FOREIGN BODY ASPIRATION IN CHILDREN: CLINICAL, RADIOLOGICAL AND BRONCHOSCOPY FINDINGS

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ABSTRACT

Background: Foreign body aspiration (FBA) is a serious problem that leads to partial or complete airway obstruction. Respiratory distress and pneumonia are the most common complications. The assortment of foreign bodies is very wide. The most common include candy, fish bones, peanuts and nuts, toys, food and batteries.
Aim of this study was to determine how accurate the presenting symptoms and signs of foreign body aspiration are and to assess the radiologic findings, the types and sites of the foreign bodies removed.
Patients and Methods: a retrospective study included101 patient from age of one month to 15 years with suspected foreign body aspiration based on history, clinical examination, Chest Xray. Rigid bronchoscopy was done for patients under general anaesthesia with muscle relaxation using neuromuscular blocking agents. For every patient gender, age, residence, interval between event and symptom onset, symptoms at admission, signs of respiratory insufficiency, pulmonary auscultation findings, Chest X-ray findings, interval between admission and bronchoscopy, the location of foreign body, type of foreign body, hospitalization days were studied and statistically analysed. A p-value of < 0.05 was considered statistically significant.
Results: Seventy six (75.24%) were proved to have foreign body aspiration that was removed by rigid bronchoscopy. toddler was the common age group 43(42.6%). Male were affected more than females 1.2:1. A significantly higher percentage of patients who had a foreign body were witnessed by a family member than those who did not have a foreign body 61.8% vs 0% (p=0.001). Stridor and cough with breathlessness were the most common signs and symptoms while unilateral wheezes, crepitations and diminished air entry were less frequent while each of crepitations, unilateral wheezes and cough with breathlessness were significantly associated with foreign body aspiration (p=0.001, 0.001, 0.02 respectively). Abnormal chest X ray finding was significantly associated with FBA (p=0.02) with hyperinflation being the most frequent finding. The types of foreign bodies removed were sunflower seeds (27.6%), food particles (18.4%) and nuts (17.1%). The most common site of foreign body was the right main bronchus (52.6%) followed by left main bronchus (34.2%).
There is a significant association between foreign body aspiration and the time interval between admission and bronchoscopy but no significant relation with age, interval between the event and onset of symptoms and hospitalization days.
Conclusion: The history of being witnessed by a family member, the presence of stridor and cough and finding of unilateral wheezes and crepitations on examination as well as hyperinflation on chest X ray are significantly associated with FBA. The sunflower seeds and food particles are the most common types and the right main bronchus is the main site of foreign bodies removed by bronchoscopy.

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Keywords: Bronchoscopy, Children, Foreign body, Hyperinflation, Sunflower seeds.

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Foreign body aspiration (FBA) is a serious problem that leads to partial or complete airway obstruction. It is more common in children than adults, with the largest frequency in ages 1–3 years[1,2]. Mortality and prevalence of the diseases resulting from foreign bodies inhalation are higher in children due to the relatively narrower airway and the immaturity of protective mechanisms[3][13].

There are regional variations in FBA. Various foods and cultures, inadequate experience of both parents and physicians and inadequate availability of bronchoscopy equipment are considered as attributable factors in this variation[4].

In younger children, FBA is the fifth most common cause of unintentional deaths among children whose ages are 1–3 year, and in infants, it is the main cause of accidental death[5].

Respiratory distress and pneumonia are the most common complications resulting from FBA[6]. Delay in the presentation, diagnosis, and management leads to higher rates of serious complications[7,8].

When aspiration event is not witnessed by caregiver's diagnosis is challenging. Besides, most symptoms and signs are nonspecific and can rapidly disappear. Rare cases of FBA present as the classic triad of cough, choking and unilateral wheezing or diminished air entry[9].

FBA should be always considered in children with prolonged respiratory symptoms[10,11]. About 50% of the patients with AFB do not show a relevant history and 20% of children with AFB might have received treatment for alternate diagnoses for long time before diagnosis is made[12].

It has been demonstrated that bronchiectasis may complicate FBA mainly in cases of aspiration of organic foreign bodies and if the foreign body is present in the airway for more than 30 days[10].

The assortment of foreign bodies is very wide. The most common include candy, fish bones, peanuts and nuts, toys, food and batteries. They vary from an area to other taken differences in populations' diets and habits and children's age[13].

The radiological investigations for suspected FBA include posterior-anterior chest X-ray, lateral chest X-ray and neck soft-tissue imaging. The chest X-ray may be normal during the first 24 hours following the inhalation and most of the inhaled foreign bodies are radiolucent12.

Aspiration can be manifested radiographically by the findings like pulmonary infiltration, atelectasis or mediastinal shift. In highly suspected cases, computerized tomographic scanning CT of the chest may help establishing the diagnosis[14].

Flexible or rigid bronchoscopy is considered the standard procedure for extracting the foreign body. This procedure is not free of drawbacks like invasiveness, need for general anesthesia, and the risk of complications[15]. However, there are no clinical clues that help physicians to confirm or exclude the diagnosis; thereby they could take the decision of opening the operation room for bronchoscopy.

In this study, we attempted to investigate patterns of foreign-body aspiration in the respiratory tract as well as the success of diagnostic and therapeutic bronchoscopy among the children hospitalized in this centre from December 2021 to December 2022. The results may help physicians, and even parents, in terms of early reference, diagnosis, and treatment of this disorder.

Aim

The aim of this study was to determine how accurate the presenting symptoms and signs of foreign body aspiration are and to assess the radiologic findings most suggestive of that in children. Also we aim to study the types and sites of the foreign bodies removed.

PATIENTS AND METHODS

This is a retrospective study accomplished at Heevi Paediatric Hospital over a period of 12 months from December 1st 2021 to

December 1st 2022.ethical approval was obtained from the ethical committee at Directorate of Health at Duhok. All patients from age of one month to 15 years with suspected foreign body aspiration during this period were included in the study.

Diagnosis was based on history, clinical examination, and Chest Xray and The Bronchoscopy findings. Rigid bronchoscopy was done for patients under general anaesthesia with muscle relaxation using neuromuscular blocking agents.

For every patient suspected to have FBA the following variables were studied: gender, age ,residence, interval between event and symptom onset, symptoms at admission, signs of respiratory insufficiency (respiratory frequency, respiratory effort, cyanosis and peripheral oxygen saturation lower than 95%), pulmonary auscultation findings, Chest X-ray findings, interval between admission and bronchoscopy, the location of foreign body, type of foreign body, destination following the procedure, hospitalization days, the need for invasive mechanical ventilation and the complications following the procedure. Numbers and percentages were used to present data.

Statistical analysis and presentation of data was conducted using the Statistical Package for the Social Sciences computer program (version 22). Numbers and percentages were used to present categorical. The chi-square test was used to study the association between categorical variables. A p-value of < 0.05 was considered statistically significant.

RESULTS

The study included 101 patients who were suspected to have FBA. Three quarters of them 76 (75.24%) were proved to have FBA that was removed by rigid bronchoscopy. As shown in table 1, toddler was the common age group 43(42.6%). Male were affected more than females 1.2:1. A significantly higher percentage of patients who had a foreign body were witnessed by a family member than those who did not have a foreign body 61.8% vs 0% (p=0.001). Table 2 shows that stridor and cough with breathlessness were the most common signs and symptoms while unilateral wheezes, crepitations and diminished air entry were less frequent while each of crepitations, unilateral wheezes and cough with breathlessness were significantly associated with FBA (p=0.001, 0.001, 0.02 respectively). Abnormal chest X ray finding was significantly associated with FBA (p=0.02) with hyperinflation being the most frequent finding.

Table1: The Demographic Characteristics of the patients

Variables		Presence of Foreign Body			Chi-Square	df	p.value
		Yes	No	Total			
Age Groups	Infants	12(15.8%)	5 (20.0%)	17 (16.8%)	1.3	3	0.72
	Toddlers	32(42.1%)	11(44.0%)	43 (42.6%)			
	Preschools	19 (25.0%)	7 (28.0%)	26 (25.7%)			
	Schools	13 (17.1%)	2 (8.0%)	15 (14.9%)			
Gender	Male	41(53.9%)	15 (60.0%)	56 (55.4%)	0.27	1	0.59
	Female	35 (46.1%)	10 (40.0%)	45 (44.6%)			
Witnessed History	Witnessed	47 (61.8%)	0 (0%)	47(46.5%)	28.9	1	0.001

Table 2 Clinical and radiologic characteristics of the patients

Variables		Presence of foreign body			Chi square	df	P value
		Yes	No	Total			
Symptom	Mild respiratory symptoms	2 (2.6%)	2 (8.0%)	4 (4.0%)	9.48	3	0.02
	Cough	12 (15.8%)	1 (4.0%)	13 (12.9%)			
	Breathlessness	0 (0%)	2 (8.0%)	2 (2.0%)			
	Cough & Breathlessness	62 (81.6%)	20 (80.0%)	82 (81.2%)			
Diminished Air Entry	Yes	23 (30.3%)	10 (40.0%)	33 (32.7%)	0.81	1	0.36
	No	53 (69.7%)	15 (60.0%)	68 (67.3%)			
Unilateral Wheezes	Yes	19 (25.0%)	19 (76.0%)	38 (37.6%)	20.8	1	0.001
	No	57 (75.0%)	6 (24.0%)	63 (62.4%)			
Stridor	Yes	69 (90.8%)	23 (92.0%)	92 (91.1%)	0.03	1	0.85
	No	7 (9.2%)	2 (8.0%)	9 (8.9%)			
Crepitations	Yes	36 (47.4%)	0 (0%)	36 (35.6%)	18.4	1	0.001
	No	40 (52.6%)	25 (100%)	65 (64.4%)			
X- Ray Finding	Abnormal	18 (23.7%)	12 (48.0%)	30 (29.7%)	5.32	1	0.02
	Normal	58 (76.3%)	13 (52.0%)	71(70.3%)			
	Irrelevant	25 (32.9%)	12 (48.0%)	37 (36.6%)			
	Radio opaque Shadow	6 (7.9%)	0 (0%)	6 (5.9%)			
X -Ray Details	Hyperinflation	34 (44.7%)	3 (12.0%)	37 (36.6%)	21.2	5	0.001
	Collapse	6 (7.9%)	2 (8.0%)	8 (7.9%)			
	lobar consolidation	5 (V)	5 (20.0%)	10 (9.9%)			
	Scattered Opacities	0 (0%)	3 (12.0%)	3 (3.0%)			
Total		**76 (100%)**	**25 (100%)**	**101(100%)**			

The most common types of foreign bodies removed by bronchoscopy was sunflower seeds followed by food particles the nuts Table3. As shown in Table 4, the most frequent site in tracheobronchial tree the foreign bodies were lodged was the right main bronchus followed by left main bronchus.

Table 3 the types of foreign bodies removed by bronchoscopy

Types of Foreign Body	NO. (%)
Sunflower Seeds	21(27.6%)
Food particles	14 (18.4%)
Nuts	13 (17.1%)
Rice	11(14.5%)
Plastic Pieces	5 (6.6%)
Metallic object	3 (3.9%)
Beads	3 (3.9%)

Table 4 The site of the foreign bodies removed by bronchoscopy

Site of Foreign Body	NO. (%)
Right Main Bronchus	40 (52.6%)
Left main bronchus	26 (34.2%)
Trachea	5 (6.6%)
Right main bronchus & left main bronchus	4 (5.3%)
Sub glottis and Right main bronchus	1(1.3%)
Total	**76 (100%)**

The mean time interval between FBA and onset of symptoms was (2.132 sd 1.79) days while the time from admission to hospital and doing bronchoscopy was (5.368 sd 3.7836) days. The mean time of hospitalization was (3.1842 sd 2.237) days.

There is a significant association between FBA and the time interval between admission and bronchoscopy but no significant relation with age, interval between the event and onset of symptoms and hospitalization days as shown in table 5

Table 5 the management characteristics of the patients

Variable	Bronchoscopy finding	N	Mean	Std. Deviation	P value
Age	Presence of FBA	76	3.3316	2.56532	0.8
	Absence of FBA	25	3.1880	3.08684	
Interval between event and symptom onset	Presence of FBA	76	2.132	1.7988	0.08
	Absence of FBA	25	2.800	1.1547	
Interval between admission and bronchoscopy	Presence of FBA	76	5.368	3.7836	0.001
	Absence of FBA	25	1.400	.7071	
Hospitalization (days)	Presence of FBA	76	3.1842	2.23732	0.1
	Absence of FBA	25	3.0000	1.35401	

DISCUSSION

Although rapid intervention is needed in cases of FBA, the diagnosis and decision for bronchoscopy is challenging16. In this study the majority (75.24%) of the suspected patients had a foreign body removed by bronchoscopy. This result is similar to other studies; 75.3%[17], 80.8%[18], 88.26%[19], 82.2%[20] and 91%[21]. The variation is possibly due to the different strategies for bronchoscopy indications among hospitals.

The median age of patients in this study was 3.3316(sd 2.56). This is close to the results of another study18.It has been found that FBA is most frequently seen in age groups less than 4 years while only in 5% of children aged 4–14 years[22]. Children of this age are greatly curious and tend to explore things by placing into mouth putting them at an increased risk of FBA if not properly supervised by parents[23].

The most frequent site of foreign body in this study was the right main bronchus (52.6%) followed by left main bronchus (34.2%) while only 6.6% were in trachea and 1.3% in subglottic area. Similarly Reyad et al found that 43.8% were in right main bronchus, 21% in left main bronchus, 14.3% in trachea and 12.4 in subglottic

area[18]. Likewise, Eren et al found 60% in the right main bronchus, 23% in left main bronchus, 13% in trachea and 3% in subglottic area24.Different other studies showed similar results[20, 25, 26]. This can be best explained as that the right main bronchus has a wider calibre and more acute angle than the rest of the tracheobronchial tree[27].

The most frequent foreign body removed was sunflower seeds (27.6%) followed by food particles (18.4%). Bakal et al found that sunflower seeds, peanuts and hazelnuts together represented 38% of retrieved foreign bodies[17]. Parida showed 54.1% were peanuts20while Aslan concluded only 19.5% were peanuts28.Seemingly food particles are by far the most common foreign bodies inhaled since children lack adequate airway protection as a result of improper coordination of pharyngeal swallow with respiratory and oesophageal functions[29].

The most frequent symptoms were cough and shortness of breath 81.6% and the most frequent signs are stridor (90.8%) and crepitations (47.4%) while only 30.3% had diminished air entry and 25% had unilateral wheezes. Comparable percentages were found by Reyad et al[18], Zahran et al[30], Bakal et al[17], Aslan et al[28] and Ulas et al[31]. This stresses the importance of having high index of suspicion in the light of history and clinical examination in order to do rigid bronchoscopy for diagnosis and treatment of FBA in children.

Moreover, the current study displays a significant association between the detection of a foreign body by bronchoscopy and each of history of being witnessed by a family member, history of cough and breathlessness and finding of unilateral wheeze and crepitations and this is comparable with other studies[18,32] but converse to Kwok et al[33] that reported no significant difference for children with and without FBA and the findings above possibly due to the small sample size (43 participants).

Chest Xray most common finding was hyperinflation that was significantly related to foreign body detection. This agrees with Reyad et al[18], Parida et al[20][25] and Sahadan et al[34].On the contrary, Chouhan et al[35] and Panda et al19reported a collapse in most of their cases.

CONCLUSION

The history of being witnessed by a family member, the presence of stridor and cough and finding of unilateral wheezes and crepitations on examination as well as hyperinflation on chest X ray are significantly associated with FBA. The sunflower seeds and food particles are the most common types and the right main bronchus is the main site of foreign bodies removed by bronchoscopy.

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پوختە

ئاواتخوازی جەستەی بیانی لە منداڵاندا: دۆزینەوەکانی کلینیکی، تیشکی و بۆرییەکانی هەناسە

پێشینە: هەڵمژینی جەستەی نامۆ (FBA) کێشەیەکی جدییە کە دەبێتە هۆی گیرانی بەشەکی یان تەواوەتی بۆری هەوا. ناڕەحەتی هەناسەدان و هەوکردنی سییەکان باوترین ئاڵۆزییەکانن. جۆری تەنە بیانییەکان زۆر فراوانە. باوترینیان بریتین لە شیرینی، ئێسکی ماسی، فستق و گوێز، یاری، خواردن و پاترى . ئامانجی ئەم توێژینەوەیە ئەوە بوو کە دیاری بکرێت کە نیشانە و نیشانەکانی پێشکەشکراوی هەڵمژینی جەستەی نامۆ تا چەند وردن و هەڵسەنگاندنی دۆزینەوەکانی تیشکدانەوە، جۆر و شوێنی ئەو تەنە نامۆیانە بوو کە لابراون.

نەخۆش و شێوازەکان: توێژینەوەیەکی پاشگەزبوونەوەی لەخۆگرتبوو کە ١٠١ نەخۆشی لە تەمەنی یەک مانگەوە تا ١٥ ساڵ بوو کە گومانی هەڵمژینی جەستەی نایان هەبوو لەسەر بنەمای مێژوو، پشکنینی کلینیکی، تیشکی ئێکس سنگ. بۆرییەکانی هەناسەی ڕەق بۆ ئەو نەخۆشانەی کە لە ژێر بێهۆشکردنی گشتیدا بوون لەگەڵ شلبوونەوەی ماسولکەکان بە بەکارهێنانی ماددە ڕێگریکەرەکانی ماسولکەکانی دەمار ئەنجامدرا. بۆ هەموو نەخۆشێک ڕەگەز، تەمەن، شوێنی نیشتەجێبوون، ماوەی نێوان ڕووداو و سەرهەڵدانی نیشانەکان، نیشانەکانی لە کاتی وەرگرتن، نیشانەکانی کەمی هەناسەدان، دۆزینەوەکانی گوێگرتن لە سییەکان، دۆزینەوەکانی تیشکی ئێکس سنگ، ماوەی نێوان وەرگرتن و بۆرییەکانی هەناسە، شوێنی جەستەی نامۆ، جۆری بیانی جەستە، ڕۆژانی نەخۆشخانە لێکۆڵینەوەیان لەسەر کرا و لە ڕووی ئامارییەوە شیکرانەوە. بەهای $p < 0.05$ لە ڕووی ئامارییەوە بە گرنگ هەژمار کرا.

دەرەنجامەکان: حەفتا و شەش (75.24%) سەلمێندرا کە هەڵمژینی جەستەی نامۆیان هەیە کە بە بۆرییەکانی هەناسەی ڕەق لابرا. منداڵی ساوا گروپی تەمەنی باو بوو 43(42.6%). نێرەکان زیاتر لە مێینەکان 1.2:1 تووشی بوون. ڕێژەیەکی بەرچاو زیاتر لەو نەخۆشانەی کە جەستەیەکی نامۆیان هەبووە لەلایەن ئەندامێکی خێزانەوە شایەتحاڵی بوون بە بەراورد بەوانەی کە جەستەیەکی نامۆیان نەبووە 61.8% بەرامبەر 0 .(p=0.001) %ستریدۆر و کۆکە لەگەڵ هەناسەبڕکێ باوترین نیشانە و نیشانەکان بوون لە کاتێکدا هەناسەبڕکێی تاکلایەنە، خرۆشان و کەمبوونەوەی چوونە ژوورەوەی هەوا کەمتر بوون لە کاتێکدا هەریەک لە خڕبوونەوە، هەناسەبڕکێی تاکلایەنە و کۆکە لەگەڵ هەناسەبڕکێ پەیوەندییەکی بەرچاویان بە هەڵمژینی جەستەی نامۆ هەبووە(p=0.001 ، 0.001، 0.02 بە ڕێککەوت). دۆزینەوەی نائاسایی تیشکی ئێکس سنگ پەیوەندییەکی بەرچاوی بە FBA هەبوو (p=0.02) لەگەڵ زیادبوونی هەڵاوسان کە زۆرترین دۆزینەوە بوو. جۆرەکانی ئەو تەنە نامۆانەی کە لابراون بریتی بوون لە تۆوی گوڵەبەڕۆژە (27.6%)، گەردیلەی خۆراک (18.4%) و گوێز (17.1%). باوترین شوێنی جەستەی نامۆ بۆرییەکانی هەناسەی سەرەکی ڕاست بووە (52.6%) و دواتر بۆرییەکانی هەناسەی سەرەکی چەپ (34.2%).پەیوەندییەکی بەرچاو لە نێوان هەڵمژینی جەستەی نامۆ و ماوەی کات لە نێوان وەرگرتن و بۆرییەکانی هەناسەدان هەیە بەڵام هیچ پەیوەندییەکی بەرچاو بە تەمەن، نێوان ڕووداوەکە و سەرهەڵدانی نیشانەکان و ڕۆژانی خەواندن لە نەخۆشخانە نییە.

دەرەنجام: مێژووی شایەتحاڵی بوون لەلایەن ئەندامێکی خێزانەوە، بوونی ستریدۆر و کۆکە و دۆزینەوەی هەناسەبڕکێی تاکلایەنە و کرێپیت لە کاتی پشکنین و هەروەها هەڵاوسانی زۆر لە تیشکی ئێکس سنگدا

پەیوەندییەکی بەرچاویان بە FBA هەیە. تێوی گوڵەبەڕۆژە و گەردیلەکانی خۆراک باوترین جۆرن و بۆرییەکانی هەناسەی سەرەکی ڕاست شوێنی سەرەکی تەنە نامۆکانە کە بە بۆرییەکانی هەناسە لادەبرێن.

الخلاصة

طموح جسم غريب عند الأطفال: النتائج السريرية والإشعاعية والتنظير القصبي

الخلفية: يعد شفط الجسم الغريب (FBA) مشكلة خطيرة تسبب انسدادًا جزئيًا أو كاملاً في مجرى الهواء. يعد ضيق التنفس والالتهاب الرئوي من أكثر المضاعفات شيوعًا. نوع الأجسام الغريبة واسع جدًا. والأكثر شيوعًا هي الحلوى وعظام السمك والفول السوداني والمكسرات ولعب الأطفال والمواد الغذائية والبطاريات.

كان الهدف من هذه الدراسة هو تحديد مدى دقة العلامات والأعراض الظاهرة لاستنشاق جسم غريب وتقييم نتائج التصوير الشعاعي ونوع وموقع الأجسام الغريبة التي تمت إزالتها.

المرضى والطرق: شملت دراسة بأثر رجعي 101 مريضا تتراوح أعمارهم بين شهر واحد و 15 عاما مع اشتباه في استنشاق جسم الصوديوم على أساس التاريخ والفحص السريري والأشعة السينية للصدر. تم إجراء تنظير القصبات الصلبة للمرضى تحت التخدير العام مع استرخاء العضلات باستخدام عوامل الحصر العصبي العضلي. لكل مريض، الجنس، والعمر، ومكان الإقامة، والفاصل الزمني بين الحدث وظهور الأعراض، والأعراض عند الدخول، وعلامات نقص التهوية، ونتائج تسمع الرئة، ونتائج الأشعة السينية للصدر، والفاصل الزمني بين الدخول والشعب الهوائية، وموقع الجسم الغريب، ونوع الجسم الغريب، والمستشفى أيام تمت دراستها وتحليلها إحصائيا. واعتبرت قيمة $p < 0.05$ ذات دلالة إحصائية.

النتائج: ستة وسبعون (75.24%) ثبت استنشاقهم لجسم غريب وتمت إزالته بواسطة منظار القصبات الهوائية. كان الطفل الصغير في الفئة العمرية الشائعة 43 (42.6%). ويتأثر الذكور أكثر من الإناث بنسبة 1.2:1. نسبة المرضى الذين لديهم جسم غريب شهدهم أحد أفراد الأسرة أعلى بكثير من أولئك الذين ليس لديهم جسم غريب 61.8% مقابل 0% (قيمة الاحتمال = 0.001). كان الصرير والسعال مع ضيق التنفس من العلامات والأعراض الأكثر شيوعًا، بينما كان ضيق التنفس من جانب واحد، والصفير، وانخفاض دخول الهواء أقل شيوعًا، في حين ارتبط كل من الخدش وضيق التنفس من جانب واحد والسعال مع ضيق التنفس بشكل كبير باستنشاق جسم غريب (قيمة الاحتمال = 0.001، 0.001، 0.02).). على التوالى). ارتبطت نتائج الأشعة السينية غير الطبيعية للصدر بشكل كبير مع) FBA ع = 0.02) مع كون التضخم المفرط هو النتيجة الأكثر شيوعًا. وكانت أنواع الأجسام الغريبة التي تمت إزالتها هي بذور عباد الشمس (27.6%)، وحبوب لقاح الطعام (18.4%)، والمكسرات (17.1%). كان موقع الجسم الغريب الأكثر شيوعًا هو القصبات الهوائية الرئيسية اليمنى (52.6٪) تليها القصبات الهوائية الرئيسية اليسرى (34.2٪ .(هناك ارتباط كبير بين استنشاق جسم غريب والفاصل الزمني بين القبول وتنظير القصبات ولكن لا يوجد ارتباط كبير مع العمر، والفاصل الزمني بين الحدث وظهور الأعراض وأيام الاستشفاء.

الاستنتاج: التاريخ الذي شهده أحد أفراد الأسرة، ووجود الصرير والسعال ونتائج ضيق التنفس من جانب واحد والفرقعة عند الفحص وكذلك التضخم المفرط في الأشعة السينية على الصدر ترتبط بشكل كبير مع FBA. بذور عباد الشمس وجزيئات الطعام هي الأنواع الأكثر شيوعًا، والقصبات الهوائية الرئيسية اليمنى هي المواقع الرئيسية للأجسام الغريبة التي يتم إزالتها عن طريق ثقب القصبة الهوائية.