A Study on the Assessment of Patterns And Complication of Foreign Body Aspiration Among Children Visited Pediatrics Emergency Room of Tikur Anbessa Specialized Hospital, Addis Ababa.Ethiopia.

Research thesis Submitted to Addis Ababa University, College of Health Sciences,Department of Emergency Medicine for Partial Fulfillment of the Requirements for Master of Science Degree in Emergency Medicine and Critical Care Nursing

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LIST OF ACRONYMS

AAU----------Addis Ababa University

DC----------Data Collection

ECSA----------Ethiopian Central Statistical Agency

EDHS----------Ethiopian Demographic Health Survey

FBA----------Foreign body aspiration

NGO---------- Non Governmental Organizations

PED----------Pediatrics Emergency Department

PI----------principal Investigator

Yrs----------Years

WHO----------World Health Organization

ABSTRACT

Introduction: Foreign body (FB) aspiration is the act of accidentally inhaling a foreign body, usually materials, food or drink. It is the leading cause of death all parts of the world. Foreign body (FB) aspirations in childhood are frequently emergency conditions especially in less than 3 years age, comprising an important proportion of accidental deaths one of the leading causes of death young children that almost 600 children under 15 years of age die per year in the USA **Objectives:** This study aims to determine the patterns of foreign body aspiration among children at Tikuer Anebsa Specialized Hospital Pediatric Emergency Department. **Methods:** All patients with FB aspiration treated at Tikuer Anebsa specialized hospital in the department of pediatric emergency OPD over a period of three year from January 2014 to Decmber2016.were.retrospectively.reviewed.

Result :-From the total 5412 surgery patients who visited the pediatric emergency department of TASH during the study period,289 (5.3%) were foreign body aspiration patients. From secondery data showed Out of the 289 cases 150 cards having complet information about pattern and complication of FB. Among the participants 95 (63.3%)were males and 55 (36.7%) were females, giving a male to female ratio of 1.7:1. The patients' mean ages 59.05 months(5 years) with the ranged of 6 months to 13 years. 41(27.3%) of the victims were between 12-36 months (1-3years). The most common cause of foreign body aspiration is crops / seeds accounted 54(36.0%) from these bean is common. Plastic and metallic materials high in frequency of foreign body aspiration accounted 44(29.3%) & 28(18.7%) respectively.Almost all of the patients 149(99.3%) have sudden onset of cough, 84(56%) and 25(16.7%) of the patients have sudden onset of difficulty in breathing and vomiting respectively. Most of the patients 71 (47.3%) have high grade fever. 52(34.7%) and 43(28.7%) of cases have lodgment on the right main

bronchus and trachea respectively. The average time of arrival to hospital is 17.6 days and ranged from 1 hour to 360 days. The majority of patients 61(40.7%) arrived to hospital after aspiration is within 3-7 days. Only 21(14%) of patients arrived with in 24 hours. 68(46%) of FBA patients developed complications. From these 44(64.7%) were aspiration pneumonia. 139(92.7%) of cases were managed with surgical procedure. Bronchoscopy was done for most of the cases 140(93.3%) . The average length of stay was 7(6.7) days ranged from 1 day to 61 days.

Keywords;-Foreign body aspiration, children, pattern, Ethiopia

1. INTRODUCTION

1.1. Background

Foreign body (FB) aspiration is the act of accidentally inhaling a foreign body, usually materials, food or drink[1]. Foreign body (FB) aspirations in childhood are frequently emergency conditions especially in less than 3 years age, comprising an important proportion of accidental deaths one of the leading causes of death young children; for example, FB aspiration has been responsible for more than 300 deaths per year in the USA. It most commonly occurs in the 1-3 year-old age group, tending to occur in boys more than girls. Children of this age are prone to foreign body aspiration because they: put objects in their mouths (particularly while running) and have less ability to chew food in the absence of molar teeth[2, 3, 4, 5].

The majority of aspirated objects are organic in nature, mainly food. Peanuts are the cause most commonly identified by different authors, but some mention melon and sunflower seeds as the predominant causes[1, 6, 7, 8]. Surprisingly, however, plastic toys are not a frequent cause of FBA in series from developing countries but they represent more than 10% of those identified in the developed world [2, 3,4,12].

Children are notoriously fond of putting objects into various orifices either on their own or partly as a result of oral phase of psychological development and partly due to innocence. Accidental foreign body aspiration (FBA) is a relatively common occurrence in the pediatric population and may lead to asphyxiation and death. Among the pediatric patients, children between the ages of 12-48 months have been found to be the major victims owing to their poor chewing ability because of the lack of posterior dentition, a tendency to put things into mouth, and a tendency to have frequent vigorous, uninhibited inspirations when startled, laughing or coughing [6,7].

Foreign body aspiration manifests with a wide range of clinical presentations and often these are not accompanied by any reliable witness to supply clinical history especially in children. The degree of difficulty will depend on a number of factors: the age of the patient, the type of foreign body inhaled the interval between inhalation and removal. The peak incidence of inhalation of foreign bodies in early childhood is of course related to the fact that children have a habit of putting objects into their mouths to determine their texture and taste, and to chew on when teething [22,23].

The symptoms and signs produced depend upon the nature, size, location and time since the lodgment of the foreign body in the trachea-bronchial tree. The main symptoms associated with foreign body aspiration are suffocation, cough, stupor, excessive sputum production, cyanosis or difficulty in breathing, choking and tachypnea. These symptoms develop immediately after the aspiration but many a times these features are not correlated to an episode of aspiration of a foreign body and thus the diagnosis is escaped. Such children under-go a battery of investigated and is treated with unnecessary medications but all in vain. This can lead to dangerous consequences for the health and life of the patient due to delayed diagnosis [2,3,4,9,10].

The major issues involve the accurate diagnosis and speedy and safe removal of the foreign bodies. The accurate diagnosis may elude even the sophisticated physician because often the initial choking episode is not witnessed and the delayed residual symptoms may mimic other common conditions such as asthma, recurrent pneumonia or upper respiratory infection. The symptoms and signs produced depend upon the nature, size, location and time since lodgment of the foreign body in the tracheobronchial tree. A large foreign body occluding the upper airway may lead to sudden death whereas a small foreign body lodged in the bronchial tree may came less severe symptoms [5,11].

Even though majority of ingested FBs pass spontaneously, some of the ingested FB can lead to major complications. FBs with smooth edges usually don't pose significant problems, but sharp foreign bodies, not timely retrieved may penetrate the wall of the viscous and cause complications. According to the literature, 90% of ingested FBs pass through the gastrointestinal tract without complications, 10-20% necessitates endoscopic removal whereas only 1% will finally need surgical intervention [13, 14].

Delay in diagnosis and, consequently, a series of chronic pulmonary pathologic conditions may occur in the cases without acute respiratory failure. But if the event is noticed in time, the child is taken to the hospital for open tube bronchoscope. If the event is unnoticed and there are no indicative clinical or laboratory findings, the patient can be hospitalized for bronchitis, bronchial asthma or in neglected cases for pulmonitis, with dangerous consequences for the health and life of the patient due to the delayed diagnosis [2, 3,4,11].

Early diagnosis and treatment are imperative to prevent mortality as well as to prevent the lesser but still significant complications of recurrent acute respiratory distress, chronic and recurrent pneumonia and pulmonary abscess [5, 12]. Patients who have inhaled foreign bodies are typically asymptomatic at the time of initial exposure unless the particle is large enough to occlude the tracheobronchial tree, in such cases, as often seen in children, the diagnosis is made by history and confirmed by chest radiography but non radio-pique foreign bodies can often be recognized by indirect signs. Bronchitis and pneumonic infiltration may develop after foreign body aspiration as a result of local irritation or possible post stenotic dystelectasis [20, 21].

Inhaled foreign bodies can be removed by bronchoscope, both rigid as well as flexible scopes. However, rigid bronchoscope offers good visualization is the preferred method for foreign body removal [8, 9, 10].

1.2. Statement of the Problem:

FB aspiration is the leading cause of death all parts of the world. FB aspiration is estimated that almost 600 children under 15 years of age die per year in the USA following aspiration of foreign bodies. In fact, choking on food has been the cause of between 2500 to 3900 deaths per year in the USA, when taking both children and adults into consideration. It most commonly occurs in the 1-3 year-old age group, tending to occur in boys more than girls [3, 5].

The health situation of Africa continent is characterized by immense disease burden and weak health systems embedded by the context of poverty, under development and conflicts, but sub-Saharan Africa it showed a high prevalence of foreign body aspiration. In this perspective Ethiopia is not unique as the case is testified by its poor socio-economic and health conditions even by sub-Saharan Africa's standards that has one of the highest numbers of children are affected by FB aspiration [15, 19].

Currently, children with foreign body aspiration increases in the burden and risk of serious respiratory tract infections. But according to the literature, 90% of ingested FBs pass through the gastrointestinal tract without complications; 10-20% necessitates endoscopic removal whereas only 1% will finally need surgical intervention [13, 14].

Similar study on foreign body aspiration were conducted in other parts of the world including Ethiopia but this study differ in that it is intended to assess the patterns of foreign body aspiration among children visited at Tikuer Anebsa specialized hospital.

Thus, to determine such gaps this preliminary study was conducted on the title entitled as patterns of foreign body aspiration among children at Tikuer Anebsa Specialized Hospital, Emergency Department, Addis Ababa, Ethiopia, 2017.

1.3. Significance of the study:

This study provides a basic information on the patterns of foreign body aspiration among children that have a valuable contribution for the academic community, service providers, health care professionals and above all children patients who is suffering from foreign body aspiration. Thus, it provides a basic clue for the prevention and early detection which would lower the morbidity and mortality due to this life threatening, preventable and manageable emergency case among the future generation, children.

2. LITERATURE REVIEW

Foreign body (FB) aspirations in childhood are frequently emergency conditions especially in less than 3 years age, comprising an important proportion of accidental deaths one of the leading causes of death young children; for example, FB aspiration has been responsible for more than 300 deaths per year in the USA [3, 4, 5].

According to the study conducted in Nigeria, the prevalence of foreign body aspiration cases seen during the study period was 2.5%[15].

According to the study conducted in Nigeria, children subjected to foreign body were 90 males and 38 females (M: F ratio of 2.4:1) with age range was 0-14 years with a mean of 3.88 ± 2.47years. The highest incidence was in the age group 3-5 years[15]. A study conducted in India, foreign body aspiration were common among males 30 (75%) and 10 (25%) were on females with the mean age for males was 3.2 ± 3.078 years and for females was 4.25 ± 3.832 years [16] in Iran, 63 percent of children with foreign body aspiration were boy and 37% were girl and thirty (63%) children were found to be younger than 3 but 77% younger than 5 years old [17]. where as a study conducted in Ethiopia showed that children who subjected to foreign body were 85 (61.5%) males and 33 (38.8) females with a mean age of 2.86 +/- 1.82 years old[18].

A study conducted in India showed that the common agents of foreign body aspiration were groundnut and peanut[16], in Iran, the most common aspirated foreign body was found to be organic materials (82%) like 58% (27 cases) seeds and 22% (10 cases) were peanuts[17], and in Nigeria showed that 90 (70.31%) the commonest foreign body encountered was fish bone[15]. But a research conducted in Ethiopia showed that 90 (70.31%) the commonest foreign body

encountered was coins followed by button batteries 5 (5.9%) and metallic materials 4(4.7%). Other ingested FBs included plastic pieces 3 (3.5%) and small wooden object 1(1.18%) [19].

According to the study conducted in Iran, the most common involved site of the lung was the main bronchus (63%) and in 34% of cases the defect was located in the right bronchus[17].

Research conducted in Ethiopia showed that the commonest sign and symptom complaints were vomiting (70.6%), difficulty of swallowing occurring 43(50.6%), drooling of saliva 9(10.6%) and repeated respiratory tract infections 4(4.7%) were also a presenting features[19], in Nigeria the commonest sign and symptom 115 (89.84%) presented with difficulty in breathing, hoarseness and occasional cough, while the remaining 13 (10.16%) presented with paroxysmal cough and fatigue[15], and the study conducted in India patients were presented with cough 57(96.6%), Fever 33(55.9%), breathlessness 50(84.7%), choking 8(13.6%), vomiting 8(13.6%), tachypnoea, decreased air entry and rhonchi with signs of respiratory distress[16].

According to the study conducted in India, 17(42.5%) patients' foreign body was reported within 24 hours among with a definitive history of respiratory distress following foreign body aspiration was present in 28 (70%) patients and the duration of the stay of the patient ranged from one day to a maximum of 26 days with a mean duration of 5.95 ± 4.506 days[16], in Ethiopia showed that the average time of removal after foreign body in tracheobronchial tree 88 (68.75%) presented late to the hospital was ranged from 30 minutes to 2 years with 39(45.9%) patients the duration of illness was less than 24 hours and after one week in 20(23.5%) patients[19].

According to the research conducted in Nigeria showed that only 70 (54.69%) patients did

radiological investigations prior to removal of foreign bodies [17].

A study conducted in India showed that the common complications detected were laryngeal edema 40 (31.25%), subcutaneous emphysema 4 (3.13%), tracheostomy tube dependence 2 (1.56%) and laryngeal stenosis 2 (1.56%) [15]. On the other way, another research in India showed that the common complications detected were respiratory collapse (33.9%), empyshema (16.9%) and pneumonia 9 (15.2%) among the pre-operative and pneumothorax (16.9%) was the commonest post operative complication patients after foreign body aspirations [18].

According to the research conducted in Nigeria showed the average time of removal after foreign body in tracheobronchial tree 88 (68.75%) presented late to the hospital was after 24 hours due to wrong diagnosis made by the primary physician that first saw the patients (40%), poverty (30%) and ignorance on the part of the parents (30%) [15] and in India the average time of removal after foreign body in tracheobronchial tree was in the first 24 hours in 54 (93.1 %) cases [18].

Research conducted in Ethiopia showed that most of the patients (61.2%) with foreign body aspiration were living out of Addis Ababa and 56 (65.9%) patients were referred from both peripheral and city hospitals.

3. OBJECTIVES

3.1. General objectives

To assess the patterns and complication of foreign body aspiration among children visited PER of Tikur Anbessa Specialized Hospital, Addis Ababa

3.2. Specific objectives

- To identify risky groups for FBA among children visited PED of TASH, Addis Ababa
- To describe the magnitude of FBA among children visited PED of TASH, Addis Ababa
- To determine the average time of removal after FBA among children presented to PED of TASH, Addis Ababa

4. METHODOLOGY

4.1. Study area and period:

Addis Ababa University is a state university in Addis Ababa, the capital city of Ethiopia. It was established in 1950 and named as University College of Addis Ababa and later in 1962 renamed as Haile Selassie I University after the Ethiopian Emperor Haile Selassie I. Then in 1975 the institution received its current, Addis Ababa University.

It is the training centre for fellows, postgraduate undergraduate, medical students, dentists, nurses, Radiographers and laboratory technicians. Addis Ababa University has thirteen campuses. Twelve of these are situated in Addis Ababa, and one is located in Bishoftu, about 45 kilometers away.

Tikuer Anbesa specialized hospital is the largest teaching hospital for Addis Ababa University, School of Medicine in Ethiopia. It is a very large referral University hospital with approximately 370,000-400,000 patients flow per year. The hospital has 800 beds, with 169 specialists, 65 non-teaching doctors and 8 major operating theatre rooms. The emergency department see around 80,000 patients a year with equipped emergency well trained professionals.

At the end, the research was carried out from December-June/2017 that takes approximately seven months duration.

4.2 Study design:

Retrospective study design was undertaken to assess the patterns of foreign body aspiration among children at Ttkuer Anbesa specialized hospital pediatric emergency OPD.

4.3 Population

4.3.1 Source population

All children who presented to pediatric emergency room (PER) of TASH from January 2014 to December 2016 .

4.3.2 Study population

All children who were registered and had medical and/or surgical care due to foreign body aspiration from January 2014 to December 2016 and **their** age range 0 to 13 yr.

4.4 Eligibility criteria:

4.4.1 Inclusion criteria:

All children medical records presented to PER of TASH and treated for foreign body aspiration whose age range is 0-13 years

4.4.2 Exclusion criteria:

Lost medical records at the time of data collection

Medical records of children whose age is more than 13years

4.5 Sample size calculation and sampling procedures

All children present with foreign body aspiration during the study period of time at Tikuer Anbesa specialized hospital pediatric emergency department.

4.6 Sample size determination

All children with FB aspiration treated at Tikuer Anbesa specialized hospital in the department of pediatric emergency OPD over a period of one years from January 2014 to December 2016 was retrospectively reviewed using patient's medical records.

4.7 Sampling procedures:

The medical records of all Children presented with suspected foreign body aspiration was analyzed retrospectively one who come in the time period between January 2014 to December 2016. Children who under-went a rigid x-ray/bronchoscopy with definitive foreign body and those who had a definite diagnosis of foreign body aspiration but collapsed before the procedure was included in the study but

one that does not show a foreign body was excluded.

4.8 Data collection tools and techniques

Data collection was undertaken from January 2014 to December 2016 through using checklist. During data collection 3 data collectors (Msc emergency medicine students) and 3 clinical nurses professionals were collect the data from children medical records respectively.

4.9 Study variables

4.9.1 Dependent variable:

- Complication of foreign body aspiration

4.9.2 Independent variable:

- Socio-demographic variables (sex, age)
- Clinical variables (Sign and symptoms, materials used, Findings during physical examination, Health status, Duration of FB removal, Home based care/intervention)

4.10 Operational definition

Foreign body (FB) :Any organic or inorganic substance that enters accidentally to the air way of children and may cause life threatening airway obstruction and death if not removed timely

Foreign body (FB) aspiration: is the act of accidentally inhaling a foreign body, usually materials, food or drink

Children: Pediatric Patients presented to PER after FBA and whose age is less than or equal to 14 years

4.11 Data quality assurance

In order to keep the data quality, the checklist first prepared in English then the check list was tried on 10% of the sample size so as to check the consistency/completeness of the questionnaire in line to the medical records. Thus, based on the draw back/problem to gather data ,the check list was corrected according to the available data on medical records.

4.12 Data analysis procedure

For all categorical variables frequencies and percentages was calculated. In addition, data entry and analysis was conduct by using SPSS v-21. Then, the entered data was edited, cleaned and analyzed. Finally, the patterns of foreign body aspirations among children was extracted from the SPSS so that it was presented using bar chart, pie chart and tables.

4.13 Ethical considerations

Letter of ethical clearance was obtained from Addis Ababa University. Then official letter was written to the service delivery points/area, i.e. Medical record room. But since this is a retrospective study based on analysis of patients' record, it was neither necessary to obtain written consent nor approval institutional review board.

Finally, confidentialities of the information gathered were assured via avoiding recorded the name and address of the patients in the checklist.

4.14 Dissemination of the results

The result of the study will be submitted to AAU College of Health Sciences,Departement of Emergency Medicine. And will be disseminating to Addis Ababa University medical laborary, Minster of Health, Pediatric Departemeent, to differnt health institusion, to the community, to publishing, and to sponsoring body (if)

5. RESULT

5.1. Socio – Demographic characteristics

From the total surgical 5412 patients who visited the pediatric emergency department of Tikur Anbesa Specialized Hospital during the study period, 289 (5.3%) were foreign body aspiration patients. Out of the 289 cases that were seen in the study period, 150 questionnaires were correctly completed making a response rate of 51.9%Ci. From 150-study population, Males were 95 (63.3%) and females were 55 (36.7%), giving a male to female ratio of 1.7:1. The patients' ages ranged from 6 months to 13 years with the mean of 59.05 months(5 years). The median and the mode were 56.50 months (4.7 years) and 84 months (7 years) respectively.

The majority of victims were between 12-36 months (1-3years) old accounting for 41(27.3%) of patients coming with the complain of foreign body aspiration.

Table1: Sociodemographic characteristics of children with FBA who presented to PER of TASH from Jan, 2014 to Dec, 2016 Addis Ababa Ethiopia

Variables	Frequency (N)	Percentage (%)
Age (in month(s)		
<12	**22**	**14.7**
12-36	**41**	**27.3**
37-72	**34**	**22.7**
73-108	**35**	**23.3**
109-144	**17**	**11.3**
145-168	**1**	**o.7**
Total	**150**	**100**
Sex		
Male	**95**	**63.3**
Femal	**55**	**36.7**
Total	**150**	**100**

Regarding the nature of foreign body removed, there were different types of material that cause

foreign body aspiration. The most common cause is crops / seeds which accounted 54(36.0%) of the vulnerable children. Plastic and metallic materials high in frequency of foreign body aspiration accounted 44(29.3%) & 28(18.7%) respectively. The remaining were ingested matter & others.

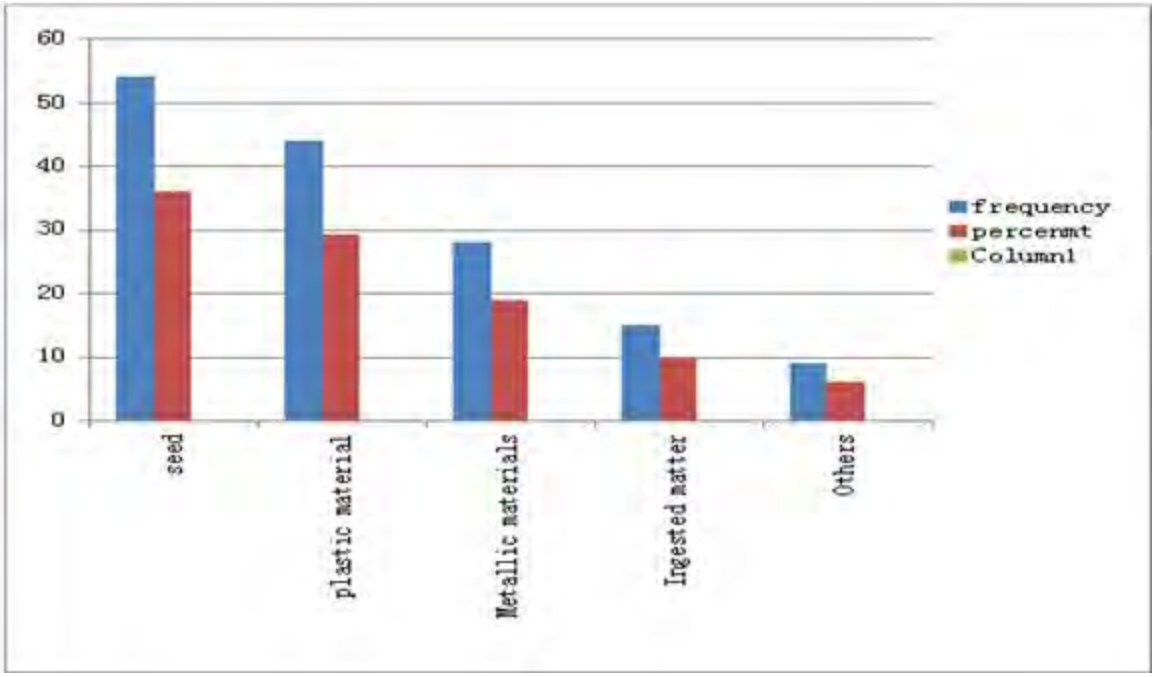

Figure: 1 Nature of FBA patients attending TASH pediatric emergency. Jan 2014-Dec.2016

Regarding the clinical manifestation of patients developed after foreign body aspiration, almost all of the patients 149(99.3%) have sudden onset of cough, 84(56%) and 25(16.7%) of the patients have sudden onset of difficulty in breathing and vomiting respectively

The clinical findings on physical examination after foreign body aspiration showed that most of the patients 71 (47.3%) have high grade fever and 11(7.3%) have low grade fever.

More than half of the patients 91(60.7%) have not sign of stridor the remaining 59(39.3%) presented with stridor. More of foreign body aspirated patients 86(57.3%) have reduced air entry from these, 32(21.3%) and 28(18.7%) have reduced air entry on left sides and both sides respectively. Among the total FBA patients most 130(86.7%) have no change in voice and the rest 20(13.3%) have. Only 20(13.3%) of children developed hoarseness of sound but the remain

was noremal.

Table2: Finding /Clinical finding of children with FBA who presented to PERof TASH from Jan, 2014 to Dec, 2016 Addis Ababa Ethiopia.

Characterstics	Frequncy	Precent
Clinical presentation		
Sudden onset of cough	**149**	**99.3**
Sudden onset of difficuliy of breathing	**84**	**56**
Noisy breathing	**14**	**9.3**
Hoarseness of voice	**10**	**6.7**
Vomiting	**25**	**16.7**
Drooling of saliva	**3**	**2**
Temperature		
Within normal range	**57**	**38.0**
High grade fever	**71**	**47.3**
Low grade fever	**11**	**7.3**
Missed/not reported	**11**	**7.3**
Total	**150**	**100**
Stridor		
Yes	**59**	**39.3**
No	**91**	**60.7**
Total	**150**	**100**

Table3: Examination Finding of children with FBA who presented to PER of TASH from Jan, 2014 to Dec, 2016 Addis Ababa Ethiopia.

Air entry in the lungs		
Normal	**64**	**42.7**
Reduced on the right side	**26**	**17.3**
Reduced on the left side	**32**	**21.3**
Reduced on both side	**28**	**18.7**
Total	**150**	**100**
Voice of the child		
Normal	**130**	**86.7**
Hoarseness	**20**	**13.3**
Total	**150**	**100**
X-ray finding		
Normal	**68**	**45.3**
Collapsed lung	**6**	**4**
Foreign body in the trachea	**17**	**11.3**
Foreign body in the bronchus	**25**	**16.7**
Heterogeneous opacity	**5**	**3.3**
Not reported	**29**	**19.3**
Total	**150**	**100**
Site of FB lodgment		
Right main bronchus	**52**	**34.7**
Left main bronchus	**33**	**22**
Trachea	**43**	**28.7**
Other	**22**	**14.7**
Total	**150**	**100**

Based on x-ray finding, majority of patients 68(45.3%) have normal x-ray finding and 53(35.4%) have abnormal finding. From abnormal x-ray finding 25(16.3%) and 17(11.3%) have Foreign body in the bronchus and trachea respectively. 6(4%) 0f children have collapsed lung finding.

Based on finding, the

Site of lodgment of foreign body aspiration 52(34.7%) and 43(28.7%) of cases have on the right main bronchus and trachea respectively.

Regarding the time lapsed between aspiration and reaching the hospital, the average time of arrival to hospital is 17.6 days. The minimum time of arrival is 1 hour and ranged to 360 days. The majority of patients 61(40.7%) arrived to hospital after aspiration is with in 3-7 days(73-168 hours). Only 21(14%) of patients arrived with in 24 hours.

The time lapsed between reaching hospital and time of FBA removal was ranged from 5 hours to 6 months and the average time of removal is 17.6 days. The majority of patients 61(40.7%) removed FBA was within 13- 24hrs. Only 6(4%) of patients arrived with in 6 hours.

The time lapsed from the occurance of aspiration to removal was ranged from 10 hours to one year. the majority of patients 43(28.7%) was performed with in 73- 168hrs (3-7days). Only 11(7.3%) of the FB aspirated patients was treated <24hrs(1 day).

Table 5: Average time of removal of children with FBA who presented to PER of TASH from Jan, 2014 to Dec, 2016 Addis Ababa Ethiopia.

Characteristics	Frequency	Percent
Time lapsed between aspiration and reaching the hospital.		
<1 (24hrs)	21	14.0
1-2 (24-48hrs)	46	30.7
2-3(49-72hrs)	11	7.3
3-7(73-168hrs)	61	40.7
>7(168hrs)	11	7.3
Total	150	100
Time lapsed between reaching the hospital and FBA remove	**6**	**4.0**

<6 hrs	**35**	**23.3**
6-12hrs	**61**	**40.7**
13-24hrs	**20**	**13.3**
25-72hrs	**10**	**6.7**
73-168hrs	**4**	**2.7**
>168 hrs	**14**	**9.3**
Missed	**150**	**100**
Total		
time lapsed between aspiration and foreign body removal		
<24 hrs	**11**	**7.3**
25-72 hrs	**39**	**26.0**
73-168 hrs	**43**	**28.7**
169-720 hrs	**29**	**19.3**
>720 hrs	**16**	**10.7**
Missed	**12**	**8.0**
Total	**150**	**100**

From the total FB aspiration patient 68(46%)developed complications. From these 44(64.7%) were aspiration pneumonia. 12(17.6%) and 8(11.8%) of patients developed complication of minimal bleeding and upper airway obstruction respectively.

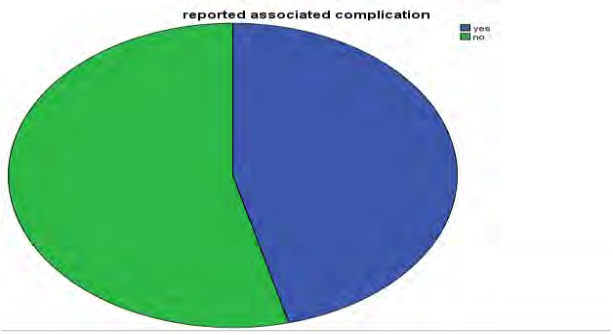

Figure 2 complication of FBA patients attending Tikur Anbesa Hospital pediatric emergency fron Jan.2014-Dec 2016

Table6: types of complications for patients with FBA who presented to PER of TASH from Jan, 2014 to Dec, 2016 Addis Ababa Ethiopia.

Characteristics	Frequency	Percent
Types of complication		
Aspiration pneumonia	44	64.7
Pneumothorax	4	2.7
Upper airway obstraction	8	11..8
Minimal bleeding	12	17.6
Total	68	100

Regarding the management of FBA, 61(40.7%) of the patients have got prehospital management. From these 45(30%) were given finger swab and 16(10.7%) were given back slap/chest trust.

139(92.7%) of cases were managed with surgical procedure and the remain 11(7.3%) treated with conservative management. Bronchoscopy was done for most of the cases 140(93.3%) . The average length of stay was 7(6.7) days ranged from 1 day to 61 days. All most all 147(98%) of the foriegn body aspirated children where improved and discharged from the hopital. only 2 cause where discharged left agenst medical advice (LAMA)

Table7: performed procedures for children with FBA who presented to PER of TASH from Jan, 2014 to Dec, 2016 Addis Ababa Ethiopia.

Characterstics	frequency	Percent
Prehospital management		
Finger sweep	**45**	**30.0**
Back slap/chest trust	**16**	**10.7**
No intervention	**68**	**44.7**
Other	**22**	**14.6**
Total	**150**	**100**
Management at hospital		
Broncoscopy	**139**	**92.7**
Conservative management	**11**	**7.3**
Total	**150**	**100**
Broncoscopy		
Yes	140	93.3
No	10	6.7
Total	150	100

6. DISCUSSION

Foreign body (FB) aspirations in childhood are frequently emergency conditions especially in less than 3 years age, It most commonly occurs in the 1-3 year-old age group, tending to occur in boys more than girls (1). According to the study conducted in Nigeria, children subjected to foreign body were 90 males and 38 females (M: F ratio of 2.4:1) with age range was 0-14 years with a mean of 3.88 ± 2.47years. The highest incidence was in the age group 3-5 years(15). In other study conducted in India showed that foreign body aspiration were common among males 30 (75%) and 10 (25%) were on females (16). Similar study in Iran showed that, 63 percent of children with foreign body aspiration were boys and 37% were girls and thirty (63%) children were found to be younger than 3 years (17) where as a study conducted in Ethiopia showed that children who subjected to foreign body were 85(61.5%) males and 33 (38.8) females with a mean age of 2.86 +/- 1.82 years old

Similarly in this study finding, the majority of victims were between 12-36 months (1-3years) old accounting for 41(27.3%) of children comes with the complain of foreign body aspiration with the high proportion of males 95 (63.3%) in comparison with female 55 (36.7%), giving a male to female ratio of 1.7:1 ratio with the mean age of 59.05 months(5 years).

The reason of this study finding may be due to Children of this age are prone to foreign body aspiration because they: put objects in their mouths (particularly while running) and have less ability to chew food in the absence of molar teeth(2, 3, 4, 5).

This study showed that most common cause of FBA is crops / seeds which accounted 54(36.0%) of the vulnerable children from these, bean is the most common. Plastic material is the second most common casus accounted 44(29.3%) of the total FBA.

This is similar to the study conducted in Iran which showed that the most common aspirated

foreign body was organic materials (82%) like 58% (27 cases) seeds and 22% (10 cases) were peanuts (17). This is relatively higher than this finding which may be due to the difference in common type seeds in the study area. But in another study conducted in Ethiopia A.A(TASH)showed that 90 (70.31%) of foreign body encountered was coins followed by button batteries 5 (5.9%).

A study conducted in India showed that patients presented with foreign body aspiration have cough 57(96.6%), Fever 33(55.9%), breathlessness 50(84.7%), choking 8(13.6%) and vomiting 8(13.6%).(16). In another study done in Nigeria showed that the commonest sign and symptom 115 (89.84%) presented with difficulty in breathing, hoarseness and occasional cough (15).

This is consistent with the study of this finding which shows almost all of the patients 149(99.3%) have sudden onset of cough,71 (47.3%) have fever ,84(56%) sudden onset of difficulty in breathing and 25(16.7%) vomiting. But a similar study done in Ethiopia(TASH) showed that the commonest sign and symptom of FBA complaints were vomiting (70.6%) and difficulty of swallowing 43(50.6%)(19). This is slightly different than this finding which may be due to complain miss documentation

According to the research conducted in Nigeria showed the average time of removal after foreign body in tracheobronchial tree 88 (68.75%) presented late to the hospital was after 24 hours. (15). This is consistent to this study finding which shows that 84.7% of patients presented late after 24 hours. but in India the average time of removal after foreign body in tracheobronchial tree was in the first 24 hours in 54 (93.1 %) cases. This may be due to low awareness of the community to take to the hospital early.A study conducted in Ethiopia(TASH) showed that the average time of removal after foreign body in tracheobronchial tree 88 (68.75%) presented late to the hospital

was ranged from 30 minutes to 2 years 19.This is similar to the finding which shows ranged from 1 hour to 1 year and the average time of removal was 17.6 days.

According to the research conducted in Nigeria showed that only 70 (54.69%) patients did radiological investigations prior to removal of foreign bodies (17). But in this study 121(80.7%) of cases have radiological investigation which shows that x-ray is the mandatory investigation for FBA in this study.

A study conducted in India showed that the common complications detected were laryngeal edema 40 (31.25%), subcutaneous emphysema 4 (3.13%), tracheostomy tube dependence 2 (1.56%) and laryngeal stenosis 2 (1.56%) (15.) another research in India showed that the common complications detected were respiratory collapse (33.9%), empyshema (16.9%) and pneumonia 9 (15.2%). But this study shows that the common complication were aspiration pneumonia 44(29.3%),minimal bleeding 12(8%), upper airway obstruction 8(5.3) and pneumothorax 4(2.7%). This study shows that the average length of stay was ranged from one day to a maximum of 61 days with a mean duration of 6.7 ± 8.07 days. This is higher than the study done in India showed the duration of the stay of the patient ranged from one day to a maximum of 26 days with a mean duration of 5.95 ± 4.506 days (16)

All most all 147(98%) of the foreign body aspirated children were improved and discharged from the hospital. only 2 cases were discharged left against medical advice (LAMA).

6.1 CHALLENGES AND LIMITATION OF THE STUDY

6.1.1 Streangeth

Treaning given for data colector, and also prpoper orentation given for patient recored room workers evry quationer fill properly .

6.1.2 Limitation

Documentation problem and attachment of the results of investigation was major challenge making patient's chart incomplete.

The time given for data collection and analysis was so short .

7. CONCULUTION AND RECOMENDATION

7.1 CONCLUSION

The finding of this study shows that from over all pediatrics emergency patients visiting PED in the study period, FBA is considerably high indicating the major public health problem. The most affected age group is between one year to three years. and males are affected than females. Most of the patients have late presentation to the hospital after FBA. The common cause of FBA is croop/seed especialy bean is the most common. Aspiration pneumonia is the most common complication of FBA for this study. Most of the patients were improved and discharged. Based on this finding, Appropriate prevention strategies should be designed and implemented for foreign body aspiration.

7.2 RECOMENDATION

- It is important to raise awareness in the public about prevention of foreign body aspiration through educational campaigns
- Foreign body aspiration first aid training for the community have to be addressed . Professionals have to be well trained in in the management of First aid foreign body aspiration.
- foreign body aspiration guide lines should be prepared and implemented to avoid misdiagnosis and management of FBA.

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ANNEXES

Annex 1: Questionnaire/Check list

Annex 2: Assurance of the investigator

Annexes

QUESTIONNAIRS

A check list designed to assess the patterns and complication of foreign body aspiration among children at Black lion specialized hospital, pediatric emergency OPD, Addis Ababa, Ethiopia, 2017.

Ser. No	Characters	Questionnaires	
1	Age(in years)		
2	Six	1. Male	
		2. Female	
3	Date of FBA		
4	Nature of foreign body removed		
5	Clinical Presentation	1. Sudden onset of cough	
		2. Sudden onset difficulty in breathing	A.
		3. Noisy breathing	

		4. .Hoarseness of the voice	
		5. Vomiting	
		6. Drooling of saliva	
		7. . Failure to swallow feeds	
		8. Chocking sign	
6	Examination /Clinical Findings.		
	A. Temperature	1. Normal range	
		2. Low grade fever	
		3. High grade fever	
	B. Strider	1. Yes	
		2. No	
	C. Chest movement on breathing	1. Normal	
		2. Reduced chest movement on left side	
		3. Reduced chest movement on right side	
		4. Reduced chest movement on both side	
	D. Chest recessions/depressions	1. Yes	
		2. No	
	E. Air entry into the lungs	1. Normal both sides	
		2. Reduced on left side	
		3. Reduced on right side	
		4. Reduced on both sides	
	F. Voice of the child	1. Normal	

		2. Hoarseness
	G. X-ray findings	1..Normal x-ray
		2. Collapsed lung
		3. FB in trachea
		4. FB in bronchous
		5. Heterogeneous opacity
	Site of lodgment of foreign body	1. Rt main bronchus
		2. Lt main bronchus
7		3. Trachea 4. Other (specify)
8	Time lapse	1. Between aspiration and reaching the hospital (hrs)
		2. Between reaching the hospital and FB removal (hrs)
		3. Between aspiration and FB removal (hrs)
9	Is there associated complications were reported?	1. Yes
		2. No
10	If no 9 answer is yes, list them.	……..……..
10.	Management at home (perhospital management)	1. Finger sweep
		2. Back slap/chest trust
		3. No Intervention
		4. Other
11	Management at hospital	1. Surgical management

		2. Conservative management
12	Leangth of stay	
13	Out come	1. Discharge with improvment 2. Refer toother center 3. LAMA 4.Death

Filled by_____Signature _____Date ____/_____/____

Checked by _____Signature _____Date____/_____/_____

Assurance of the investigator

The under signed declared that this work has never been presented in this or another university for graduation and that the source materials used in this research project have been dully acknowledge.

Name

Signature

Addisu Tamalew

Place of submission; Addis Ababa University, School of Medicine and Health Science Department of emergency medicine and critical care, Ethiopia

Date of submission; Jun, 2017

This thesis submitted for examination with my approval as a college advisor.

Declaration

Investigator:

Addisu Tamalew

Signature_____

Date:_____

Advisors

1. **Kibatu Gebrie (Msc)**

   Signature _____

2. **Dr. Tigist Zewudu**

   Signature_____