

Radioaerosol Imaging Predicts the Utility of Aerosolized Antifungal Therapy in Allergic Bronchopulmonary Aspergillosis

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Abstract: A 10-year-old girl with a history of complicated cystic fibrosis was hospitalized for pulmonary exacerbation with allergic bronchopulmonary aspergillosis and severe right upper lobe bronchiectasis diagnosed with chest radiograph and CT. She was started on itraconazole during the hospitalization in attempt to decrease her systemic steroid dose, but she had ongoing coughing and wheezing. The possibility was raised that the right upper lobe bronchiectasis may be a nidus for ongoing aspergillosis. Radioaerosol imaging was performed to determine whether the aerosolized antifungals would reach the area of bronchiectasis.

Key Words: radioaerosol scan, aspergillosis, cystic fibrosis

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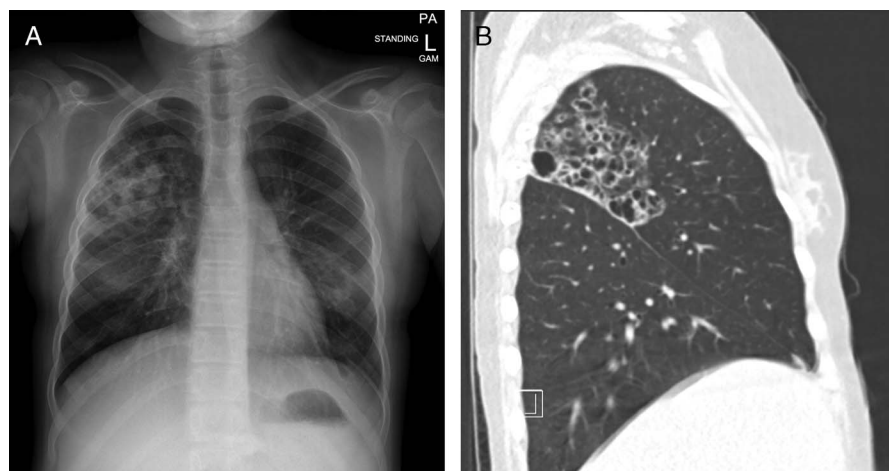


FIGURE 1. Chest radiograph (A) and chest CT (B). The chest radiograph in the PA projection demonstrates a right upper lobe (RUL) patchy opacity. A sagittal projection from the CT scan shows RUL predominant cystic bronchiectasis in the RUL that correlates with patient's known history of cystic fibrosis.

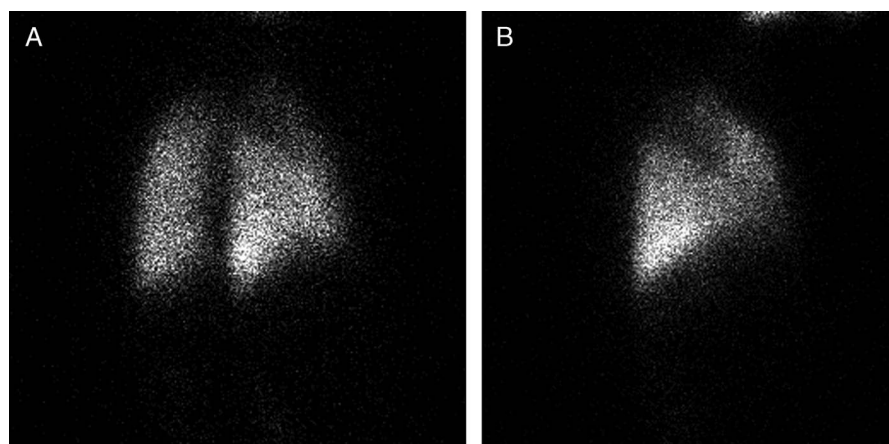


FIGURE 2. Radioaerosol scan in the right posterior oblique (A) and right lateral (B) projections. Radioaerosol imaging was performed after the inhalation of 1 mCi of aerosolized ^{99m}Tc -pyrophosphate. A defect in the RUL corresponds to the zone of bronchiectasis. The radioaerosol scan showed absent tracer deposition in the zone of bronchiectasis. Based on the radioaerosol scan, the patient was deemed to not be a candidate for aerosolized medication. Allergic bronchopulmonary aspergillosis is a fungal infection that can, in particular, affect patients with chronic lung diseases such as cystic fibrosis and asthma.¹⁻² Scintigraphy, performed with both gases and aerosols, has been used to assess lung function in patients with chronic disease.³⁻⁵ Treatment options for allergic bronchopulmonary aspergillosis include aerosolized medications.⁶⁻⁸ In this case, a radioaerosol scan was performed with an aerosolized tracer to assess the potential efficacy of antifungal tracers delivered by this means. Unfortunately, the tracer was not able to reach the region of concern. The patient was discharged on IV antibiotics and an anti-IgE monoclonal antibody.