NEUROLOGIC COMPLICATIONS IN HEMOPHILIA: A STUDY IN 214 CASES

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Abstract - Intracranial hemorrhage and entrapment neuropathy are the most serious and disabling complications in hemophilia.

The occurance of these neurological complications was studied in 214 hemophiliac patients during a 3 month period. Nine patients (4.2%) suffered intracranial hemorrhage (one epidural and others intracerebral). All of intracranial hemorrhage patients had the severe form of disease (<1% factor VIII or IX). 6 out of 9 intracranial hemorrhage cases mentioned a history of head trauma. Entrapment neuropathy was present in 10 patients (femoral neuropathy 5, ulnar n. 3, radial n. 1 median n. 1). All of entrapment neuropathy patients described a history of trauma to the extremities. Eight patients in the latter group had severe disease and two patients had moderate disease (1-5%). The proportion of intracranial hemorrhage following head trauma (20% in this series) was greater than other studies. In conclusion, early diagnostic evaluation and replacement therapy may be beneficial in hemophilic patients with trauma.

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Key Words: Hemophilia, intracranial hemorrhage, neuropathy, trauma

INTRODUCTION

Hemophilia is a coagulopathy which occurs mainly in males. Mild cases have been reported in females (19,23).

Central nervous system (CNS) bleeding and entrapment neuropathy comprise neurologic complications of hemophilia (1,8,20,22). Trauma may cause such bleeding but the minimal amount of injury necessary is unknown (2,4-6). At least one third of patients with CNS bleeding are thought to be traumatic (6). We have studied the above mentioned neurologic complications in hemophilia A and B patients during a 3 month period.

MATERIALS AND METHODS

We considered any patient with previously diagnosed hemophilia who was refered to Imam - Khomeini hemophiliac center, Tehran.

Our patient population included 214 persons, all of whom had been registered at the above center, with defeciency of either factor VIII (classic hemophilia) or factor IX (Christmas disease).

They were questioned about family history of hemophilia, age, trauma history and symptoms of neurologic complications. Later all of them were examined and assessed thoroughly.

According to history, neurological examinations, CNS imaging and nerve conduction studies, the neurologic complications were documented.

One of our patients was a female. Our patients ranged from 1 to 55 years. Factor IX deficiency accounted for 25 patients. Factor VIII was deficient in the other patients.

Out of 214 patients, 157 had severe disease (<1% of normal), 32 moderate (1-5% of normal) and 25 mild (>5% of normal) disease. Twenty - nine patients had a history of head trauma (13%).

Also head trauma history was present in 5 out of 9 intracranial hemorrhage patients (67%). All patients with entrapment neuropathy described trauma to extremities.

RESULTS

A. CNS bleeding

Nine patients suffered intracranial hemorrhage (4.2%) including eight intracerebral and one epidural hemorrhages. Subdural, intraventricular and intraspinal hemorrhages were not seen in these patients. CNS bleeding occurred at ages less than 20 years. In 33% of these patients there was no history of known head trauma. All of these patients suffered the severe form of disease (table 1).

Table 1. : Intracranial hemorrhage and coagulation factor deficiency

Factor deficiency	ICH		Total patients
	Frequency	%	
Severe (<1%)	9	100	157
Moderate (1-5%)	0	0.0	32
Mild (>5%)	0	0.0	25
Total	9	100	214

B. Entrapment Neuropathy

Ten patients suffered entrapment neuropathy including :

	No
Femoral neuropathy	5
Ulnar neuropathy	3
Median neuropathy	1
Radial neuropathy	1

In these patients, entrapment neuropathy occurred in age range from 10 to 20 years. Out of 10 patients, 8 patients had severe disease and two had moderate disease (Table 2).

Table 2. Entrapment neuropathy and coagulation factor deficiency

Factor deficiency	Femoral n.	Ulnar n.	Radial n.	Median n.
Severe (<1%)	3	3	1	1
Moderate (1-5%)	2	0	0	0
Mild (<5%)	0	0	0	0
Total	5	3	1	1

Frequency of the head trauma and subsequent intracranial hemorrhage (ICH) in this study is demonstrated by tables 3 and 4 respectively.

Table 3. Head trauma in ICH and total patients

Head trauma	ICH		Total patients	
	Frequency	%	Frequency	%
Positive	6	67%	29	13%
Negative	3	33%	185	83%
Total	9	100	214	100

Table 4. ICH in patients with head trauma

With ICH	Head Trauma Frequency	%
With ICH	6	20%
Without ICH	23	80%
Total	29	100

DISCUSSION

13 percent of our patients reported head trauma (29 of 214 pts). Of the 29 patients, 6 cases (20%) subsequently had ICH (table 3).

The proportion of ICH in our patients with head trauma, therefore, was greater than one found in retrospective studies in which reported incidence of ICH following trauma was 12% (3).

On the other hand, of 9 cases of ICH, 6 patients had head trauma (67%) which was somewhat at variance with other studies (2,8,9) where 14-65% had a history of preceding head injury (table 4).

We could not fully relate the injury severity of head trauma to the risk of ICH (6-10,13,15,) since reports of both mild and severe trauma preceded definite bleeding. The severity of head trauma is difficult to categorize, since no standard classification exists.

As mentioned above, the proportion of neurologic complications in hemophilia patients was greater in childhood and adolescence which could be attributed to engagement in risky activities or lack of parental supervision.

In our study, the proportion of ICH following trauma was greater than previous published studies (1-6). Also history of trauma in ICH cases was more obvious than in other studies. It seems that the role of trauma as a cause of ICH & nerve entrapments is more prominent in our series.

So it is recommended that all hemophiliac patients with head trauma should be evaluated as soon as possible and brain imaging be performed if ICH is suspected (11-17), preferably after receiving an empirical dose of the corresponding factor.

In the case of trauma to extremities, perfect neurological examination and CNS imaging if indicated, are necessary for early diagnosis and treatment.

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