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A Case of Whistle as Foreign Body in Trachea

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ABSTRACT

Background. Most of foreign body aspiration cases are found in children under the age of fifteen. Pediatric patients often presents with non-food foreign body aspiration, such as toys. The most common clinical manifestation are history of choking following foreign object insertion into the mouth (85%), paroxysmal cough (59%), wheezing (57%) and airway obstruction (5%).
Case presentation. Main principle of airway foreign body extraction is to do it immediately in the most optimal condition with slightest possible trauma. Rigid bronchoscopy is a suitable choice for tracheal foreign body extraction. We reported a case of seven years old male with tracheal foreign body presented with history of whistle ingestion five hours prior to admission. This patient was discharged from hospital after third days of rigid bronchoscopy procedure.
Conclusion. History of foreign body aspiration in children should be suspected as a tracheobronchial foreign body. Rigid bronchoscopy is preferred to extract foreign bodies present in the trachea. The prognosis for tracheobronchial foreign body aspiration is good if the foreign body is treated early and without complications.

1. Introduction

Foreign body aspiration is the entry of foreign objects from outside the body (exogenous) and inside the body (endogenous) into the respiratory tract. Foreign body aspiration is an emergency case in the Department of Otolaryngology and Rhinology, especially if it is not treated early. About 75% to 85% of cases of foreign body aspiration are experienced by toddlers and children under the age of 15 years, with the highest incidence at the age of 1-3 years, which is around 50%. The total death rate due to foreign body aspiration reaches 1000 cases per year and is the most common cause of accidental death in children under one year of age.[1-6]

Tracheobronchial foreign bodies do not always produce typical symptoms. The most common symptoms were a history of ingesting a foreign object into the mouth and then choking (85%), paroxysmal cough (59%), wheezing (57%), and marked airway obstruction (5%). Clinical symptoms of foreign body aspiration in the airways can be divided into three stages: choking, vomiting, and wheezing is occurred in the initial phase. In addition, other symptoms that can appear are a sudden cough, a feeling of congestion in the throat, respiratory obstruction, and the presence of cyanosis, especially perioral. The foreign body may be vomited or lodged in the larynx or descend further into the tracheobronchial tract. Mortality in this phase is very high.

Furthermore, in the asymptomatic phase, the respiratory mucosa adapts to the presence of foreign bodies so that the initial symptoms disappear. The asymptomatic interval varies according to the size and

nature of the foreign body. This period can last from a few hours to several weeks. This stage is dangerous because it often causes a delay in diagnosis or tends to ignore the possibility of foreign body aspiration because the symptoms and signs are not apparent. Patients with bronchial foreign bodies mostly come to the hospital in the asymptomatic phase, their general condition is still good, and chest X-rays have not shown any abnormalities. The advanced phase is caused by airway obstruction, inflammation, or foreign body-induced trauma and depends on the attachment site. In laryngeal foreign bodies, large foreign bodies can completely occlude the airways resulting in sudden death due to asphyxia in a short time, unless resuscitation is carried out immediately. This is caused by the onset of laryngeal spasm with symptoms including dysphonia to aphonia, apnea, and cyanosis. Partially obstructed foreign bodies will cause discomfort or pain in the throat, shortness of breath, croupy cough, aphonia, dyspnea, wheezing, and coughing up blood.

Complications of delayed foreign body aspiration are anoxic/hypoxic brain injury, bronchial injury, airway stenosis, abscess formation, and pneumothorax can take the form of emphysema, atelectasis, pneumonia, abscess formation and granulation tissue, sepsis, to the formation of perforation or fistula foreign bodies. The principle of handling foreign bodies in the airways is to do it immediately in the most maximal condition and minimal trauma. This case reports aims to describe a case of a foreign body in a child.[9]

2. Case presentation

A 7-year-old boy was brought to the emergency unit of Dr. Mohammad Hoesin Palembang on June 25, 2021. The patient complained of choking on a whistle while playing for 5 hours at SMRS. Shortness of breath and cough are present; the child appears cyanotic and coughs violently shortly after choking. There were no complaints of coughing up blood, difficulty swallowing, pain when swallowing, the taste of the food being stuck, suffocation, burning sensation in the chest, regurgitation, substernal pain, and nausea and vomiting. The first aid efforts carried out before entering the hospital were hitting the nape of the neck and scratching the throat.

Figure 1. Patient appearance.

On physical examination, general condition was good, and consciousness was compos mentis, pulse was 105 beats per minute, temperature and respiratory rate were normal. No audible slap, palpatory thud, or asthmatic wheezing were found. No retraction was found-examination of the heart, lungs, and extremities within normal limits. There was an increase in leukocytes and electrolytes within normal limits on laboratory examination.

Figure 2. STL/AP lateral imaging.

X-ray of the soft tissue of the neck in the AP/lateral position, the trachea was found in the middle, there was no visible airway narrowing, and there was no pharyngeal wall thickening. A chest X-ray showed a radiopaque image at the level of the carina, and a whistle foreign body was suspected. The interval from the onset of choking to photographing was six hours. A tracheal foreign body was found based on the history, physical examination, and radiological examination.

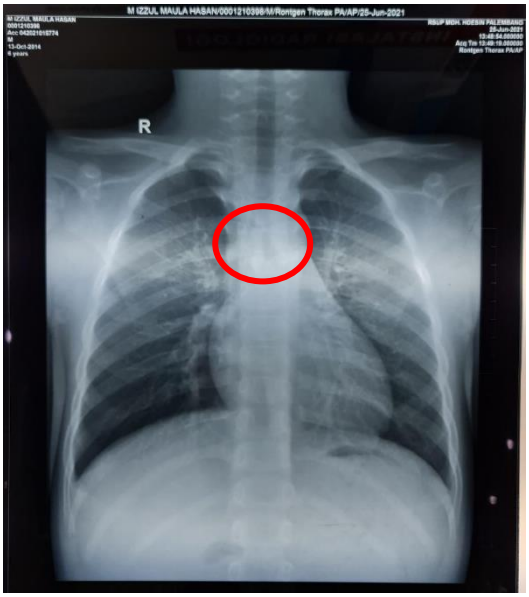

Figure 3. Thorax X-ray imaging before bronchoscopy procedure.

An hour later, a cito bronchoscopy was performed on the patient with a rigid bronchoscopy approach with a diameter of 6 mm and using a cunam tooth 3. The bronchoscopy was performed under general anesthesia, the trachea was evaluated, and a whistle was found 15 cm from the incisor or above the carina. The whistle valve is clamped and pulled. However, the whistle valve is separated from the whistle body. A second attempt was made to remove the body of the whistle, and the foreign object was removed entirely. An evaluation was carried out, and no lacerations were found on the inner wall of the trachea, and the operation was completed. The action lasted for 30 minutes, and there were no complicating factors before, during, or after the procedure. Post-operative chest X-ray showed no signs of pneumonia. The patient was then hospitalized and planned for medical therapy.

Figure 4. Imaging from bronchoscopy. Red ring: a whistle in trachea.

During the three days of hospitalization, there was no subcutaneous emphysema and crepitus. The patient was then discharged. The patient was asked to re-control one week later; the patient had no complaints on the physical examination and lung auscultation within normal limits.

3. Discussion

A tracheal foreign body aspiration case has been reported in a 7-year-old male patient. Most foreign body aspiration occurs in toddlers and children under the age of 15, which is around 75% - 85%. Children often put everything in their mouths, including when playing, running, or screaming. Men also experience foreign body aspiration more often than women (2:1).[4,10]

In this case, the patient complained of choking on a whistle while playing for 5 hours at SMRS. Other complaints that are felt are coughing and shortness of breath. Children often present with the aspiration of non-food foreign objects, such as toys placed in the child's mouth. A study conducted by Aminu Kano Teaching Hospital on children in Kano-Nigeria showed that peanuts and whistles were the most frequently aspirated foreign bodies (25,7%). Whistle foreign bodies are also the most common type of foreign body inhaled in pediatric patients aged 3 to 6 years. Clinical symptoms of foreign body aspiration in the tracheobronchial tract vary from asymptomatic, sudden cough, wheezing, to asphyxia. The most common symptom of foreign body aspiration was a history of inserting a foreign object into the mouth and then choking (85%), paroxysmal cough (59%), wheezing (57%), and marked airway obstruction (5%). [7,11-13]

Examination of vital signs showed no dyspnea. No audible slap, palpatory thud, and asthmathoid wheezing were found. The absence of these signs does not exclude the possibility of a tracheal foreign body. Audible slap and palpatory thud are usually caused by the up and down movement of loose foreign bodies such as grass seeds along the trachea between the carina and the lower surface of the vocal cords. In this case, the foreign body is in the form of a whistle and does not include a frail foreign body. About 40% of cases also have no abnormalities on physical examination. Laboratory examinations in tracheobronchial cases are needed to determine the presence of acid-base balance disorders and signs of tracheobronchial tract infection and prepare before general anesthesia is carried out.

Radiological examination is carried out to determine the presence of foreign bodies, the location of foreign bodies, and the abnormalities they cause. Radiopaque foreign bodies can be x-rayed immediately after the incident, while radiolucent (such as nuts) x-rays can be made after 24 hours of the incident because they have not shown a significant before 24 hours of the incident radiological picture.

Conventional PA and lateral examination of the neck's soft tissues may reveal radiopaque and sometimes radiolucency in the larynx and trachea. PA and lateral chest radiographs may reveal radiopaque foreign bodies, segmental or lobar atelectasis (total foreign body obstruction), or unilateral hyperinflation of a lobe or lung segment (ball-valve obstruction). In

most cases of aspiration in children, foreign bodies are radiolucent, and only 7% are radioopaque. In this case, a radioopaque image at the level of the carina was obtained, which was suspected as a whistle foreign body. In foreign bodies, carina can cause atelectasis in one lung and emphysema on the other, depending on the degree of obstruction of the type of foreign body caused. The patient did not have atelectasis and emphysema in both lungs because the foreign body in the whistle has ventilation holes that allow air to still pass to the left and right lungs.

Bronchoscopy is the gold standard for diagnosing and managing tracheobronchial foreign bodies. Bronchoscopy is more sensitive than X-rays and computer tomography. A foreign body in the trachea is removed by bronchoscopy, which must be done immediately with the patient lying supine and Trendelenburg so that the foreign body does not descend into the bronchi. Rigid bronchoscopy is the gold standard for managing foreign body aspiration in the direct visible tracheobronchial tree. Rigid bronchoscopy is an option for foreign body extraction because ventilation is more secure in pediatric cases (having a connector connected to oxygen) and the location of the foreign body in the trachea. Initial intervention using rigid bronchoscopy followed by extraction using a gripping forceps or magnetic extractor allows easy and safe removal of the foreign body.[8,14-16]

After bronchoscopy, the patient was hospitalized for post bronchoscopy evaluation. Patients with suspected foreign body aspiration should be hospitalized for observation and possibly antibiotics. Tenenbaum et al. reported that 85.7% and 53.6% of patients with foreign body aspiration were given corticosteroids and antibiotics, respectively. Administration of corticosteroids can reduce laryngeal edema and bronchospasm after bronchoscopy, while antibiotics should use broad-spectrum antibiotics.

During the three days of hospitalization, there was no subcutaneous emphysema and crepitus, and then he was discharged. The prognosis is good in children with foreign body aspiration if the foreign body is treated early and without complications. Most of the patients who came to the emergency department showed a good outcome. In a study of 94 children after three days of aspiration onset, all recovered fully without complications except for one patient who died of respiratory failure. The fast recovery time in these patients after foreign body extraction is probably due to the natural and inorganic nature of the whistle toys, which are non-irritating foreign bodies. Thus, tissue inflammation caused is lighter than inflammation caused by foreign bodies from plant fragments (beans and grains).[3,19]

4. Conclusion

History of foreign body aspiration in children should be suspected as a tracheobronchial foreign body. Whistles are one of the most common foreign bodies found in children, especially in 3 to 6 years. This is because this age group usually has much playing time and the games involved involve small objects, including whistles. Bronchoscopy is the gold standard to rule out the differential diagnosis and as a treatment for removing foreign bodies. Rigid bronchoscopy is preferred to extract foreign bodies present in the trachea. The prognosis for tracheobronchial foreign body aspiration is good if the foreign body is treated early and without complications. The tissue inflammation caused by a whistle foreign body is also less severe so that the patient's outcome is generally better.

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