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CASE REPORT

Laryngotracheal and pulmonary aspergillosis in an adolescent with acute lymphoblastic leukemia: case report

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Abstract

Patients undergoing chemotherapy for acute lymphoblastic leukemia are at greater risk for invasive fungal diseases that represent an important cause of morbidity and mortality. Aspergillosis is a fungal infection, usually pulmonary, that rarely affects the laryngeal and tracheal regions. This is a case report about an immunocompromised adolescent undergoing chemotherapy for acute lymphoblastic leukemia, who evolved with febrile neutropenia and pulmonary and laryngotracheal aspergillosis. After 3 weeks of antifungal treatment using voriconazole, a chest tomography showed the reduction of the multiple pulmonary nodules and the fibronasolaryngoscopy endorsed a complete response to the treatment of laryngotracheal lesions.

Keywords: acute lymphoblastic leukemia; invasive fungal disease; aspergillosis; adolescent.

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Introduction

Acute lymphoid leukemia (ALL) is the hematologic neoplasm with a greater incidence in children, currently with high survival rates[1,2]. Due to the immunosuppression caused by the disease and the treatment, fungal infections are common in these patients and they are related to high rates of morbidity and mortality.

Aspergillosis is a disease caused by inhalation of the Aspergillus fungus, usually with pulmonary involvement. Extrapulmonary manifestations of aspergillosis are less common, and laryngotracheal aspergillosis is a rare entity, with few descriptions in the literature and with high mortality. Early diagnosis and proper treatment of aspergillosis are essential to improve outcomes in these patients[3].

Case report

This is a 15-year-old female patient diagnosed with high-risk Acute Lymphoblastic Leukemia (ALL). The patient was undergoing chemotherapy treatment, when she evolved a febrile neutropenia, and the hospitalization for infectious treatment was indicated. Due to persistent dry cough, a computed tomography of the chest was performed, which showed the presence of pulmonary nodules indicating aspergillosis.

On the seventh day of hospitalization, the patient presented dysphonia and pharyngeal globus sensation, which evolved after 3 days with stridor and dyspnea, then she was referred to the Intensive Care Unit (ICU). An endoscopic evaluation of the larynx was performed, showing evidence of a semi-obstructive glottic lesion with apparent extension to the subglottis. The patient underwent a tracheostomy identifying a lesion on the tracheal wall. In the same procedure, laryngotracheoscopy was performed with evidence of a semi-obstructive vegetating lesion extending to the subglottis and trachea. A biopsy of the lesion showed the presence of hyphae characterized as Aspergillus. Serum Galactomannan – Aspergillus wall antigen – was also collected with a positive result, endorsing the diagnosis of laryngeal, tracheal and pulmonary aspergillosis. Treatment with voriconazole antifungal was started (Figure 1).

The patient had a significant improvement in symptoms, tolerating staying in ambient air, without fever, maintaining only residual cough and ventilatory-dependent pain, being discharged to the ward after 5 days in the intensive care unit. After 3 weeks of antifungal treatment, a chest tomography showed

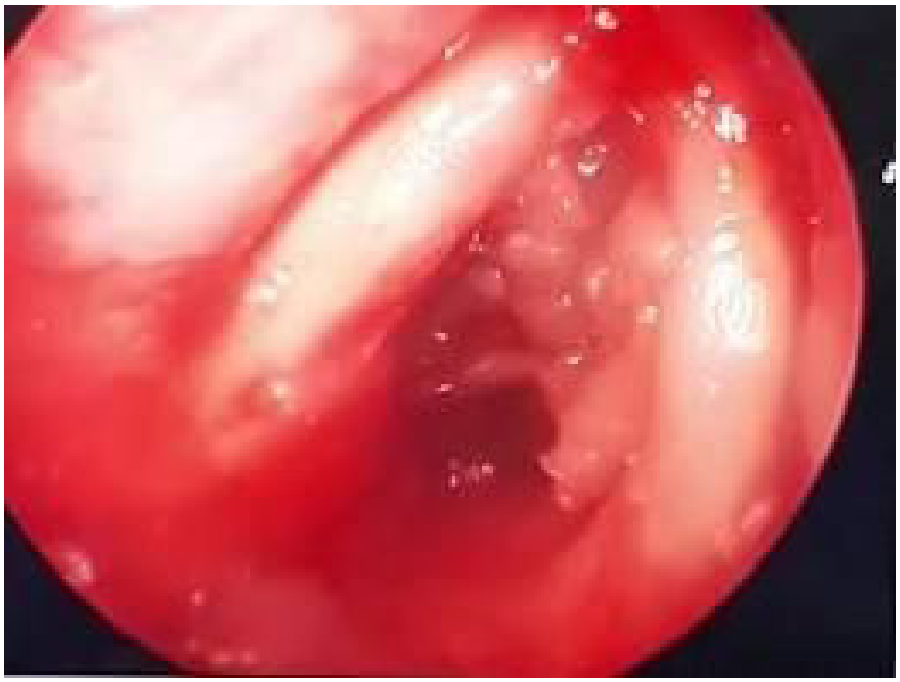

Figure 1. Fibronasolaryngoscopy image showing a semi-obstructive vegetating lesion extending to the subglottis and trachea.

Figure 2. Chest tomography image at diagnosis and after three weeks of treatment.

a reduction in pulmonary nodules, associated with a reduction in serum galactomannan. Control fibronasolaryngoscopy was performed, showing a complete response to laryngotracheal treatment, with the disappearance of the lesions, enabling decannulation (Figure 2).

Discussion

In this report, we presented a rare case of an immunocompromised adolescent undergoing chemotherapy for ALL and diagnosed with aspergillosis in the larynx, trachea and lung. The use of voriconazole resulted in an improvement of the symptoms and a good pulmonary and tracheal response to treatment.

The invasive fungal infections are one of the main causes of morbidity and mortality in hematologic neoplasms patients, and also immunocompromised and in chemotherapy treatment ones [4,5]. A severe and prolonged neutropenia, as in this patient, is a known risk factor for the development of these infections, and Aspergillus is the second most commonly isolated fungus in these patients[4]. Due to non-specific clinical symptoms, low test sensitivity, long wait for results, difficulty in obtaining positive blood cultures and lack of appropriate conditions for procedures such as tissue culture biopsy or bronchoscopy, the early diagnosis of aspergillosis in pediatric hematologic malignancies becomes difficult[3]. The case of laryngeal aspergillosis is extremely rare, and the symptoms of upper airway obstruction are the most common – hoarseness, stridor and sensation of pharyngeal globus. A high index of suspicion is necessary to indicate appropriate diagnostic procedures and to begin treatment properly. Antifungal treatment using Voriconazole is recommended in the literature[5].

This report reinforces the importance of constant monitoring of patients with Acute Lymphoid Leukemia, the value of early diagnosis and treatment as the prevalent factor for a good clinical evolution of patients with invasive fungal infections.

Ethical matters

This case report was approved by the Research Ethics Committee of the Dr. Francisco das Chagas Lima e Silva Hospital - Santa Casa de Misericórdia of Belo Horizonte - SCMBH (CEP/CONEP nº 066601/2021).

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