



Mothers' knowledge about foreign body aspiration in young children

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ABSTRACT

Objective: To evaluate parents' knowledge regarding foreign body aspiration (FBA) and determine the factors that are associated with lack of knowledge.

Methods: An 8-item questionnaire regarding knowledge of FBA was developed and distributed at regular check-ups for children younger than 24 months old.

Results: Out of the 1766 questionnaires distributed, 1603 were recovered and most of them (1539) were answered by mothers. After omitting 49 questionnaires with incomplete data, 1490 questionnaires answered by mothers were analyzed. Only 4.3% [95% CI 3.3–5.3] of mothers did not recognize a small toy as a cause of FBA, while 20.2% [95% CI 18.2–22.2] did not know that peanuts and other nuts can be causes of FBA, and 48.1% [95% CI 45.5–50.6] did not know that they should not give peanuts to a child younger than 3 years old. Regarding clinical signs, 27.7% [95% CI 25.4–30.0] and 41.8% [95% CI 39.3–44.3] of mothers did not know that sudden choking and sudden coughing were symptoms suggesting FBA, respectively. Being a mother with a child younger than 12 months old and being a mother with a first child were independent risk factors for lack of knowledge about FBA, regardless of the age of the mother. **Conclusions:** A substantial number of mothers lack knowledge regarding FBA. To prevent FBA and to make timely diagnoses, parents, especially mothers with children younger than 12 months old and mothers with a first child should be given adequate information.

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1. Introduction

Foreign body aspiration (FBA) is a common cause of respiratory emergencies in young children and it can be a life-threatening event [1]. Although there have been significant advances in airway management and endoscopic technology, the incidence of FBA has not changed significantly [2]. In a nationwide survey conducted in Japan, we evaluated 163 cases of FBA and found that 78.6% of them were younger than 3 years old, of whom 85.3% aspirated foreign bodies that were organic in nature such as nuts and beans [3]. The diagnosis of FBA is often delayed, and delayed diagnoses can cause problems for children, ranging from life-threatening airway obstruction to chronic wheezing, recurrent pneumonia, or failure to thrive [4–6]. Our previous nationwide survey revealed that in approximately 50% of FBA cases, the diagnosis was delayed by more than 24 h, although 65% of these cases had suspected episodes, such as choking and sudden coughing [3]. To prevent FBA

and to make timely diagnoses for appropriate management, public awareness should be increased. However, there have been only a few reports evaluating efficient ways to educate and advise parents regarding FBA. Karatzanis evaluated the effects of a media campaign for public awareness of FBA and showed that the total number of bronchoscopies for FBA decreased, compared to the time period before the introduction of the campaign [7]. In addition to the media campaign, an individualized educational program regarding FBA for parents of younger children could be effective in preventing FBA. As a first step toward developing an individualized educational program, the knowledge of parents regarding FBA should be evaluated. Therefore, we developed a questionnaire to assess the knowledge of parents regarding FBA and distributed it at regular check-ups for children younger than 24 months old. Furthermore, we tried to determine the factors that are associated with a lack of parental knowledge regarding FBA.

2. Methods

2.1. Study design

Because no suitable questionnaire was available for evaluating the knowledge of parents regarding FBA, we developed an

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Table 1
An 8-item questionnaire regarding knowledge of foreign body aspiration.

Questions	
Q1	Did you know that peanuts and other nuts can cause accidents involving foreign body aspiration?
Q2	Did you know that small toys can cause accidents involving foreign body aspiration?
Q3	Did you know that sudden choking is one of the symptoms of foreign body aspiration?
Q4	Did you know that sudden coughing is one of the symptoms of foreign body aspiration?
Q5	Did you know that foreign body aspiration is most frequently seen in children aged 0–2 years old?
Q6	Did you know that you should not give peanuts to a child younger than 3 years old?
Q7	Did you know that when a child is holding a small toy in his/her mouth, you should not make him/her cry when trying to take it out?
Q8	Did you know that you should not allow a child to walk or laugh while he/she is eating?

8-item questionnaire using earlier data on the characteristics of FBA cases (Table 1) [2,3]. This anonymous self-administered questionnaire was distributed to parents who brought their children for regular check-ups, which were performed at 12 regional community centers in Toyama, Japan. The parents were asked to fill out the questionnaire by the end of the check-up without consulting other persons. The questions focused on knowledge of the causes and clinical signs of FBA and on what they should do to prevent FBA. To determine the factors that are associated with a lack of knowledge about FBA, the questionnaire also included questions regarding the age and birth order of children and the age of the parents. This cross-sectional survey was conducted from May 2010 through August 2010. This study protocol was approved by the institutional review board (IRB) of the University of Toyama.

2.2. Statistical analysis

Multivariable analysis was performed to estimate the effects of the background characteristics of the participants on lack of knowledge. A p value < 0.05 was considered to be statistically significant. All of the analyses were performed using the statistical package of SPSS for Windows version 17.0J (SPSS, Inc., Chicago, IL, USA).

3. Results

Out of the 1766 questionnaires distributed, 1603 were recovered. Because most of the questionnaires were answered by mothers ($n = 1539$, 96.0%), in this study we focused on mothers' knowledge. After omitting 49 questionnaires with incomplete data, 1490 questionnaires answered by mothers were analyzed. The background characteristics of the participants are shown in Table 2. The ages of the children were distributed from 1 to 22 months old, with a mean of 11.5 months, and 51.7% were younger than 12 months old. The mean place in the birth order was 1.7, and

Table 2
Baseline characteristics of the subjects.

	Mean (SD)	Range	No.	Percent
Children				
Age (months)	11.5 (7.2)	1–22		
<12			771	51.7
≥12			719	48.3
Order birth	1.7 (0.8)	0–5		
1			658	44.2
2			580	38.9
3			196	13.2
>3			29	1.9
Unknown			27	1.8
Mothers				
Age (years)	32.0 (4.8)	19–47		
<30			458	30.7
≥30			1024	68.7
Unknown			8	0.5

44.2% were the first children. The ages of the mothers were distributed from 19 to 47 years old, with a mean of 32.0 years old, and 30.7% were younger than 30 years old.

Only 4.3% [95% CI: 3.3–5.3] of mothers did not recognize a small toy as a cause of FBA, while 20.2% [95% CI: 18.2–22.2] did not know that peanuts and other nuts can be causes of FBA, and 48.1% [95% CI: 45.5–50.6] did not know that they should not give peanuts to a child younger than 3 years old (Fig. 1). Regarding clinical signs, 27.7% [95% CI: 25.4–30.0] and 41.8% [95% CI: 39.3–44.3] of mothers did not know that sudden choking and sudden coughing, respectively, are symptoms suggesting FBA. Furthermore, 27.2% [95% CI: 24.9–29.4] of mothers lacked the knowledge that when a child put a small toy in his/her mouth, they should not make a child cry during they try to take it off, and 18.1% [95% CI: 16.2–20.1] did not know that they should not allow a child for walking or laughing during he/she is eating. To determine the factors that are associated with the lack of knowledge regarding FBA, multivariable analysis was performed (Table 3). Being a mother with a child younger than 12 months old and being a mother with a first child were independent risk factors for a lack of knowledge regarding FBA, but the age of the mother was not.

4. Discussion

Many cases of FBA can be preventable. One of the risk factors for FBA is a lack of knowledge of caregivers of children, as an European Union-based surveillance of FBA, the Susy Safe registry, showed that an adult was present in 40% of the FBA cases involving a child younger than 1 year old [8]. It has been emphasized that public awareness should be increased. However, there have been few reports evaluating parental knowledge regarding FBA in a general population. In this study, we found that a substantial number of mothers of young children lacked knowledge of FBA. Fewer mothers knew about peanuts than small toys as a cause of FBA, even though most studies have shown that peanuts are the most frequent cause of FBA worldwide [1,3]. This finding might reflect the fact that it is mandatory to place a choking hazard warning label on toys with small parts for young children in several countries including Japan [9]. To prevent FBA in younger children, foods containing nuts should be labeled with choking hazard warnings [10,11].

Diagnosis of FBA is often delayed. In approximately 50% of the cases, diagnosis was missed for more than 24 h [2,3]. There are several factors associated with delayed diagnosis including physician- and parent-related factors [2]. One of the parent-related factors is that parents do not know clinical signs suggesting FBA, such as sudden choking and coughing [1], as shown in this study. Our previous study revealed that, even in cases with the delayed diagnosis, 65% of these children had an episode suggesting FBA retrospectively [3]. If the parents did not know that these symptoms were typical signs of FBA, they would not have suspected that their child had aspirated a foreign body, even though they noticed these symptoms. Parents should be informed about the possible signs of FBA [12].

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