

Case Report

Foreign Body Bottom of Pen in Bronchus with and without Atelectasis

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Abstract

Introduction: Foreign body aspiration (FBA) is a common case in children. Delayed diagnosis more than 24 hours often increased the risk of complications and mortality. Atelectasis is one of the common complication of FBA. Rigid bronchoscopy under general anaesthesia is the choice of procedure for diagnosis and treatment. **Case Report:** It was reported two cases foreign body aspiration of a bottom of pen. First case was a girl, aged 6 year-old with foreign body a bottom of pen without lumen in bronchus with atelectasis and second case was a foreign body bottom of pen with lumen in bronchus in a boy, aged 12 year-old without atelectasis but late diagnosis. Both cases have been successfully extracted using rigid bronchoscopy. **Conclusion:** Foreign body without lumen have more acute and severe complication rather than foreign body with lumen. The presence of a lumen within the foreign body allows good ventilation and shows less symptoms. Appropriate diagnosis and treatment will minimize the risk of complications.

Keywords: Foreign body aspiration, rigid bronchoscopy, atelectasis

Abstrak

Pendahuluan: Aspirasi benda asing merupakan kejadian yang umum pada anak-anak. Keterlambatan diagnosis lebih dari 24 jam sering meningkatkan resiko komplikasi dan kematian. Atelektasis adalah salah satu komplikasi aspirasi benda asing. Bronkoskopi kaku di bawah anestesi umum adalah prosedur pilihan untuk diagnosis dan terapi. Laporan kasus: Dilaporkan dua kasus aspirasi benda asing tutup bawah pena. Kasus pertama pada anak perempuan berusia 6 tahun dengan benda asing tutup bawah pena tidak berlumen di bronkus dengan komplikasi atelektasis dan kasus kedua aspirasi benda asing tutup bawah pena berlumen di bronkus, pada anak laki-laki berusia 12 tahun tanpa komplikasi atelektasis tetapi dengan keterlambatan diagnosis. Kedua kasus telah berhasil diekstraksi dengan menggunakan bronkoskopi kaku. Kesimpulan: Benda asing tanpa lumen memiliki komplikasi yang cepat dan berat dibandingkan dengan benda asing dengan lumen. Terdapatnya lumen pada benda asing memungkinkan ventilasi dan menyebabkan kurangnya gejala. Diagnosis dan pengobatan yang tepat akan meminimalkan risiko komplikasi.

Kata kunci: Aspirasi benda asing, bronkoskopi kaku, atelektasis

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INTRODUCTION

Foreign body aspiration (FBA) is a common case in children, especially among children under 3 years old, with a higher incidence in boys. FBA can be life threatening, act as a significant cause of fatal home accidents in children and causing more than 300 deaths per year in the United States. Delayed diagnosis >24 hours is common and associated with increased complications and mortality. In 2012 meta-analysis of 1.063 papers published over a 30-year period, delayed diagnosis >24 hours occurred in an estimated 40% of patients and complications occurred in approximately 15% of these patients.¹⁻⁴

There is a suggestive history of choking, although the classic clinical presentation, with coughing, wheezing, and diminished air inflow, were seen in less than 40% of the patients, other symptoms like cyanoses, fever, and stridor. Sometimes, FBA can

be completely asymptomatic. Other findings, such as chronic cough, recurrent pneumonias in the same chest region, atelectasis, and even pneumothoraces or pneumomediastinum, are more common in adults, who may or may not recall an episode of possible aspiration.^{1,3,5-7}

Most frequently, aspirated objects are food, which is involved in 75% of the cases; other organic materials, such as bones, teeth, and plants, 7% nonorganic materials, such as metals and plastics, 13% rocks, 1% and toys or parts of toys. The aspiration of foreign bodies become lodged in the tracheobronchial tree (figure 1) comprise a small subset of FBA cases. The location of lodging of the foreign bodies has been shown to be 48% to 49% in the right lung; 39% to 44% in the left lung; and only 4% to 13% between the larynx and trachea. In isolated cases, foreign bodies have been shown to migrate and changed location.^{1,3,6,8}

There are 3 typical stages in foreign body aspiration. The first stage is the impaction phase, characterized by choking, gagging, and coughing

paroxysms. This may also be referred as "penetration syndrome," characterized by a sudden onset of choking and coughing, with or without vomiting. Second stage is asymptomatic, phase when the foreign body becomes lodged. This phase can last from hours to weeks. The third stage is known as the complications phase, when late sequelae occurred such as erosion, infection, pneumonia, and abscess.⁴

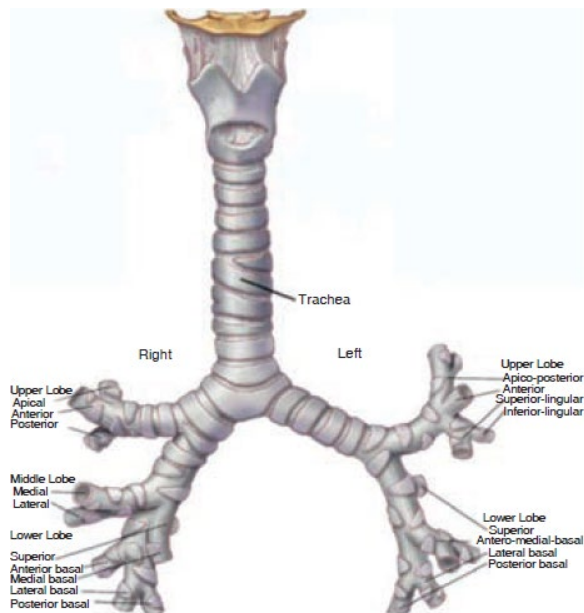


Figure 1. Anatomy tracheobronchial tree.⁹

It is important to differentiate an aspirated foreign body from an ingested foreign body, and differentiate it from other conditions that can show similar symptoms. Aspirated foreign bodies typically present with respiratory symptoms, while esophageal foreign bodies can cause respiratory distress from compression on the trachea. Coughing is generally a good indicator of an aspirated foreign body, it can also indicate an ingested foreign body. Conversely, aspirated and ingested foreign bodies can be asymptomatic.⁴

When considering alternative diagnoses to an aspirated foreign body, it is useful to organize the possible diagnoses based on the symptoms and the suspected location (Tables 1 and 2).⁴

In 1897, Gustav Killian, a German otolaryngologist, performed the first bronchoscopy using a rigid esophagoscope to successfully remove a pig bone from a farmer's right main bronchus. Nowadays, bronchoscopy is essential if FBA is suspected, first to confirm the diagnosis and also because it can be used for therapeutic treatment in the same stage. General anesthesia for the removal of aspirated objects with increased experience with the rigid bronchoscope and advances in anesthetic delivery.^{1,10}

Rigid bronchoscopy remains the gold standard for the removal of foreign bodies from the tracheobronchial tree under direct vision. The advance of ventilating bronchoscopes and improvement in the

illumination and visualization provided by Hopkins telescope guided optical forceps. The advances in anaesthesia have reduced the mortality and greatly facilitated the task of the endoscopist by allowing simultaneous visualization and manipulation of the foreign bodies.^{11,12}

Table 1. Physical examination findings based on anatomical location⁴

Location	Physical examination findings
Laryngeal	Hoarseness, stridor, croupy cough
Tracheal	Biphasic stridor, dysphonia, dysphagia
Bronchial	Coughing, wheezing, decreased breath sounds

Table 2. Differential diagnosis based on signs and symptoms⁴

Signs/Symptoms	Differential Diagnosis
Coughing	Esophageal foreign body Pneumonia Asthma Bronchiolitis Croup
Wheezing	Asthma Bronchiolitis Vascular malformation
Stridor/hoarseness/dysphonia/ dysphagia	Croup Abscess Vascular malformation Esophageal foreign body Epiglottitis
Asymmetric breath sounds	Asthma Pneumonia Pulmonary abscess Cavitary tuberculosis Congenital lobar emphysema

Flexible fiberoptic bronchoscopes were introduced in 1966. It consists of bundles of fiberoptic fibres with a magnifying lens system at the distal end. The tip of the bronchoscope can be angulated using a steering wheel at its distal end and on most there are suction and injection ports. Spontaneous ventilation occurs around the instrument; hence, it will be difficult for the patient to breathe if the scope is too big. Flexible bronchoscopy complements rigid bronchoscopy and makes removal of foreign bodies even safer and more complete. With modern bronchoscopy equipment, thoracotomy with bronchotomy and segmental resection of the lung as part of the management of bronchial foreign bodies has been largely relegated to the past.^{11,12}

It is important to select an instrument of suitable size for the patient's airway; a guide to selecting bronchoscope size can be found in Table 3. The size refers to the nominal internal diameter (ID); this dictates ease of ventilation (spontaneous and manual) and suctioning.¹²

Table 3. Suggested ETT and rigid bronchoscope sizes for children¹²

Age	Cricoid airway diameter (mm)	Tracheal tube		Bronchoscope size		
		Size ID	ED (mm)	Size	ID	ED
Premature	4.0	2.5-3.0	3.5-4.0	2.5	3.2	4.0
Term newborn	4.5	3.0-3.5	4.0-4.9	3.0	4.2	5.0
6 months	5.0	3.5-4.0	4.9-5.4	3.0	4.2	5.0
1 year	5.5	4.0-4.5	5.4-6.2	3.5	4.9	5.7
2 year	6.0	4.5-5.0	6.2-6.9	3.5	4.9	5.7
3 year	7.0	5.0-5.5	6.9-7.4	4.0	5.9	6.7
5 year	8.0	5.5-6.0	7.4-7.9	5.0	7.0	7.8
10 year	9.0	6.5 cuffed			5.0*	
14 year	11.0	6.5 cuffed			5.0*	

Undiagnosed foreign body in bronchial tree, it can cause inflammation and necrosis of airway mucosa, resulting complication such as pneumonia, atelectasis, emphysema, bronchiectasis or bronchoesophageal fistula.¹³ Atelectasis is a collapsed and air less peripheral gas exchange region of the lung. Atelectasis occurs in three ways: (a) increased surface tension in small airways and alveoli; (b) compression of pulmonary parenchyma by intrathoracic chest wall, and extrathoracic processes; and (c) obstruction of airways. The incidence of atelectasis accompanying several respiratory disorders in childhood is reported to range as: meconium aspiration 40 to 55%, post extubation collapse in infants 35%, bronchopulmonary dysplasia 46 to 50%, bronchiolitis 12 to 24%, pneumonia 23 to 25%, asthma 4 to 19%, foreign body aspiration 10 to 20% and tuberculosis 8%.¹⁴

CASE REPORT

1st case

A 6-year old girl patient came to Emergency Room Dr. M. Djamil Hospital Padang on December 15th, 2014, MR 892303, with chief complaint accidentally choking a bottom of pen since 2 hours before admission. Previously, the patient was lying down and bite a bottom of pen (pink colour). Accidentally the patient was choking and coughing, her mother try to pulled out with scratching her mouth then patient vomit twice but the bottom of pen didn't came out. Patient then brought to M. Djamil hospital. There was no difficulty in breathing. There was no bluish face. There was no bloody cough and saliva. There was no pain in the chest. There was no hoarseness. There was no difficulty in swallowing. There was no pain in swallowing. There was no fever and cold. There was no history of inserted foreign body to ear, nose and mouth before.

On physical examination, general condition was moderately ill, composmentis cooperative, blood pressure 100/60mmHg, heart rate 84x/min, respiratory rate 24x/min, temperature 36,8°C, body weight 24kg. Thorax examination, inspection; there was no retraction, auscultation; there was no stridor, no wheezing, no ronchi, bronchovesicular, there was decreasing of breathe sound in the left side. On ear,

nose and throat examination there was no abnormality was detected. Patient was diagnosed with suspected foreign body a bottom of pen in bronchus.

On thorax X-ray examination AP and lateral position on December 15th, 2014, there was not seen any foreign body and there was opacity at the left side of lung. X-ray result was suggestive atelectasis at the left lung (figure 2).

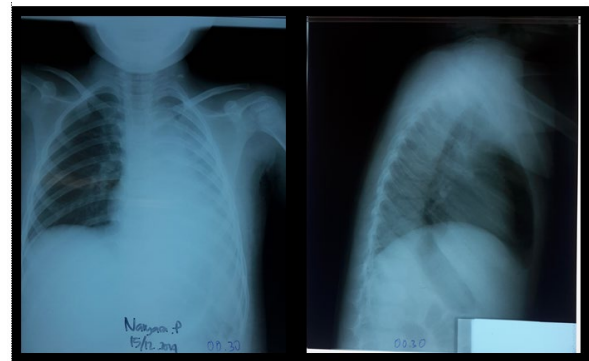


Figure 2. Thorax X-ray examination AP-lateral position before operation

Patient was prepared for performed rigid bronchoscopy and extraction of foreign body under general anesthesia. Performed informed consent to her parents and they were agree. Performed laboratory blood test and patient was consulted to Pediatric Department for operation tolerance.

Laboratory finding were haemoglobin 12.8g/dl, leucocytes 17.700/mm³, thrombocytes 418.000/mm³, haematocrytes 38%, PT/APTT 9.7"/36,6". From Pediatric Department, there was no contraindication to performed rigid bronchoscopy and extraction of foreign body in general anesthesia. They gave therapy ceftriaxone 2x800 mg (iv) and dexamethasone 3x3 mg (iv).

Bronchoscopy was performed on December 15th, 2014. Patient was lying under general anesthesia. Aseptic and antiseptic procedures. Insert bronchoscope 4 x 30 cm and through with straight laryngoscope. Rigid bronchoscope entered to trachea, foreign body was not found. Bronchoscope passed through carina until main bronchus of the left lung, pink foreign body was seen. Foreign body extracted with alligator forcep, succeeded and pulled up together

with the bronchoscope (figure 3). Bronchoscope was reinserted to evaluate the trachea and left and right bronchus, there was erosion at the carina, there was no active bleeding. Operation finished.

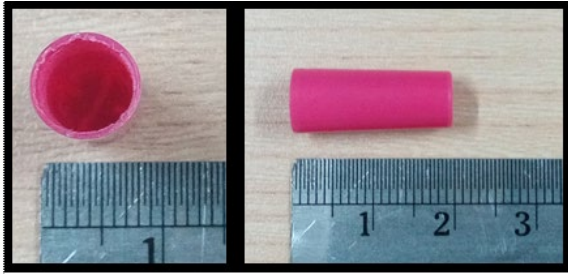


Figure 3. Foreign body a bottom of pen after extraction, $\pm 0,8 \times 2$ cm in size

Patient was hospitalized with therapy ceftriaxone 2x800mg (iv), dexamethasone 3x3 mg (iv), IVFD KaEN 1B 500cc 18 drop/min, ambroxol syrup 3x15mg orally.

One day post operation the general condition was good, composmentis cooperative. There was cough, no fever, no difficulty in breathing and no subcutaneous emphysema. Pain in swallowing was not present. Thorax examination, inspection; there was no retraction, auscultation; there was no stridor, no wheezing, no ronchi, no decrease of breath sound. We diagnosed the patient with post extraction foreign body (a bottom of pen) in the bronchus. Therapy was continued. Chest X-ray was performed and there was no abnormality found (figure 4).

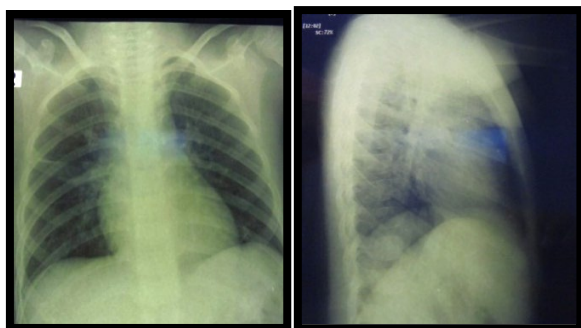


Figure 4. Thorax x-ray examination AP- lateral position post operation

Patient was discharged after two days hospitalization and therapy was substituted by cefiximesyrup 2x100mg and ambroxol syrup 3x15mg. Patient was suggested to control to ENT outpatient clinic 5 days later.

Control at December, 23th 2014. There was no cough, no fever, no difficulty in breathing. Thorax examination, inspection; there was no retraction, auscultation; there was no stridor, no wheezing, no ronchi, no decrease of breath sound. Patient suggest to control if there was any complaint.

2nd case

A 12-year old boy patient came to emergency room Dr. M. Djamil Hospital Padang on September

12th, 2015, MR 922879, with chief complaint accidentally choking a bottom of pen since 2 days before admission. Previously, the patient was lying down and bite a bottom of pen (black colour). Accidentally the patient was choking and coughing. Patient was brought to primary health care, then patient was referred to distric hospital. Patient was suggested to come to ENT outpatient clinic next day, from outpatient clinic pasien was referred to Dr. M.Djamil hospital. There was no difficulty in breathing. There was no bluish face. There was no bloody cough and saliva. There was no pain in the chest. There was no hoarseness. There was no difficulty in swallowing. There was no pain in swallowing. There was no fever and cold. There was no history of inserted foreign body to ear, nose and mouth before.

On physical examination, general condition was moderately ill, composmentis cooperative, blood pressure 120/80 mmHg, heart rate 80x/min, respiratory rate 20x/min, temperature 36,8°C. Thorax examination, inspection; there was no retraction, auscultation; there was no stridor, no wheezing, no ronchi, no decrease of breath sound. On ear, nose and throat examination there was no abnormality was detected. Patient was diagnosed with suspected foreign body a bottom of pen at bronchus.

On thorax X-ray examination AP and lateral position on September 12th, 2015, there was not seen any foreign body and there was no abnormality found (figure 5).

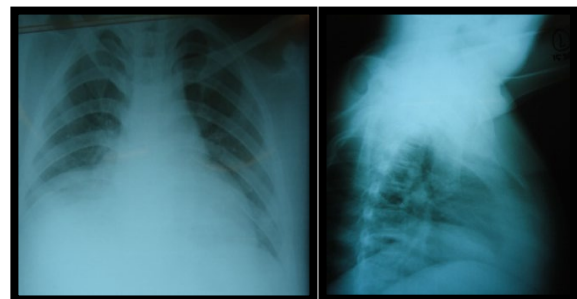


Figure 5. Thorax X-ray examination AP- lateral position before operation

Patient was prepared for performed rigid bronchoscopy and extraction of foreign body under general anesthesia. Performed informed consent to his parents and they were agree. Performed laboratory blood test and patient was consulted to Pediatric Department for operation tolerance.

Laboratory finding were haemoglobin 14,6 g/dl, leucocytes 14.200/mm³, thrombocytes 393.000/mm³, haematocytes 42 %, PT/APTT 10,2"/33,2". From Pediatric Department there was no contraindication to performed rigid bronchoscopy and extraction of foreign body under general anesthesia. They gave therapy cefoperazone 2x1gr (iv) and dexamethasone 3x5mg (iv).

Bronchoscopy was performed on September 12th, 2015. Patient was lying under general anesthesia. Aseptic and antiseptic procedures. Insert

bronchoscope 7,5 x 43 cm and through straight laryngoscope. Rigid bronchoscope entered to trachea, foreign body was not found. Bronchoscope passed through carina until main bronchus of the right lung, black foreign body was seen. Forcep inserted through a rigid bronchoscope. Foreign body extracted with alligator forcep, succeeded and pulled up together with the bronchoscope (figure 6). Bronchoscope was reinserted to evaluate the trachea and left and right bronchus, there was no laceration, no active bleeding. Operation finished.



Figure 6. Foreign body a bottom of pen after extraction, $\pm 0,8 \times 1,5$ cm in size

Patient was hospitalized with therapy cefoperazone 2x1gr (iv), dexamethasone 3x5mg (iv), IVFD RL 500 cc and tramadol drip 50 mg, 20 drop/min, ambroxol 3x30mg orally.

One day post operation the general condition was good, compositentis cooperative. There was cough, no fever, no difficulty in breathing and no subcutaneous emphysema. Pain in swallowing was not presented. Thorax examination, inspection; there was no retraction, auscultation; there was no stridor, no wheezing, no ronchi, no decrease of breath sound. We diagnosed the patient with post extraction foreign body (a bottom of pen) in the bronchus. Therapy was continued.

Patient was discharged after two days hospitalization and therapy was substituted by cefixime 2x200mg orally and ambroxol 3x30mg orally. Patient was suggested to control to ENT outpatient clinic 5 days later.

Control at September, 21th 2015. There was no cough, no fever, no difficulty in breathing. Thorax examination, inspection; there was no retraction, auscultation; there was no stridor, no wheezing, no ronchi, no decrease of breath sound. Patient suggest to control if there was any complaint.

DISCUSSION

It has been reported two cases of foreign body a bottom of pen in bronchus. In the first case, patient was a 6-year old girl and the second case was a 12 year-old boy. Diagnosis of foreign body aspiration is usually suggested with clinical history and radiological findings.⁷

Most tracheobronchial foreign bodies in children which are radiolucent materials, so accurate diagnosis of such foreign bodies is not always easy.

Children may present without any history of aspiration or an atypical history with nonspecific symptoms.^{15,16}

The foreign body classified into mainly two types, 1. Non irritating type: plastic, glass or metallic foreign bodies. It allows uninterrupted passage of air & may remain symptomless for a long time. 2. Irritating type: vegetable, peanuts, beans, seeds. It initiates inflammatory reaction leading to congestion and edema of the tracheobronchial mucosa while a large foreign body may cause a total occlusion of the airway. Vegetable foreign bodies like peas & beans can lead into severe pneumonitis & are also difficult to remove.¹⁷ In these cases, foreign body was made from plastic and classified into non irritating type.

In children, 91% of foreign bodies are organic, half of those are peanuts. In adults, 59% of foreign bodies are organic, with the remainder being miscellaneous, ranging from a dental file to tooth material, amalgam, a toy wheel, a pen cap, a swab, and chicken bone. The nature of other foreign bodies can vary from pills to metal fragments, plastic fragments, stones, or parasites. Several of these, particularly bones, stones, metal fragments, denture and teeth fragments usually show high attenuation at CT. Foreign body aspiration in adults with a normal swallowing reflex is rare. Risk factors leading to aspiration are neurologic dysfunction, trauma with loss of consciousness, facial trauma, intubation, dental procedures, underlying pulmonary disease, alcohol consumption, and sedative use.^{3,18}

Children present a higher risk of foreign body aspiration, which is attributed to several factors, tendency to put objects in their mouth, absence of molars to chew some types of food, to cry, walk and run with objects inside their mouth, lack of coordinating mechanism of swallowing, associated to elevation of the larynx and to protect reflex, which is immature in small children.^{3,8,16,19,20}

The most common signs and symptoms of foreign body aspiration are choking, coughing, wheezing and decreasing of breathe sounds. The history of choking crisis showed sensitivity and specificity of 97% and 93% respectively, other findings such as radiography has a high sensitivity (85%) but low specificity (9%).^{10,15} At first case patient has a history of choking a bottom of pen. On thorax examination, there was decreasing of breathe sound in the left side. The second case patient also had history choking a bottom of pen, but on thorax examination, there was no abnormality was found.

Aspirated foreign bodies are usually found in the proximal airway (trachea, right and left bronchus), most of them located in right bronchial tree because of large size and vertical branching from trachea than the left. Other report told, there is no significant difference location foreign body between the right and left bronchus.^{8,13,19} In these case, foreign body was found in left bronchus at the first case and in right bronchus at second case.

Almost 40% of patients were diagnosed as having FBA 24 hours after onset of symptoms. Because the children usually do not have severe symptoms immediately after the choking, parents may not seek medical help until there is a persistent cough and fever.³In second case a bottom of pen has a lumen, there was no abnormality on thorax examination and thorax X-ray.

Reilly and colleagues in Rovin, retrospectively reviewed the charts of 507 children evaluated for foreign body aspiration. The most common complications among children in whom the diagnosis was delayed were croup, pneumonia, pneumothorax, atelectasis, stricture, and perforation.¹⁶In second case it has been delayed two days on management of foreign body, but there was no complication. In long term, complications will be arise if foreign body not removed, because foreign body in the airway leads to local mechanical effects, chemical reactions and inflammation. An animal study has demonstrated that initial reaction to the presence of foreign body in the airway is polymorphonuclear leukocyte infiltration and edema which is followed by mononuclear leukocyte and macrophage infiltration. These findings have been interpreted as initiation of acute inflammation as early as three days after aspiration and progression to chronic inflammation as early as ten days.⁷

The most specific sign on physical examination is a localized decreasing of breath sounds. When unilateral atelectasis is massive, tracheal deviation and shift of heart sounds towards the atelectic side may occur. However, the majority of children with atelectasis will present with cough, tachypnea, rales, rhonchi, a history of chest pain, or fever and less often dyspnea or cyanosis. In study, children with acute atelectasis due to pneumonia, foreign body aspiration and mucus plugs, did not clinically showed specific signs of atelectasis.^{7,14}In first case there was history of choking and coughing, on thorax examination there was decreasing of breathe sound in the left side. From radiology finding, it says there was opacity at the left side of lung, and suspicious with atelectasis.

Chest radiograph is the only clinical mean of accurately documenting the presence, extent, and distribution of atelectasis. The most direct and reliable sign is the displacement of an interlobar fissure. Other signs of volume loss, such as elevation of hemidiaphragma and mediastinal shift, are maximal nearest to point of volume loss and accompanied by an increase in focal density.¹⁴

The chest radiograph was diagnostic in only 10 (14%) of the patients (only in those with opaque foreign body). In children, in whom a definitely radio-opaque shadow was seen in only 20% of the cases. Pneumonic and atelectatic radiographic changes were found in 46 (74%), regardless of the time that had elapsed after the foreign body aspiration.²¹ Chest radiography is the preferred initial diagnostic test.

Because 80% to 96% of aspirated foreign bodies are radiolucent, inspiratory and forced expiratory films are optimal to assess for radiographic signs of an aspirated foreign body, as opposed to visualizing an actual object. A typical radiographic finding is obstructive emphysema due to partial or complete bronchial obstruction, in which one would see unilateral hyperinflation due to blockage of an air passage during expiration. Other radiographic signs include air trapping, abnormal heart shadow, mediastinal shift, pneumomediastinum, pneumothorax, and subcutaneous emphysema.⁴Girardi et al in Maraynes reported 2 previously undocumented radiographic findings: hyperinflation or obstructive emphysema with atelectasis.

Decreasing mortality rate for FBA from 24% to 2% with the use of endoscopic techniques for foreign body removal was reported.⁶Bronchoscopy is the tool for observation of tracheobronchial tree both for the diagnostic purpose and for the treatment. Observation with rigid bronchoscopy still preserves its vital importance in removing the foreign bodies in the tracheobronchial tree.^{5,22}Bronchoscopy should be use as a diagnostic method in cases where the possibility of FBA cannot be ruled out through history, physical and radiological examination. Upon diagnosis, early bronchoscopy is necessary because the earlier the bronchoscopy the lesser complications could occur.³In these cases bronchoscopy were used for diagnostic and for treatment, patient had a history of choking but in physical examination and radiological finding still doubt, so we used bronchoscope to diagnostic and we found then removed foreign body.

Ahmed in Cassol said, bronchoscopy is a delicate procedure and must be performed by experienced team, due to the risk of broncospasm and arrhythmias. Removal foreign bodies is performed by means of rigid bronchoscopy, allowing adequate ventilation for patient, while the flexible bronchoscopy is recommended used for diagnosis. Melon in Cassol told, complication of endoscopic procedures that deserve special attention are larynx edema, subglottic epithelial erosion, bronchial edema to excessive local manipulation, which may lead to atelectasis, pneumothorax, pneumomediastinum and subcutaneous emphysema evolving to cardiac buffering, hemorrhages and septic complications. Bronchoscope with appropriate diameter should be chosen and the procedure should be limited to 20 minute in order to avoid possible sub-glottic and laryngeal edema and bronchospasm after bronchoscopy.³After removal of the aspirated foreign body, patients are admitted for observation, possible antibiotic and bronchodilator treatment. Most children are discharged within 24 hours of the procedure.¹⁶In these patients they discharge for 2 days, to observation complication and got antibiotic treatment.

CONCLUSION

Foreign body without lumen have more acute and severe complication rather than foreign body with lumen. The presence of a lumen within the foreign body allows good ventilation and shows less symptoms.

Foreign body aspiration (FBA) in children were diagnosed by anamnesis, physical examination and radiological findings. Appropriate diagnosis and treatment will minimize the risk of complications in patients.

REFERENCES

- Oliveira CF, Almeida JFL, Troster EJ, Vaz FAC. Complicationa of tracheobronchial foreign body aspiration in children : report of 5 cases and review of the literature. *Rev. Hosp. Clin. Fac. Med. S. Paulo.* 2002; 57(3):108-111
- Cakir E, Torun E, Uyan ZS, Akca O, Soysal O. An unusual case of foreign body aspiration mimicking cavitory tuberculosis in adolescent patient: Thread aspiration. *Italian journal of pediatrics.* 2012:1-3
- Saki N, Nikakhlagh S, Rahim F, Abshirini H. Foreign body aspirations in infancy: a 20-year experience. *Int J. Med. Sci.* 2009; 6(6):322-8
- Maraynes M, Agoritsas K. Inhaled foreign bodies in pediatric patients: proven management techniques in the emergency department. *EB medicine.* 2015; 12(10):1-16
- Tyung RC, Boss EF. Tracheobronchial Endoscopy. In: Flint PW, Haughey BH, Lund VJ, Niparko JK, Richardson MA, editors. *Cummings otolaryngology head & neck surgery.* 5th eds. Philadelphia. Mosby elsevier; 2010. p.998-1011.
- Salah MT, Hamza S, Murtada M, Salma M. Delayed diagnosis of foreign body aspiration in children. *Sudanese journal of public health.* 2007;2(1):48-50
- Can D, Yilmaz O, Asilsoy S, Gulle S, Yuksel H. Aspiration of foreign bodies that allow air passage through. *OJPED.* 2011; 1:90-3
- Cassol V, Pereira AM, Zorzela LM, Becker MM, Barreto SSM. Foreign Body in Children's Airways. *J.Pneumologia.* 2003; 29:1-10
- Campos JH. Fiberoptic bronchoscopy guidelines for anesthesiologist. *Revista mexicana de anesthesiologia.* 2011; 34:S264-9
- Fidkowski CW, Zheng H, Firth PG. The anesthetic considerations of tracheobronchial foreign body in children: a literature review of 12,979 cases. *Anesh Analg.* 2010; 111:1016-25
- Falase B, Sanusi M, Majekumni A, Ajose I, Oke D. Preliminary experience in the management of tracheobronchial foreign bodies in Lagos, Nigeria. *Pan African Medical Journal.* 2013; 15:31
- Roberts S, Thomington RE. Paediatric bronchoscopy. *Brithis Journal of Anaesthesia.* 2005; 5(2):41-4
- Cho HK, Cho KY, Cho SY, Sohn S. Bronchial foreign body aspiration diagnosed with MDCT. *Korean jornal of pediatrics.* 2007; 50(8): 781-4
- Raman TSR, Mathew S, Ravikumar, Garcha PS. Atelectasis in children. *Indian pediatrics.* 1998; 35:429-35
- H Motaghi, M Jafarzedah, S Poorahmadi. The value of chest x-ray in foreign body aspiration of children. *The Iranian journal otorhinolaryngology.* 2006; 18(45):67-71
- Rovin JD, Rodgers BM. Pediatric foreign body aspiration. *Pediatrics in review.* 2000;21(3) :86-90
- Taksande A, Vilhekar K, Tyagi V. Uncommon foreign body aspiration in infant. *Calicut medical journal.* 2010; 8(2):1-3
- Patel S, Kazerooni E. Case 31: foreign body aspiration chicken vertebra. *Radiology.* 2001; 218:523-5
- Iqbal I, Lateef M, Wani AA, Rafiq S. A rare case of foreign body bronchus: a case report. *Indian J otolaryngol head neck surg.* 2011; 63(suppl1): S81-2
- Boloorsaz MR, Khalilzadeh S, Niknejad A, Velayati AA. Foreign body in children's airway: a five year study. *Tanaffos.* 2005; 4(15):49-52
- Debeljak A, Sorli J, Music E, Kecelj P. Bronchoscopic removal of foreign bodies in adult: experience with 62 patients from 1974-1998. *Eur Respir J.* 1999; 14:792-5
- Yetim TD, Bayarogullan H, Arica V, Akcora B, Arica SG, Tutanc M. Foreign body aspiration in children: Analysis of 42 cases. *J.Pulmon Resp Med.* 2012; 2(3):1-5