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Dławienie ciałami obcymi – analiza problemu wśród dzieci zamieszkałych na terenach województwa lubelskiego

Streszczenie

Wstęp. Ciała obce zaaspirowane przez jamę ustną stanowią istotny problem terapeutyczny i społeczny u dzieci. Są przyczyną zgonów i trwałych uszkodzeń ciała, w tym niedotlenienia spowodowanego długotrwałym duszeniem.

Cel. Celem pracy była analiza czynników predysponujących do występowania zagrożeń aspiracją wśród dzieci oraz zwrócenie uwagi na problem edukacji opiekunów w udzielaniu pierwszej pomocy w zadławieniu.

Materiał i metody. Metodą badawczą była analiza dokumentacji medycznej pacjentów Kliniki Otolaryngologii Dziecięcej, Audiologii i Foniatrii Dziecięcego Szpitala Klinicznego (DSK) Uniwersytetu Medycznego w Lublinie, hospitalizowanych z powodu podejrzenia aspiracji ciała obcego do dolnych dróg oddechowych lub przełyku.

Wyniki. Spośród 307 pacjentów, 55% stanowiły dzieci z terenów wiejskich. Nie wykazano istotnej zależności między objawami klinicznymi a miejscem zamieszkania pacjentów. Również rodzaj ciał obcych nie różnicował dzieci miejskich i wiejskich. Znaczącą grupę stanowiły dzieci rodziców z podstawowym wykształceniem. Stwierdzono wpływ sezonowości – częściej występowały ciała obce u dzieci wiejskich w okresie letnim i jesiennym, co mogło wynikać z zaangażowania rodziców w pracach polowych.

Wnioski. Szeroka skala problemu ciał obcych u dzieci, niewystarczająca liczba szkoleń pracowników ochrony zdrowia, którzy mogą mieć kontakt z małymi pacjentami w stanie zagrożenia zdrowia lub życia z powodu zadławienia, stały się jednym z powodów, dla których przeprowadzono poniższą analizę.

Słowa kluczowe: ciało obce, aspiracja, czynniki demograficzne, drogi oddechowe, przełyk, dziecko, edukacja.

Choking with foreign bodies – analysis of the problem of children living in the Lublin province

Abstract

Introduction. Foreign bodies (FB) aspirated through the oral cavity are important therapeutic and social problems in children. They are the cause of death and permanent injuries, including hypoxia caused by prolonged suffocation.

Aim. The aim of the research was to analyze the factors predisposing to ingestion hazard among children and to draw attention to the problem of educating tutors in providing first aid in case of choking.

Material and methods. The research method was the analysis of medical records of patients of the Department of Pediatric Otolaryngology, Audiology and Phoniatrics, Children's University Hospital (DSK), Medical University of Lublin, hospitalized for suspected FB aspiration into the lower respiratory tract or esophagus.

Results. Of the 307 patients, 55% were children from rural areas. There was no significant relationship between clinical symptoms and the place of residence of the patients. Also, the type of FBs did not differentiate urban and rural children. A significant group consisted of children having parents with elementary education. The influence of seasonality – frequent FBs in children occurred in rural areas during the summer and autumn months, which could be due to the involvement of parents in the field work.

Conclusion. The reasons why the following analysis has been made is a wide scale of the problem of foreign bodies in children and unsatisfactory training of health care workers who may come into contact with young patients in health or life-threatening situations due to choking.

Keywords: foreign body, aspiration, demographic factors, respiratory tract, esophagus, child, education.

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INTRODUCTION

Foreign bodies in the esophagus are a common problem that is faced by caregivers of young children and doctors. This is confirmed by statistical data such as that of United States: about 100,000 cases of choking with FBs per year, and 1,500 of those children die [1,2]. In Poland, unfortunately, these statistics are not publicly held.

Objects that get stuck in the esophagus, require removal in approximately 20-40% using esophagoscope [3,4]. In many cases, FB ingestion occurs not witnessed by adult guardian, which may delay the proper procedure and increase the risk of complications, death including. Reasons for which foreign bodies are in the mouth of a child and items inventory are different depending on the age [5]. During infancy, this is the food mostly given by the guardian, not suitable for a particular age group (nuts, bony fish), which for anatomical and physiological reasons is not fragmented in the mouth well [6]. In the esophagus of younger children we mostly find: coins, small toy parts, batteries, jewelry, and pins (Photo 1).

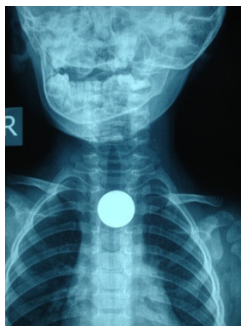

PHOTO 1. Foreign body (coin) in esophagus.

Older children tend to have a habit of biting covers of pens, holding thumb tacks between teeth, and sometimes safety pins, often while consuming a meal.

Sometimes small children especially swallow all sorts of things to attract attention from their parents. This typically occurs in situations when there is a younger sibling in the family, to whom by the nature, caregivers devote more attention than older children. Lack of supervision can lead to ingestion or choking of foreign body [7]. Inserting objects in order to self-harm, is encountered less frequently in children than in adults [8-10]. Gangs of young offenders, as an introductory ritual, cultivate swallowing sharp objects (nails, thumb tacks, needles) as proof of courage and obedience [1]. Children with pathologic esophageal stricture (e.g. after chemical burns with sodium hydroxide) or children with mental disabilities, are a group that requires special attention. At the developmental age, in children without the premolars and with one pair of molars, food is not properly crushed and therefore can more easily get stuck in the esophagus, acting then as a FB. The hard palate, especially the front part, also takes part in the process of identifying and crushing food fragments [7]. In small children, all of these mechanisms are not as effective as in adults.

AIM

The aim of this study was to analyze the various demographic factors that may affect the incidence of choking and hospitalizations the pediatric patients due to foreign bodies in the esophagus. The authors would like to draw attention to this problem.

MATERIAL AND METHODS

We analyzed medical documentation of patients with the suspicion of FB in the esophagus hospitalized in 1998-2008 in the Department of Pediatric Otolaryngology, Audiology and Phoniatrics of Children's University Hospital in Lublin. The group included 168 children undergoing esophagoscopy in general anesthesia. There was a question posed about social factors predisposing for FB aspiration.

RESULTS

Most of hospitalizations for suspected FB in the esophagus were in 1998 – 27 children, the least number in 2001 – 9 children. They are presented in Figure 1.

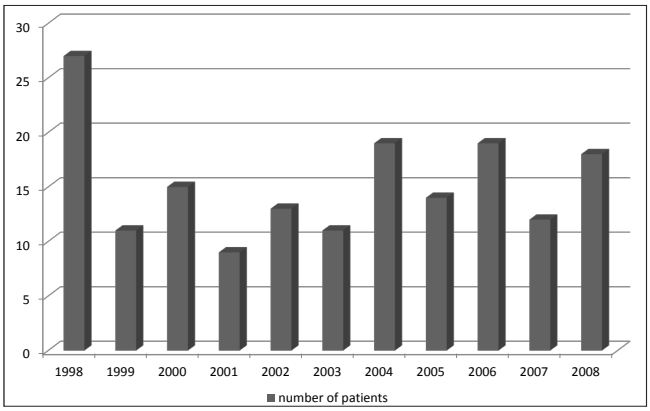

FIGURE 1. The number of hospitalized patients in subsequent years.

Patients were mostly 1-3 years old (n=80, 48%). In the analyzed period, there were 109 hospitalized boys (65%) aged from 6 months to 15 years (Table 1).

TABLE 1. Patients hospitalized with suspicion of esophageal FB in relation to age and gender.

Child's gender	1-12 months	1-3 years	>3 years	Total n	Total %
Boys	7	44	58	109	65
Girls	4	36	19	59	35
Total	11	80	77	168	100

Analysis of parents' education has shown that the vast majority of hospitalized children's caregivers were with elementary education. In some cases no adequate data was collected and the data on education was missing (Table 2).

TABLE 2. The education level of carers.

Parents' education	Number of patients	%
Elementary	72	43
Secondary	30	18
Higher	11	7
No data	55	33

The population of 168 patients was also analyzed for the place of residence. There were 93 children from urban areas (Figure 2).

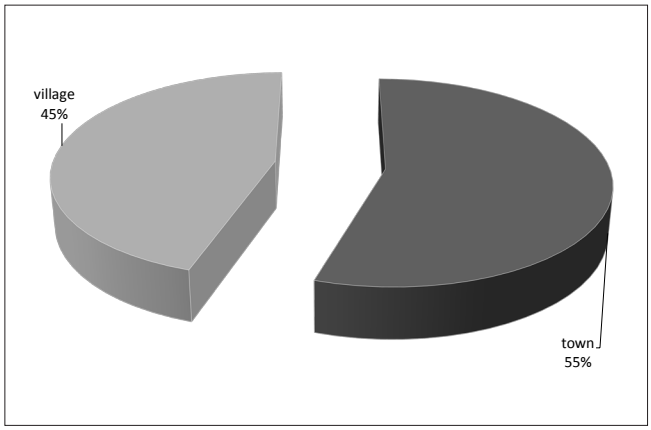

FIGURE 2. Children hospitalized with regard to place of residence.

The vast majority (104 people) were children having siblings (Figure 3).

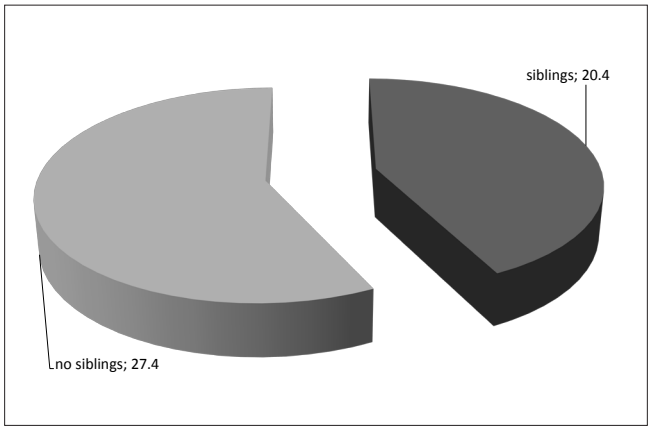

FIGURE 3. Having a sibling by the surveyed population.

Children with older siblings more often were placed in the hospital with the suspicion of FB (Table 3).

TABLE 3. Number of patients with the suspicion of FB (in the respiratory tract or esophagus) with regard to the age of children.

Siblings	Number of patients	%
Older	70	67.5
Younger	20	19
Younger and older	14	13.5

Most hospitalizations took place in the third and fourth quarters of the year (Table 4).

TABLE 4. The incidence of hospitalization in each quarter of the year.

Months of hospitalisation	Number of patients	%
I-III	34	20
IV-VI	31	18
VII-IX	55	33
X-XII	48	29

DISCUSSION

In Polish literature there is relatively a small number of publications devoted to EFB in children [4,8-10]. Therefore, foreign references constitute the basic source of information on this subject [11,12]. Pediatric patients are usually hospitalized in the ENT, gastroenterology, or pediatric surgery wards [1]. The study group of patients, as in other authors [12-15] was divided into three age groups: up to completion of 1 year of age, between 1 and 3 years of age and above 3 years of age. Both in our own material as well as in the cited authors, foreign bodies were impacted mostly in esophagus in children between 1 and 3 years of age. In our study this accounted for 48%. Children up to 1 year of age in the material constituted respectively 6.5%, which was also compared with other reports [1,3,6,8,15,16].

In the analyzed material in terms of gender, the boys ingested foreign bodies more often. In the studied material they accounted for 65% (109 boys to 59 girls). Similar results were reported by other authors [12,13,17,18]. This gender disproportion may be due to difference in temperaments of boys and girls, as well as the ways of playing. In two publications the number of boys and girls was comparable [18]. However, in one publication the authors noted a higher incidence of FB ingestion in girls [8].

Based on the study of demographic factors that may affect the FB ingestion, it was found that in the study population the children of caregivers having primary education were dominating: 43%. The children of parents with higher education constituted the smallest proportion (7%). In 33% of cases the anamnesis was incomplete. The level of parents' education plays an important role in the prevention of FB ingestion in children. Paying attention to the type and method of food ingestion by children and securing access to small, dangerous things represent a very important element in the prevention of small children from trouble. In the literature, comparative information could not be found.

Another developed aspect was having siblings and the impact of their age on the FB ingestion. Studies have shown that patients having siblings accounted for a definitely bigger group (104 individuals – 57%). Children with older siblings were dominating. While carrying out anamnesis with their parents it often turned out that the practice of feeding the child by an older brother or sister or playing with their tiny toys was frequent. In the literature no reference to such data has been found.

In the paper the season of the year was taken into account in terms of the number of hospitalizations. It was found that most of the FB were retrieved from the esophagus in the summer and autumn-winter months, which was probably associated with a poorer than usual supervision of children. In some regions, the problem of FB in the esophagus is associated with the forms of ethnic or religious behavior. A variety of items swallowed by children results from many factors, including age, gender, latitude, and socio-economic conditions. Fish and seafood is one of the basic components of food, e.g. in Indonesia, Thailand, and Japan [1,14,19].

Regardless of country of residence, the children eagerly play with coins, which reflects the amount found in the digestive tract sections. In our study, they accounted for 53.57% of all patients undergoing esophagoscopy. Similar findings have been noted by other authors [1,8,12,13,15]. Children with impaired swallowing reflex, delayed psychomotor development or after surgery of congenital esophagus defects (atresia with trachea – esophageal fistula or without the fistula), are predisposed to aspiration of foreign bodies

[11]. In the studied material there were two children (1.2%) with delayed psychomotor development with suspected FB in the esophagus. In one case a coin was retrieved from the esophagus, in the other the suspected bone was not found. Reading described a boy with severe psychomotor impairment who had not eaten any meals for six weeks but fluids. The chest X-ray revealed the presence of soldier figurine on top of the esophagus. Removal of the obstacles caused return of appetite in the child [7]. Kay et al mention that in the United States about 2% of FBs are found in the esophagus of retarded children [1].

In the presented material there were two boys with esophagus stenosis after chemical burns and one after surgery of congenital atresis with trachea-esophageal fistula. One had the esophagoscopy performed 5-times, the second – twice over several years. Each time the organic FBs were removed (pieces of sausage) from pathological strictures of the esophagus. Similar cases have been described by other authors [12].

CONCLUSIONS

1. Risk factors for FB ingestion in children include: male gender, age: 1-3 years, having older sibling, elementary education of parents, pathologic esophagus stenosis after trauma, burns, congenital defects, delayed psychomotor development, summer months (and thus reduced supervision).
2. Place of residence had no effect on the pathology.

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