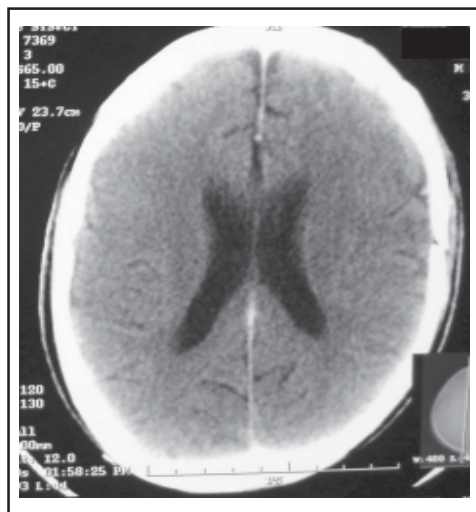


Fig-4: Follow up contrast CT scan showing complete resolution of subdural collection.

ral haematoma.<sup>2,4-6</sup> In present case both pre - and post-operative CT scans did not show any contrast enhancement. During surgery also there were no purulent exudates either on the meninges or in subdural space. Pus culture and blood culture did not show any growth. However histopathological findings in this case were consistent with chronic subdural membrane with evidence of meningitis.<sup>7,8</sup> On the basis of clinical, radiological and histological findings diagnosis of chronic subdural haematoma with meningitis was considered in this case and adequately treated with surgery and antibiotics. Possible source of infection were paranasal sinuses as CT scan showed fracture of the cribriform plate and opacification of paranasal sinuses in this case. Subdural empyema is one extreme of infections

involving the leptomeninges. Imaging and operative findings may not be conclusive in early stages especially in patients with chronic subdural haematoma. This case emphasizes that in cases of base of skull fracture there should be high degree of clinical suspicion of two remote sequelae of head injury i.e. chronic subdural haematoma and meningitis as timely recognition and adequate treatment will result in good outcome.

## REFERENCES

1. Sambasivan M. An overview of chronic subdural haematoma: Experience with 2300 cases. *Surg Neurol* 1997;47(5):418-22.
2. Tewari MK, Sharma RR, Shiv VK. Spectrum of intracranial subdural empyemas in a series of 45 patients: current surgical options and outcome. *Neurology India* 2004;52(3):346-9.
3. Green Lee JE. Subdural empyema. Current treatment options. *Neurology* 2003;5:13-22.
4. Tsai YD, Chang WN, Shen CC. Intracranial suppuration: a clinical comparison of subdural empyemas and epidural abscesses. *Surg Neurol* 2003;59:191-6.
5. Gormley WB, del Busto R, Saravolatz LD. Cranial and intracranial bacterial infections. In: Youmans JR editor, *Neurological surgery*, 4th Ed, Philadelphia, WB Saunders Co 1996;5:3191-220.
6. Narendra N, Nadvi SS, van Dellen JR. Intracranial subdural empyemas in the era of Computed tomography: A review of 699 cases. *Neurosurgery* 1999;44:529-35.
7. Kawano N, Suzuki K. Presence of smooth muscle cells in the subdural membrane. *J Neurosurg* 1981;54:646-51.
8. Matschke J, Tsokos M. Post-traumatic meningitis: histomorphological findings, postmortem microbiology and forensic implications. *Forensic Science Intern* 2001;115:199-205.