INJURIES DUE TO SEIZURE IN CHILDREN WITH NEWLY DIAGNOSED AND UNTREATED EPILEPSY

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Abstract

Background: There is an increased risk for physical injury during convulsion in children with epilepsy before control or in poorly controlled fits.

Objectives: To study the rate and features of physical injuries due to seizure in newly diagnosed children with epilepsy before the use of anti-epileptic drugs.

Method: Newly diagnosed and untreated children with epilepsy with at least two unprovoked a febrile fits of any type aged 1-14 years presenting to Al-Kadhimiya Teaching Hospital and the author's private clinic along 12 months period (April 2004-March 2005) were studied. Information was collected from the parents about whether physical injuries resulted from the seizure. Features of the fits and the injuries with their management were fixed.

Results: Eleven children (17.7%) sustained physical injury out of 62 with epilepsy. Nine children (81.8%) had single injury while 2 children (18.2%) had multiple injuries. Eight children (72.7%) sustained their injury at home, 2 at school (18.2%) and one (9.1%) in the garden. Most of the injuries were bruising of head and/or face (63.6%). The most common seizure type causing injury is generalized tonic-clonic (72.7%) and all the children with typical absence seizure did not experience any injury.

Conclusion: Physical injuries from seizures are not uncommon, but they are simple. We have to find a balance between seizure precaution and the freedom to enjoy life.

Keywords: Injuries, Seizure, Children, Epilepsy.

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Introduction

Children newly diagnosed with epilepsy or those with uncontrolled or poorly controlled epilepsy, are reported to have a higher risk of physical injury due to the fit, than children with no epilepsy. Occasionally some children with well controlled epilepsy may have physical injuries as a complication of the adverse effects from antiepileptic drugs (AEDs)[1-3].

Those studies have been based on patients with an established diagnosis of epilepsy and receiving AEDs. Early diagnosis of epilepsy and early treatment by some doctors is to prevent seizure-related injuries and to allay parental fear that seizures may cause injuries[4-6].

An accurate understanding of injury risk for patients who have epilepsy not only affects the patient, but also family members, schools, employers and the general public. It is important to find a balance between seizure precaution and the freedom to enjoy life. Unnecessary restrictions of activity can adversely affect quality of life, often to a more serious extent than what seizure attacks can do. Ignoring the risk of injuries may have disastrous consequences for some people with epilepsy. However, overestimating the risk of injuries may unfairly impact on the rights of those with well-controlled epilepsy. People with well-controlled epilepsy should not arbitrarily be considered at higher risk of injury than those without epilepsy. School authorities and work personnel should understand that the risk of injuries from seizures is very small in people whose

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epilepsy is well-controlled. It is comparable to or lower than the risk in many people without epilepsy. It is illegal to deprive people with well-controlled epilepsy of their opportunities to study or to work. Most previous studies of seizure injury rate looked at patients treated for poorly-controlled epilepsy in epilepsy centers or emergency room; these studies cited injury risk rates as high as one in three patients. The high injury rate in patients with severe epilepsy investigated in these prior studies does not apply to the general population of people with epilepsy, which would include those with well-controlled as well as those with uncontrolled epilepsy[7].

The aim of the study is to assess the rate and features of physical injuries due to convulsion in children with a new diagnosis of epilepsy before starting antiepileptic drugs.

Patients and Methods

The patients were collected from the pediatric neurology clinic in Al-Kadhimiya Teaching Hospital and from the author's private clinic along 12 months period from April 1st 2004 to March 31st 2005 aged between 1 and 14 years.

The diagnosis of epilepsy was made by the author based on an eyewitness account on the child's seizure. The criteria for inclusion in the study:

1. Children with newly diagnosed epilepsy.
2. Have at least two unprovoked afebrile convulsions of any type.
3. Did not receive any antiepileptic drugs.

The information was obtained from the child's parents with a structured questionnaire including the following:

The duration of the child's epilepsy before diagnosis, the epilepsy syndrome, any accompanying learning difficulty, the seizure type causing the injury, how and the age at which the injury was sustained and whether hospital treatment was required because of the injury. Children who were admitted to the hospital because of a fit were not included because it was difficult to determine the reason for admission whether it was because of the fit itself or because of the injury. Those children with learning difficulties were excluded from the study.

The classification of patients' seizure type or types and epilepsy syndrome was according to the International League Against Epilepsy[8,9].

Results

Sixty two patients (38 boys and 24 girls) with age range from 1-14 years were included in this study. Eleven (17.7%) patients experienced injuries because of their fit, before the diagnosis of epilepsy. Of the 11 patients with injuries, 7 were boys (63.6%), of whom 2 had sustained multiple injuries. No female patient experienced multiple injuries.

Table 1: Distribution of patients according to their type of injury and sex.

Injury	Male		Female		Total	
	No.	%	No.	%	No.	%
Single	5	45.5	4	36.3	9	81.8
Multiple	2	18.2	0	0	2	18.2
Total	7	63.7	4	36.3	11	100

Multiple injuries were defined as injuries causing bruising with at least one other injury (I.e., fracture, cuts or lacerations, or broken teeth) and sustained during the same fit. A bitten tongue and friction burns were not considered physical injuries because these features are common to many tonic-clonic seizures.

The mean age of injury occurrence was 9.2 years, (range 3.5-13.1). The mean age of epilepsy diagnosis with injury was 10.1 years, (range 3.8-13.3). The mean age of epilepsy diagnosis with no injury was 11.1 years, (range 4.6-13.8).

Eight patients (72.7%) had experienced their injuries at home, 2 at school (18.2%) and one (9.1%) outside the home (in the garden). Five of the injuries sustained at home had occurred in the bedroom while the children were asleep when they fell out of the bed, one occurred in the kitchen and two occurred on the stairs. The two patients who had experienced a convulsion at school they were in the school playground.

Table 2: Distribution of injured patients according to place of injury.

Place of injury		No.	%
Home	Bedroom	5	72.7
	Kitchen	1	45.4
	Stairs	2	9.1
School		2	18.2
Outside home		1	9.1
Total		11	

The physical injuries sustained included bruising to the head and/or face (7 patients). Multiple bruising involving the face, head and limbs (2 patients), bruising or cuts to the limbs (1 patient) and cut lips and/or broken teeth (1patient).

Table 3: Distribution of injured patients according to physical injury.

Physical injury	No.	%
Bruising head and/or face	7	63.6
Multiple bruising (face, head, limbs)	2	18.2
Bruising or cuts to limbs	1	9.1
Cut lips and/or broken teeth	1	9.1
Total	11	100

Two patients (18.2%) required medical care because of their injury, one for suturing of cuts and the other because of parental concern about the child's first convulsion. The fits causing the injuries were reported to have been generalized tonic-clonic in 8 patients (72.7%), complex partial in one patient (9.1%), myoclonic in one patient (9.1%) and of uncertain type in one patient (9.1%).

Table 4: Distribution of injured patients according to type of epilepsy.

Type of seizure	No.	%
Generalized tonic-clonic	8	72.7
Complex partial	1	9.1
Myoclonic	1	9.1
Uncertain	1	9.1
Total	11	100

All the 62 epileptic patients with and without injury were distributed according to the type of epilepsy as shown in table 5. None of the 9 patients with typical absence epilepsy experienced a physical injury.

Table 5: Distribution of all epileptic patients according to type of epilepsy.

Type of seizure	No.	%
Generalized tonic-clonic	42	67.7
Complex partial	5	8.2
Myoclonic	3	4.8
Absence	9	14.5
Uncertain	3	4.8
Total	62	100

Discussion

This study reports the rate of physical injuries in a consultation clinic in a teaching hospital and in a private clinic, of children with a new diagnosis of epilepsy and before introducing medication. Some studies have previously described the relation of physical injuries with epilepsy, but most have been adult based and have concentrated on head injuries, drowning and burns and in patients already receiving AEDs[1-3,10,11].

The diagnosis of epilepsy was made by the author based on an eyewitness account on the child's fit only. Demonstration of paroxysmal discharges on the EEG during a clinical fit is diagnostic of epilepsy, but fits rarely occur in the EEG laboratory. A normal EEG does not preclude the diagnosis of epilepsy, because the interictal recording is normal in approximately 40% of patients[12].

Buck D. et al. studied 1000 adults with active epilepsy, 24% of them sustained a head injury, 16% had sustained a burn or scald, 10% a dental injury and 6% other fractures[2]. None of our patients had burns or scalds, this shows the fact that children are more likely to be supervised in situations that could predispose them to these specific injuries.

In our study injuries had occurred at a mean age of 9.2 years, and epilepsy had been diagnosed at a mean age of 10.1 years in the patients who had injuries and at a mean age of 11.1 years in those patients who had no injuries as a result of the fit. The difference in ages reflected the fact that many of the injuries had occurred with a first or subsequent fits before the diagnosis of epilepsy. The delayed diagnosis of epilepsy in the non-injured rather than the injured group probably reflects the fact that the injuries may have attracted the attention to the diagnosis of epilepsy[10].

Tonic-clonic seizures were the most common types of epilepsy causing injuries in our patients. This is accepted because of the sudden falls and shakings caused by these types of epilepsy, and this was observed also by other authors[1-3,10].

None of the 9 children with typical absence seizure in our study had an injury. Ziegler et al. mentioned 14% of the children with absence seizure had an accident or injury in his study[10]. Wirrell et al. mentioned a figure of 27% of children with absence seizure had an injury[11]. Those patients in the mentioned studies were receiving AEDs. This finding may be explained by the fact that the treated patients in those studies would have had a longer history of epilepsy than our patients which exposed them to more risk of injury.

Most of the injuries in our study were sustained at home and in the bedroom because of a fall from the bed during tonic-clonic

convulsion, and two children were injured at school.

The fact that 18.2% of the children in our study sustained a physical injury that required minor medical care would suggest that untreated epileptic fits cause a physical injury.

Conclusion

1. The rate of physical injuries in children with newly diagnosed and untreated epilepsy was 17.7%.
2. Most of the injuries were minor and only 18.2% needed simple medical care.

Recommendations

1. The major factor in risk reduction for seizure-related injuries in epileptic children is effective epilepsy control.
2. Education of parents about the measures taken if their child had a convulsion.
3. Appropriate companion or supervisor for the child during activities that may pose high risk of serious injury if a convulsion occurs.

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