

Original Article

Head Injury from Fan Blades Among Children

Azmi Alias, Ravi Krishnapillai, Hong Wah Teng, Ahmad Zubaidi Abd Latif and Johari Siregar Adnan, Department of Neurosurgery, Hospital Kuala Lumpur, Kuala Lumpur, Malaysia.

OBJECTIVE: Head injury caused by fan blades is rare among children. We analysed 14 cases of such injury and discuss the causes, type of injury and preventive measures.

METHODS: A retrospective analysis of 14 cases of children who were admitted to the Pediatric Neurosurgical Unit of Hospital Kuala Lumpur after sustaining head injuries caused by fan blades between January 2000 and December 2002 was performed.

RESULTS: The causes of fan-blade head injury included jumping on the upper bunk of a bunk-bed, climbing on a ladder, climbing up onto a table, and being lifted by an adult. Thirteen patients were injured by ceiling fans and one by falling onto an uncovered table fan. School-aged boys were the predominant victims. Mean patient age was 7.9 years (range, 1.0–12.2 years). There was a twin peak incidence of when the accidents occurred: just before lunch in the afternoon and bedtime at night. The types of injury were scalp lacerations, compound depressed fractures and multiple intracranial haemorrhages. Two patients had the complication of wound infection, and one of these patients developed cerebral spinal fluid leak. One patient died from severe head injuries.

CONCLUSION: Safety awareness among parents and caretakers are important as fan-blade head injury among children is preventable. [*Asian J Surg* 2005;28(3):168–70]

Key Words: children, fan blade, head injury

Introduction

The home can be a dangerous place for children; they spend most of their time there and it is where most accidents happen. Over 1 million children in the United Kingdom are injured in accidents at home every year,¹ of which the majority can be prevented.

Head injury from fan blades is rare among children and limited data are available in the literature. A retrospective analysis involving 14 cases of head injury caused by fan blades among children who presented to our institute was carried out. The causes, type of injury and preventive measures are discussed.

Patients and methods

We conducted a retrospective analysis of 14 children who sustained head injuries caused by fan blades between January 2000 and December 2002. The patients' clinical notes, computed tomography (CT) brain scans, and operative records were analysed.

Results

A total of 14 children were included, of whom 10 were boys (71.4%) and four were girls (28.6%). Mean age was 7.9 years (range, 1–12.2 years). Among the ethnic groups, Malays were

Address correspondence and reprint requests to Dr. Azmi Alias, Department of Neurosurgery, Hospital Kuala Lumpur, Kuala Lumpur 50586, Malaysia.

E-mail: azmidr@hotmail.com • Date of acceptance: 27 May 2004

Table 1. Causes of fan-blade head injury

Cause	n (%)
Ceiling fan injury	
Jumping on the upper bunk of a bunk-bed	8 (57.1)
Climbing on a ladder	2 (14.3)
Lifted by an adult	2 (14.3)
Climbing up onto a table	1 (7.1)
Table fan injury	
Falling onto an uncovered table fan	1 (7.1)

predominant (71.4%), followed by Indians (21.4%) and Chinese (7.1%). There was a twin peak incidence of when the accidents occurred: prior to lunch in the afternoon and bedtime at night. The causes of fan-blade head injury are shown in Table 1. Thirteen patients were injured by spinning ceiling fans, and one was injured after falling onto an uncovered spinning table fan. Most had right-sided head injuries (79%) involving the frontal region (57%). All patients had scalp lacerations, with wound length ranging from 3 cm to 6 cm. The types of head injuries sustained are shown in Table 2.

Nine patients underwent toilet and suturing under local anaesthesia. Four patients required wound debridement and elevation of depressed fracture under general anaesthesia, one had craniectomy and evacuation of blood clots. Two patients (14.3%) had the complication of wound infection, and one of these patients developed cerebral spinal fluid leak. Both were treated conservatively with local dressings and antibiotics. One patient (7.1%) died from severe head injuries. This 6-year-old boy was accidentally hit by a spinning ceiling fan while playing with siblings on the upper bunk of a bunk-bed. He sustained a compound depressed fracture of the right frontal bone with underlying intracerebral, subdural and extradural haemorrhage. He was brought to the hospital with a Glasgow coma scale score of 5/15. An emergency craniectomy and

Table 2. Types of head injuries sustained

Injury	n (%)
Compound linear fracture	4 (28.6)
Compound depressed fracture	3 (21.4)
Compound depressed fracture with pneumocranium	3 (21.4)
Extradural haemorrhage	3 (21.4)
Multiple intracranial haemorrhage	1 (7.1)

evacuation of blood clots were performed, but he died 4 days later.

Mean hospital stay was 5 days (range, 2–14 days). The duration of follow-up ranged from 2 to 12 weeks, with a mean of 4 weeks.

Discussion

Physical interaction and recreational activities are essential components of healthy development in children. However, inappropriate playgrounds can result in unintentional injuries. Bunk-beds are convenient and favoured by many parents, especially when living in an environment of limited space. Ceiling fans are commonly used as alternatives to air-conditioners because they are relatively cheap and easy to maintain.

Activities such as playing and jumping on bunk-beds can be dangerous, especially when the bed is placed near a ceiling fan. Children can fall from a height or get hit by the spinning blades of a ceiling fan. Various injuries can occur following falls from the upper bunk of bunk-beds, such as head injury, multiple broken bones and soft tissue injury.² However, reported cases in the literature on head injury caused by spinning fan blades are limited.³⁻⁵ Activities such as carrying a child on one's shoulders, lifting up a child by an adult, a child climbing on a ladder or onto a table or school desk can bring children within the reach of ceiling fans.

The causes of fan-blade head injury in this series were potentially preventable. Although the majority of patients recovered uneventfully, one patient died from severe head injuries and two had complications of wound infection.

A fan blade is a relatively blunt object, but can become an effective cutting edge as the fan rotates, resulting in high-velocity penetrating injuries with potential hazards to the skull and brain. The severity of injury depends much on the speed of the rotating fan and the mechanism of the child's fall. This, however, was not observed in this series. Boys outnumbered girls as, by nature, they are more frequently involved in physical activities. Most of the accidents occurred when the children were playing without the presence of supervisory adults.

As a preventive measure, bunk-beds or other high furniture should be placed at a distance away from a ceiling fan. Air-conditioners should be considered as an alternative. Small children should not be allowed to sleep or play on the upper bunk of a bunk-bed. Lifting up small children high above one's head or leaving a spinning table fan uncovered is asking for

trouble. Children can be injured by the fan blades if they fall against the fan or touch it.

It is the responsibility of adults to create play environments that are challenging for children but also safe. Using age-appropriate equipment, maintaining home safety, limiting equipment height, increasing safety awareness, combined with adult supervision, can greatly reduce the incidence and severity of injuries.

Conclusion

Fan blades are potential hazards that can cause, sometimes fatal, head injury. However, such injury is preventable. Accidents are often the result of ignorance and carelessness.

By increasing safety awareness, the majority of accidents in the home can be prevented.

References

1. Consumer Safety Unit. *Home Accident Surveillance System, 19th Annual Report*. London: Department of Trade and Industry, 1995.
2. Macgregor DM. Injuries associated with falls from beds. *Inj Prev* 2000;6:291-2.
3. Bouckaert MM. Fan blade injury. *S Afr Med J* 1999;89:837-9.
4. de Villa GH, Nicholoff TJ Jr. Fan blade injury of the face. *J Philipp Dent Assoc* 1998;50:32-5.
5. Sedhom AW, Leathers RD, Belton MJ, Ghobrial G. Fan blade injury to the maxillofacial region: a case report. *J Oral Maxillofac Surg* 1998; 56:98-100.