Nontuberculous mycobacteria in cystic fibrosis and non-Cystic Fibrosis bronchiectasis

Timothy R. Aksamit
Pulmonary Disease and Critical Care Medicine
Mayo Clinic
Rochester, MN
United States of America
Aksamit.Timothy@mayo.edu

SUMMARY

Nontuberculous mycobacterial (NTM) lung disease is common in both cystic fibrosis (CF)-related and non-CF (nCF) related bronchiectasis patients. As a ubiquitous organism in soil and water, exposure to NTM organisms is universal although distribution of specific NTM species varies between different geographic areas. The reason for an observed increase in the incidences and prevalences of NTM lung disease and bronchiectasis remains elusive but does appear to be associated with increased morbidity and mortality. Infectious and inflammatory relationships manifesting as the phenotypic presentation of symptomatic NTM lung disease and bronchiectasis are complex and likely involves both specific and general host, environment, and organism interactions. Most patients with NTM lung disease have bronchiectasis although which of these two comes first may vary across different phenotypic presentations.

The diagnosis of NTM lung disease in bronchiectasis patients follows current guidelines and generally differentiates NTM lung disease from the presence of isolated NTM organisms in respiratory secretions without NTM-associated lung disease. The need for treatment in the presence of NTM lung disease must be individualized with goals of therapy and end points of treatment articulated a priori partly because treatment regimens for NTM lung disease involve multidrug regimens with substantial potential side effects and intolerances. Addressing other co-morbid diagnoses including, but not limited to, sinus disease and gastroesophageal reflux as well as instituting bronchial hygiene for bronchiectasis may be successful in managing respiratory symptoms even in the presence of NTM lung disease. Recent reviews and guidelines have assisted formulating strategies to best approach to bronchial hygiene measures and related bronchiectasis treatments. Specific treatment with macrolide monotherapy has been widely used in bronchiectasis for anti-inflammatory purposes but should be cautiously prescribed to avoid development of acquired macrolide resistant NTM pulmonary infections in those at risk. Moreover, not all effective treatments for CF bronchiectasis patients have universally been demonstrated to be effective for non-CF bronchiectasis patients.

Robust exposure to water sources may contribute to the development of NTM lung disease. The impact of mitigation of specific water sources in residential and health care settings to minimize risk of NTM exposure and presumed development of NTM lung disease for those at risk is uncertain. Universally accepted specific recommendations regarding environmental modifications are not currently available but this remains an area under active investigation. Nonetheless, tap water exposures should be minimized in the respiratory programs of patients at risk. Recent epidemiologic investigations have confirmed the transmission of select NTM isolates (*M. Abscessus* ssp. *massiliense*) in two CF outpatient clinics.

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