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FOREIGN BODY ASPIRATION: STUDY OF EPIDEMIOLOGICAL FACTORS, SITE AND TYPE OF FOREIGN BODIES IN CHILDREN

Khaled Alhomsi*

Alsham Private University (ASPU), Damascus, Syria.

***Corresponding Author: Khaled Alhomsi**
Alsham Private University (ASPU), Damascus, Syria.
Email ID: k.a.foph.lat@aspu.edu.sy,

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ABSTRACT

Objective: The purpose of this study is to analyze epidemiological data of patients with foreign body aspiration (FBA) and to show the most common type of foreign bodies (FBs) and the location of them. **Materials and Methods:** This is a retrospective study composed of all files of children who were diagnosed with foreign body aspiration after visiting different pediatric clinics between 1/1/2017 and 1/2/2020, and had foreign body aspiration. This study included 314 cases with foreign body aspiration. Statistical analysis was done using SPSS 25.0. **Results:** Patients between one to two years old were the most common age for FBA with 38.3%. Males were more common with 55.7% than females. Seeds were the most common foreign body found. Most of the FBs were located in the two main bronchi. Mortality rate was 0.3%, which is classified as very low. **Conclusion:** Parents and guardians should be educated about the potential dangers of aspirating foreign bodies, especially in very young children, and the need to create a safe environment for them.

KEYWORDS: Foreign Body Aspiration, Syrian Population, Children.

INTRODUCTION

Foreign body aspiration (FBA) occurs mostly in children due to the lack of molar teeth to properly chew food and the tendency to play or talk with food in the mouth; it can, however, also affect adolescents and adults.[1,2] The gold standard for treatment of FBA is rigid bronchoscopy with forceps removal even though flexible bronchoscopy is quite useful in certain conditions.[3] However, in cases of failed rigid bronchoscopy, the surgical options available for retrieving the foreign body (FB) include tracheostomy, bronchotomy, and thoracotomy.[4–8] FBA continues to be a common problem in pediatric that may have severe consequences, as it can result in both acute and chronic health problems.[9] FBA is a serious condition during childhood that requires immediate management to keep away complications and irreversible lung injuries.[10] Tracheobronchial FBA is life-threatening emergency for children[11] and comprise the majority of accidental deaths in childhood.[12] After tracheobronchial foreign body aspirations, cardiopulmonary arrest and sudden death may be seen in patients, especially in children.[13]

FBA is the most likely cause of accidental fatalities in children under 1-year-of-age.[14] In the group of children up to 3 years, presence of foreign body in the respiratory tract accounts for 7% of sudden deaths.[15] The prevalence in young children could be because of their lack of molar teeth; poor swallowing of food; their tendency to put objects in the mouth; playing with objects in the mouth; talking, crying, or moving while eating; having weak protective laryngeal reflexes; and having the desire to explore the world.[16] FBA is one of the most common cause of accidental death at home in age <5 years.[17] Statistics show that, in United States, 5% of all accident-related deaths in children under the age of 4 is caused by FBA, which is also the leading cause of accidental deaths in the home among children under the age of six.[18] FBA continues to be a concerning pediatric problem, accounting for thousands of emergency room visits and more than 100 deaths each year in the United States.[19] Delay in diagnosis, and hence in treatment, may have serious consequences.[20]

MATERIALS AND METHODS

This is a retrospective study composed of all children who were reviewing pediatric clinics between 1/1/2017 and 1/2/2020, and had a foreign body aspiration complain. This study included 314 cases diagnosed with foreign body aspiration. The patient's information was obtained from different clinics records including (age, sex, bronchoscopy reports, type of foreign body, location of foreign body and mortality). All personal details were blinded to ensure the privacy. Furthermore, only the report of bronchoscopy, regardless of the hospital or institution which was conducted in, was obtained to demonstrate the findings in this study. Statistical analysis was done using SPSS 25.0.

RESULTS

Patients between one to two years old were the most common age group for FBA with 38.3%. Moreover, males were more common with 55.7%. (Figure 1, Figure 2)

It is important to emphasize that the mortality rate was 0.3%, which is classified as very low mortality. (Figure 3)

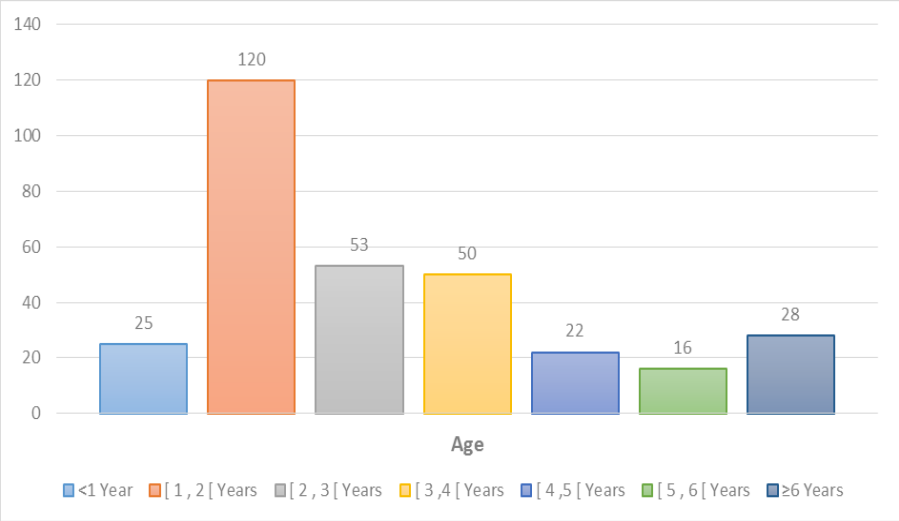

Figure 1: Age distribution of Patients in our study.

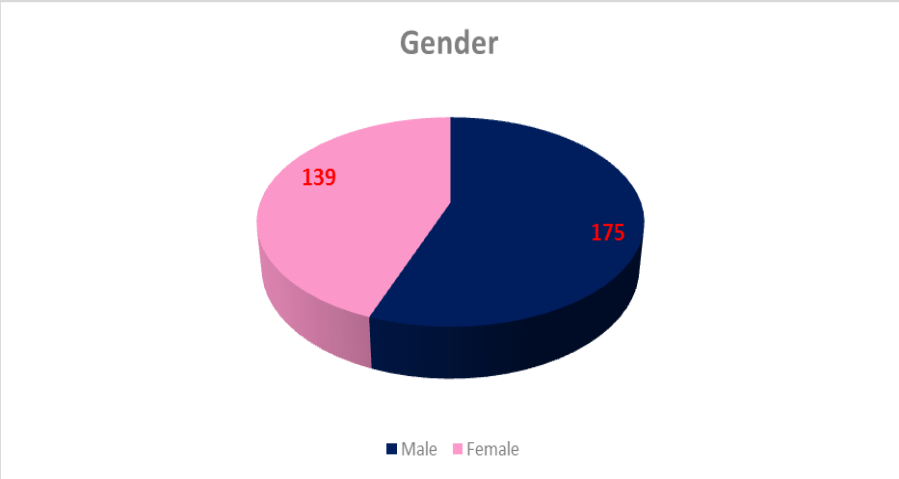

Figure 2: Gender distribution of Patients in our study.

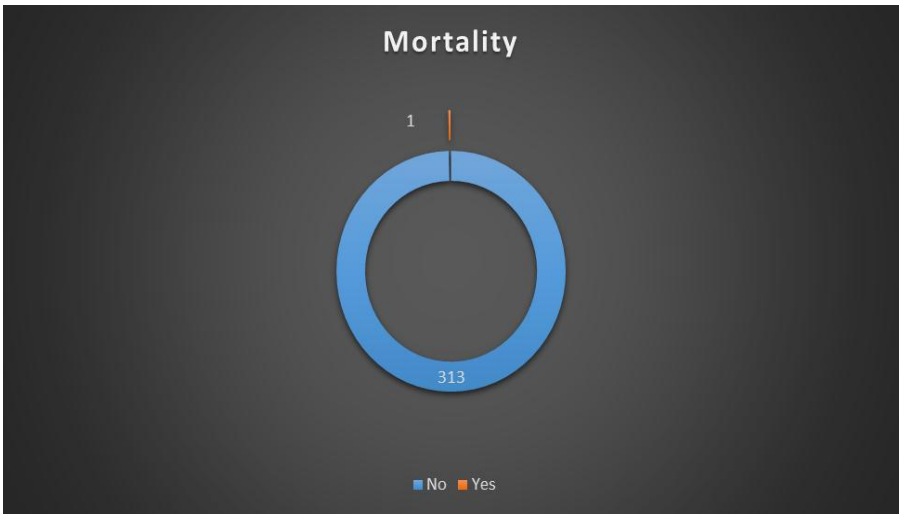

Figure 3: Mortality Rate in our study.

We had 314 cases with FBAs and all cases of them had a bronchoscopy and 80% of them had positive results (FBs found), while 20 had a negative bronchoscopy (no FBs found). (Figure 4)

In bronchoscopy reports, seeds were the most common foreign body found with 60.9% followed by peanuts in 14.9%. (Figure 5, Table 1)

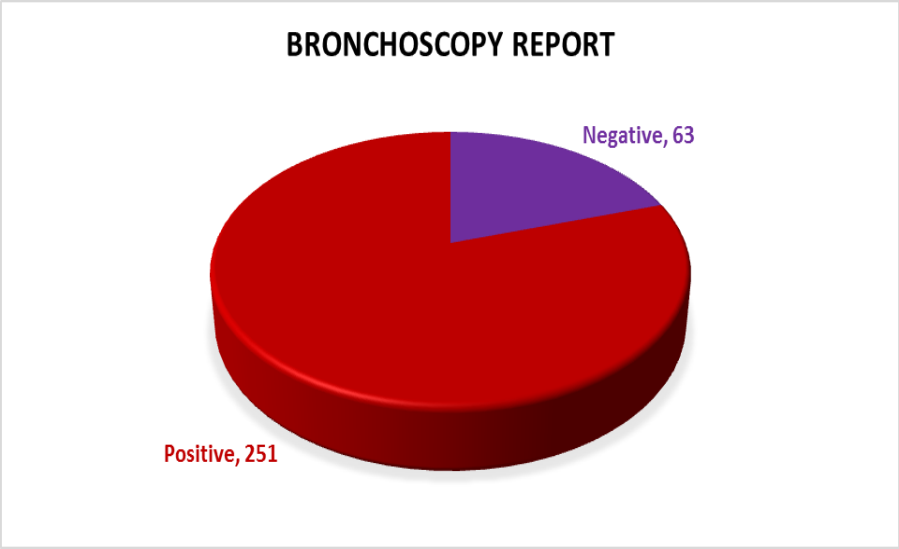

Figure 4: Bronchoscopy Reports in Patients in our study.

Table 1: Nature of foreign bodies found in our study.

		N	% from Positive Bronchoscopy Reports (251)
Nature of Foreign Bodies	Seed	131	52.2
	Peanuts	47	18.7
	Plastic Bodies	8	3.2
	Metal Bodies	16	6.4
	Vegetarian Bodies	49	19.5
	Total		100%

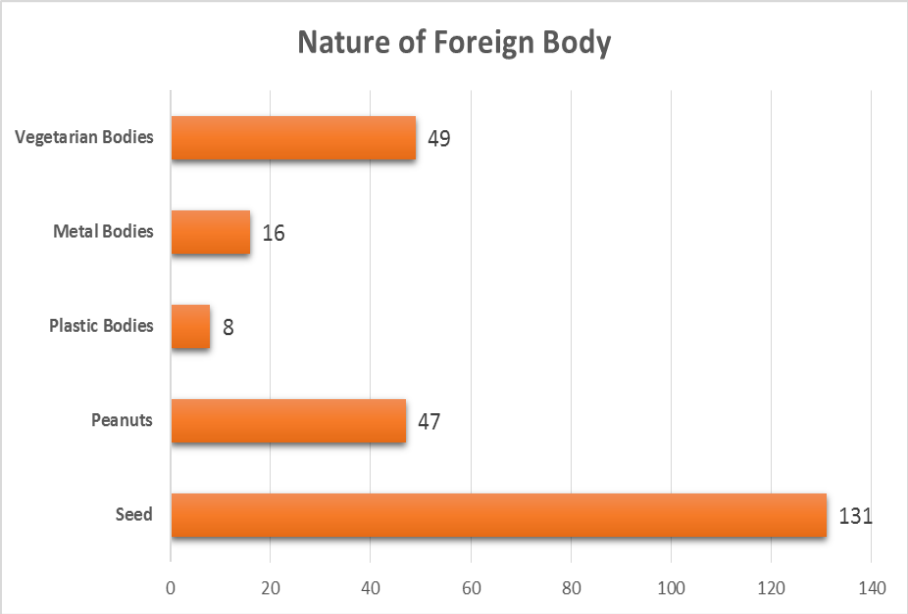

Figure 5: Nature of Foreign Bodies in Patients in our study:

Regarding the location of the foreign bodies, most of FBs (173 cases) were located in the two main bronchi, 41 cases were in the trachea and 20 cases in the larynx. (Figure 6).

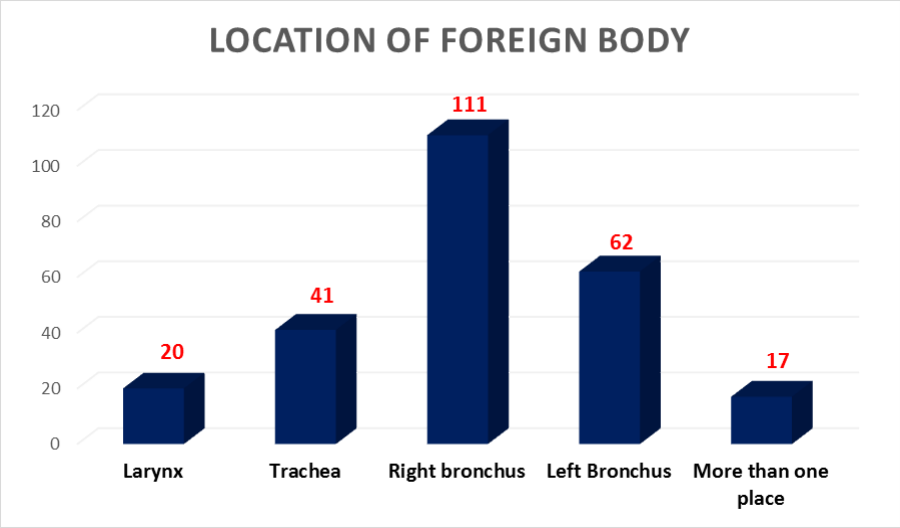

Figure 6: Location of foreign bodies in patients in our study.

DISCUSSION

In similar studies.[21,22–27] FBA was most common in children ≤3. In our study, patients between one to two years old (1-2) were the most common age for FBA with 38.3%. Similar studies.[21,28] reported that the male and female prevalence was the same with a ratio of 1: 1. However, in our study, males were more common with 55.7%.

We had 314 cases with FBAs and all cases of them had a bronchoscopy and 80% of them had positive results (FBs found), while 20% had a negative bronchoscopy (no FBs found).

A similar study[21] showed that the most common foreign bodies found included groundnuts (the most common), metallic objects, seeds, fishbone, plastic objects, grains, and cartilage, which is similar to the findings of other published studies.[25,28,29,30,31] In our study, seeds were the most common foreign body found with 41.8% followed by peanuts in 14.9%.

Regarding the location of the foreign bodies, in a similar study[21], the majority of the foreign bodies were localized to the two main bronchi, which was found to be consistent with the findings of Girardi et al.[32] However, the study[21] showed a 21.2% localization of FBs in the trachea and 6.1% localization in the larynx compared to the 4.5% trachea localization and 6% larynx localization in the study by Girardi et al.[32] In our study, the results were similar with most of FBs (68.9%) found in the two main bronchi, 16.4% in the trachea and 7.9% in the larynx.

The highest rate of mortality is recorded in the countries: Ethiopia-11%[33], India-6%[34], Puerto Rico-7.5%[35], Nigeria-8.3%.[36] It is also worth noticing that there is a study from India with zero mortality.[37] Furthermore, studies from China showed zero mortality[38-41], or very low mortality below 0.25%[43-45] except one study by Pan H[42], in which the mortality rate was 1.58%. In our study, the mortality rate was 0.3%, which is classified as very low mortality.

CONCLUSION

Patients between one to two years old were the most common affected by FBA. Moreover, males were more common. Seeds were the most common foreign bodies found followed by peanuts. The majority of foreign bodies found were located in the two main bronchi (Right bronchi more common), followed by those found in the trachea and in the larynx, respectively.

Compliance with Ethical Standards

Funding: This study was not funded by any institution.
Ethical approval: The names and personal details of the participants were blinded to ensure privacy.

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