Case Report

A case study of hemoptysis in 4 years old

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ABSTRACT

Hemoptysis is a rare complaint in the pediatric population. Although most cases of pediatric hemoptysis are from benign causes and are self-limiting, there is a need to establish the severity of hemoptysis and establish the cause, which can be assessed by eliciting a good history and a thorough physical examination. The most common cause in pediatric age group is lower respiratory infections: pneumonia and tracheobronchitis, foreign body aspiration, and aberrant bronchial artery circulation. Here is a case of 4-year-old female patient who presented with 2 days history of hemoptysis two episodes to the pediatric emergency. She was brought by the mother who provided the history of the child. There were no similar complaints in past and no significant family history. She also gave a history of recurrent lower respiratory tract infections since birth. The patient was stable on admission no respiratory distress, afebrile, and no evidence of current bleeding. She was given nebulization with salbutamol and she responded well. The patient was discharged with instructions to follow-up with a pediatric department.

KEY WORDS: Hemoptysis, Respiratory distress, Respiratory tract infetions

INTRODUCTION

Hemoptysis is defined as the expectoration of blood or blood-tinged sputum. Blood-tinged sputum is a rare finding in the pediatric population. It is important to establish the severity of the hemoptysis, as well as the actual cause. With this information, an emergency medicine physician should be able to make accurate clinical decisions. A focused physical exam and history can often lead to the underlying diagnosis causing the hemoptysis.[1] Chest radiographs in at least two views should be obtained in all patients presenting with hemoptysis. Fiberoptic bronchoscopy and high-resolution computed tomography may be used to further assist in the establishment of a cause of hemoptysis.[1-4]

The severity of hemoptysis is dependent on the volume of blood loss. Scant hemoptysis refers to <5 mL of blood loss, mild-to-moderate hemoptysis refers to 6–240 mL of blood loss, and massive hemoptysis refers to more than 240 mL of blood loss. Estimation of the volume of blood loss is important in the establishment of hematemesis severity. The life-threatening severity threshold is >8 mL/kg every 24 h.

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CASE REPORT

A 4-year-old female presented to the emergency department with the chief complaint of two episodes of hemoptysis that occurred just before arrival. Her mother stated that she had cold-like symptoms for the past few days before arrival, and on the day of arrival, she began to cough up blood. She brought the blood-tinged rag with her to the ED. She had vomited the night prior, as well as on the morning before arrival, and had diarrhea during that same time frame. Her mother said that diarrhea and vomit were not blood-tinged. There had been no change to her urine output. She stated that she had a fever the night prior, as well as on the morning of presentation with a maximum temperature of 101°F. Her mother said that she attends daycare and that multiple children in her daycare had recently come down with respiratory syncytial virus (RSV).

Her mother stated that she was born full-term with no complications. She also said that she had multiple bronchitis infections since her birth. According to her, she is up to date on all vaccinations.

Her temperature on arrival to the emergency was 99.1°F. He had a pulse rate of 120 beats/min, a respiratory rate of 24 breaths/min, and a blood pressure of 88/60. Physical exam revealed the presence of rhinorrhea as well as diffuse crackles and expiratory wheezing in all quadrants of lung.

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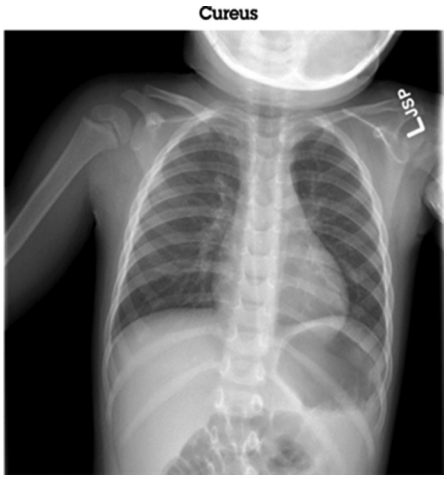
A complete blood count and comprehensive metabolic panel were all within normal limits. Chest radiographs in two views were performed, and it was determined that no acute lung abnormalities or pulmonary infiltrates were present. A hemoccult test was done on the blood-tinged rag which confirmed that the substance was blood. It was estimated that the total amount of blood on the rag was significantly <5 mL. This placed her in the category of scant hemoptysis.



Throughout her stay in the emergency, she did not have any additional episodes of hemoptysis. Nebulization with salbutamol was given, which she tolerated well. On re-auscultation of her lungs, the crackles and expiratory wheezing had resolved. Given her afebrile status and prior exposure to RSV, it was determined that she likely contracted RSV from her classmates. She remained stable throughout her entire stay and was discharged home with instructions to follow-up with her pediatrician. It was also recommended that they follow-up with a pediatric pulmonologist for evaluation of his extensive history of bronchial infections.

DISCUSSION

Our patient's hemoptysis was attributed to mechanical trauma from forceful coughing, likely causing mucosal irritation and inflammation. Given her history of recurrent bronchial infections, it was suspected that she had secondary inflammatory changes that may have caused her to be at an increased risk for hemoptysis. Hemoptysis is broken down into three categories: scant, mild-to-moderate, and massive. In patients with scant hemoptysis, they will have lost <5 mL of blood. In these patients, the hemoptysis usually resolves spontaneously and is unlikely to recur. No further intervention is necessary other than observation for recurrence and appearance of other symptoms.

In patients with mild-to-moderate hemoptysis, there is a 6–240 mL blood loss. It is managed based on the cause of the hemoptysis. If foreign body aspiration is suspected, bronchoscopy should be performed for the diagnosis and removal of the aspirated object. Rigid bronchoscopy is the most commonly used method for removing an aspirated foreign body. A recently published study, however, has shown that a flexible bronchoscopy using a retrieval basket is also an effective instrument for the removal of aspirated foreign bodies in pediatric patients. Massive hemoptysis refers to an expectorated blood loss of more than 240 mL. These patients may need to be stabilized to prevent further bleeding. Rapid sequence intubation and mechanical ventilation with high positive end-expiratory pressure (PEEP), circulatory support, and replacement of blood products are all necessary interventions. PEEP may improve oxygenation, as well as tamponade the site of hemorrhage. If the site of hemorrhage is known, selective intubation to the unaffected lung should be done. Bilevel positive airway pressure should not be used due to the risk of further aspiration of blood. Rigid bronchoscopy may be used both as an investigative tool and a treatment modality.[5,6] It can be used as a manual vasoconstrictor or endobronchial tamponade, while providing ventilation of the patient. These patients may eventually require bronchial artery embolization by bronchial angiography if hemorrhaging persists.

The most common cause of hemoptysis in the pediatric population is lower respiratory infections; pneumonia and tracheobronchitis being the two most common offenders.[7] Hemoptysis in these patients is usually self-limiting and all interventions should be aimed at treating the underlying infection.

Foreign body aspiration is the second most common cause of hemoptysis in pediatric patients.

In the case of foreign body aspiration, the bleeding is caused by mechanical trauma to the respiratory epithelium or the ensuing inflammatory reaction, especially to vegetable matter.[8] Physicians should have a high clinical suspicion for foreign body

aspiration when a pediatric patient presents with hemoptysis. Key clinical signs involve paroxysmal coughing and unexplained wheezing with normal chest radiographs. A history of choking is also highly suggestive of foreign body aspiration. These patients should be evaluated and treated using bronchoscopy. Rigid bronchoscopy is more commonly used, but there are arguments for the use of flexible bronchoscopy as well.[9]

CONCLUSIONS

Hemoptysis is a symptom that rarely presents in the pediatric population. Most cases of pediatric hemoptysis are from benign causes and are self-limiting. It is important to establish a good history and do a thorough physical exam to determine the severity of the hemoptysis. Chest radiographs should be performed in all patients to evaluate for the presence of pulmonary infiltrates or foreign body. Most cases of hemoptysis in pediatric patients are caused by some sort of viral or bacterial respiratory infection; hence, the focus of all interventions should be managing the underlying infection.

REFERENCES

1. Tom LW, Weisman RA, Handler SD. Hemoptysis in children. Ann Otol Rhinol Laryngol 1980;89:419-24.
2. Batra PS, Holinger LD. Etiology and management of pediatric hemoptysis. Arch Otolaryngol Head Neck Surg 2001;127:377-82.
3. Hemoptysis in Children; 2018. Available from: https://www.uptodate.com/contents/hemoptysis-in-children. [Last accessed on 2019 Jan 22].
4. Gaude GS. Hemoptysis in children. Indian Pediatr 2010;47:245-4.
5. Kim K, Lee HJ, Yang EA, Kim HS, Chun YH, Yoon JS, *et al.* Foreign body removal by flexible bronchoscopy using retrieval basket in children. Ann Thorac Med 2018;13:82-5.
6. Bannister M. Paediatric haemoptysis and the otorhinolaryngologist: Systematic review. Int J Pediatr Otorhinolaryngol 2017;92:99-102.
7. Dine AP, Werner SL. Pediatric hemoptysis with pulmonary hemorrhage and respiratory failure. Am J Emerg Med 2008;26:639.e3-4.
8. Andrews A, Scheid A, Stockmann P, Guglani L. A 6-year-old boy with an atypical cause of chest pain and hemoptysis. Chest 2013;144:637A-B.
9. Master Sankar Raj V, Warnecke D, Roberts J, Elhadi S. Antiglomerular basement membrane disease in a pediatric patient: A case report and review of the literature. Case Rep Nephrol 2017;2017:1256142.

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