Bacterial Tracheitis in Children: A Varied Entity

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Abstract

Objective: To highlight the different presentations of bacterial tracheitis (BT), an potential life-threatening cause of airway obstruction in children.

Design: Case series

Methods: A review of medical records of 4 cases of BT who presented with alarming signs and symptoms was performed.

Results: Clinical manifestations of 4 patients with BT are presented with corresponding endoscopic appearance of the airway. Two patients were afebrile and toxic, and 2 had an elevated white cell count. Three had different diagnoses of leukemia. One had a respiratory arrest. Cultures grew a combination of MSSA and alpha hemolytic Strep. Three days after the procedure, she was discharged home on amoxicillin/sulbactam and had an uneventful complete recovery.

Conclusions: Bacterial tracheitis needs a high index of suspicion because of its varied presentations. Certain forms have less severe clinical manifestations. These forms also require aggressive management as they can result in acute obstruction from membranes and edema.

Introduction

The most common cause of stridor in children presenting to an emergency room during the fall and winter is viral laryngotracheobronchitis, otherwise known as croup. Typically, patients present with fever, stridor, rhonchi, and a barking cough (1). The true incidence of BT is unknown; however, studies estimate it occurs in 0.14 to 0.4% of all children presenting with stridor. BT is defined by the presence of thick adherent tracheal secretions combined with characteristic croup-like symptoms (2). The diagnosis is made by direct visualization of the trachea with an otoscope or flexible fiberoptic bronchoscope. Overall, some patients present with high fevers and toxic symptoms, whereas others are afebrile and nontoxic. Although BT has a low mortality rate, morbidity is significant. A high index of suspicion for this entity is required in the emergency room during the winter months, especially in the presence of patients with stridor (3).

Case 1

A 7-year-old girl was admitted to the pediatric ward with a 2-day history of fever, cough, and hoarseness. On admission, she was afebrile and nontoxic, and vital signs were within normal limits. The patient had a chronic medical history of asthma. The patient had an unremarkable past medical history. On presentation, the patient was afebrile with tachypnea and stridor. The patient was intubated and was moved to the intensive care unit. The patient was put on mechanical ventilation, and a flexible fiberoptic bronchoscopy was performed. The findings revealed large amounts of purulent secretions coating the distal trachea, with thick mucosa (Fig. 1A, B). The patient was extubated on postoperative day 3. Debridement and culture of secretions was performed and revealed MRSA as the causative pathogen. The patient was treated with ceftriaxone and vancomycin. The patient was discharged home after 5 days.

Case 2

A 10-year-old boy with a history of CP and BP had bilateral epiglottitis treated with antibiotics and intubation. Two weeks later, he presented with stridor and a biphasic fever. Flexible fiberoptic bronchoscopy revealed thick exudative tracheitis with adherent debris and evidence of respiratory failure. The patient was intubated, and ceftriaxone and vancomycin were started. The patient was extubated on postoperative day 3 with resolution of his symptoms. The patient was treated with amoxicillin and clavulanic acid for 2 weeks.

Case 3

A previously healthy 15-month-old boy presented to the hospital with a 7-week history of fever, cough, and stridor. The patient was afebrile and nontoxic, and vital signs were within normal limits. The patient had a chronic medical history of asthma. The patient had an unremarkable past medical history. On presentation, the patient was afebrile with tachypnea and stridor. The patient was intubated and was moved to the intensive care unit. The patient was put on mechanical ventilation, and a flexible fiberoptic bronchoscopy was performed. The findings revealed large amounts of purulent secretions coating the distal trachea, with thick mucosa (Fig. 1A, B). The patient was extubated on postoperative day 3. Debridement and culture of secretions was performed and revealed MRSA as the causative pathogen. The patient was treated with ceftriaxone and vancomycin. The patient was discharged home after 5 days.

Case 4

A 12-year-old previously healthy girl with a week history of some shortness of breath and hoarseness treated with steroid nasal spray. On admission to the pediatric ICU, she was afebrile, had an elevated white cell count, and was intubated. A flexible fiberoptic bronchoscopy revealed thick exudative tracheitis with adherent debris and evidence of respiratory failure. The patient was intubated, and ceftriaxone and vancomycin were started. The patient was extubated on postoperative day 3 with resolution of his symptoms. The patient was treated with amoxicillin and clavulanic acid for 2 weeks.

Discussion

Bacterial tracheitis was first described in 1945 by Chavalier Jackson (3) and is defined by the presence of high thick adherent tracheal secretions. Histologically, tracheal biopsies are characterized by large acute inflammatory cell infiltrates and extracellular matrix (Fig. 1A, B). The infection is typically caused by a combination of streptococci, staphylococci, and gram-negative bacilli. The infection is characterized by low-grade fever and respiratory symptoms and is distinguished from croup-like symptoms by the presence of purulent secretions and blood cultures. The diagnosis is made by direct visualization of the trachea with an otoscope or flexible fiberoptic bronchoscope. Overall, some patients present with high fevers and toxic symptoms, whereas others are afebrile and nontoxic. Although BT has a low mortality rate, morbidity is significant. A high index of suspicion for this entity is required in the emergency room during the winter months, especially in the presence of patients with stridor (3).

Conclusions

Bacterial tracheitis is a potentially life-threatening disease that requires a high index of suspicion. The disease is under recognized and should be considered in any patient presenting with a pneumonic syndrome of the upper airway. Bacterial tracheitis presents a life-threatening airway obstruction. The high morbidity of this disease is related to the lack of awareness of this entity among physicians. Treatment with broad-spectrum antibiotics is recommended in all cases. The mortality rate of this disease is very low, but morbidity is significant. The disease usually responds to antibiotics, but surgical intervention may be necessary in severe cases.

References