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Original Contribution

Acute epidural hematoma of the posterior fossa—cases of acute clinical deterioration

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Abstract

Purpose: Posterior fossa epidural hematoma (PFEDH) is an uncommon complication of head injury, which is sometimes associated with acute clinical deterioration (ACD) without significant warning symptoms and may results in death. We investigated clinical characteristics of PFEDH with ACD to identify the process of ACD.

Methods: A retrospective case-control review of all patients admitted with a diagnosis of PFEDH between September 1989 and February 1999 was performed.

Results: Twenty-one patients (14 men and 7 women) were admitted for PFEDH to Sendai City Hospital. Four patients suffered ACD. All patients had struck their occipital region and had occipital fracture. Patients were treated conservatively on admission because computed tomography (CT) showed no significant findings in 2 patients and PFEDH with minimal symptoms in the others. All patients suffered acute deterioration of consciousness after vomiting. Follow-up CT showed large PFEDH with severe mass effect. Emergency surgery was performed and identified the bleeding point as the venous sinus. The presence of nausea/vomiting was significant risk factor of ACD (Fisher exact test: $P = .021$). Of the 4 patients, 2 achieved excellent recovery without deficit, 1 was moderately disabled, and 1 died. The outcome of patients with ACD was worse compared to those without ACD (Fisher exact test: $P = .046$).

Conclusions: We should note that vomiting itself could be a significant risk factor of ACD for occipital head trauma. The patients with occipital fracture and vomiting must be observed closely and followed up by CT, even if the initial CT is negative. CT performed shortly after the trauma may reveal no evidence of PFEDH but cannot exclude the development of delayed hematoma.

1. Introduction

Posterior fossa epidural hematoma (PFEDH) is an uncommon complication of head injury. Before the introduction of cerebral computed tomography (CT), PFEDH carried a poor prognosis. Clinical symptoms contributed little to identifying the site of the hematoma, and the diagnosis after the onset of medullary complications was too late for effective treatment, and the outcome was usually death. Computed tomography has allowed a real revolution in the diagnosis and early treatment of hematoma. However, PFEDH is not always easy to identify before manifesting as brainstem symptoms. Furthermore, patients with PFEDH

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Table 1 Summary of patients with PFEDH

	Patients without A.CD	Patients with ACD	Statistical difference
No. of patients	17 (F, 6; M, 11)	4 (F, 1; M, 3)	
Median age (y)	16.0	44.0	Unpaired *t* test: *P* = .056
Cause of injury			
Traffic accident	14	1	
Fall	3	3	
Interval between injury and admission			
0-2 h	12	2	
6 h	2	1	
12 h	0	1	
24 h	2	0	
>24 h	1	0	
(median)	(2.0 h)	(1.65 h)	Unpaired *t* test: *P* = .70
Consciousness loss at injury			
Yes	6	2	
No	11	2	
GCS score on admission			
13-15	14	4	
9-12	1	0	
3-8	2	0	
Symptoms on admission			
Headache	12	4	Fisher exact test: *P* = .53
Nausea/vomiting	5	4	Fisher exact test: *P* = .021[a]
Focal neurological signs	3	2	Fisher exact test: *P* = .23
Hit point			
Occipital	14	4	
Occipitoparietal	3	0	
Skull fracture			
Yes	17[b]	4[c]	
No	0	0	
Associated lesion on CT			
SAH	4	1	
SDH	3	0	
Contusion	9 (coup 3, contre-coup 6)	1 (coup 1)	
Shearing injury	2	2	
Hematoma aggravation on CT			
Yes	5	4	
No	12	0	
Treatment			
Surgical	3	4	
Conservative	14	0	
GOS			
GR	16	2	Fisher's exact test: *P* = .046[a]
MD	1	1	(GR vs. not GR)
SD	0	0	
PVS	0	0	
D	0	1	

F, female; M, male; GOS, Glasgow Outcome Scale; SAH, subarachnoid hemorrhage; SDH, subdural hematoma; GR, good recovery; MD, moderate disability; SD, severe disability; PVS, persistent vegetative state; D, died.

[a] Statistically significant.

[b] Fractures were all confirmed by CT.

[c] Fractures were all confirmed by CT but one which was confirmed only at operative findings.

sometimes suffer acute clinical deterioration (ACD) without significant warning symptoms, even after hospitalization and CT, and may consequently die.

The present study describes the clinical and radiological findings of patients with PFEDH who suffered ACD to identify the process of ACD.

2. Patients and methods

A retrospective case-control review of all patients admitted with a diagnosis of PFEDH between September 1989 and February 1999 was performed. A control group of PFEDH without ACD was statistically compared with the patients with ACD with respect to symptom, radiological findings, and operative findings. Statistical significance was established at the probability level of .05 by using Fisher exact test and unpaired *t* test.

The Glasgow Coma Scale (GCS) was used on admission to assess the level of consciousness. ACD was defined as a change of GCS within a few minutes. Routine CT in all patients confirmed the diagnoses of PFEDH and skull fracture. Computed tomography was performed for all the patients with symptomatic head trauma transferred to our department. Computed tomographic scans were performed for the patients with epidural hematoma on admission and three and 24 h post admission routinely. Computed tomography was also performed in patients who suffered clinical deterioration.

3. Results

3.1. Patient characteristics

Twenty-one patients (14 men and 7 women) were admitted for PFEDH among 251 patients with epidural hematoma (8.4%) admitted to Sendai City Hospital. The clinical presentations of the 21 patients with PFEDH are described in Table 1. The patients with PFEDH were 4 to 68