

Mycobacteria Tuberculosis: Ecology and Effects on Human and Animal Health

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Abstract

Non Tuberculous Mycobacteria (NTM) are a significant class of potentially pathogenic, environmentally saprophytic bacteria that are capable of causing serious Mycobacteriosis in both animals and humans. Except for infections caused by groups of the *Mycobacterium (M.) avium* complex that are soil- or water-borne, water washed, water based, or water related, the sources of infections frequently go unnoticed. *M. serendipity*; and additional NTM species, such as *M. ulcerans* infection, which is referred to as a Buruli Ulcer, and *M. marinum* infection, also known as fish tank granuloma. Sapronoses, or pathogens that spread through water, air, and soil, are all possible classifications for NTM. Due to the abundance of published data on permanent, periodic, transient, and incidental prognoses, many clinically relevant NTM species could be considered. Mycobacteriosis that have been diagnosed in humans and domesticated animals (esp. pigs) brought on by NTM species found in garden peat, potting soil, peat from peat bogs, guano from bats and birds, and other matrices used as garden fertilizers. Dust and water aerosols contain NTM, which serve as indicators of Aerogenous infection in immunosuppressed host organisms during hospitalization, speleotherapy, and recreational activities. The clinical relevance, therapy, prevention of Mycobacteriosis, epidemiology, and ecology of NTM are all discussed in this collection of articles for this special issue.

Keywords: Mycobacterium; Mycobacteriosis; Nontuberculosis; Fertilizers; Aerogenes; Speleotherapy

Introduction

This report outlines the ongoing prevalence of pulmonary and extrapulmonary Mycobacteriosis in children and adults for the years 2020 to 2022. In the United States, South Korea and China, pulmonary Mycobacteriosis is very bad for people who are more likely to get it and have other conditions. Patients with cystic fibrosis are particularly susceptible to colonization and NTM infection. The majority of extrapulmonary Mycobacteriosis has been described as infections of the skin. It has been shown that the following species of NTM exist: The treatment and outcome of *M. marinum* infections in 40 patients in the Netherlands, *M. terrae* and *M. intracellulare* Tenosynovitis following hurricane relief efforts in the USA, and *M. smegmatis* skin infection following cosmetic procedures all examples of tattoo-associated cutaneous *Mycobacterium (M.) mageritense* infections. More than 20 confirmed infected children with a median age of 6 years were observed in two *M. abscessus* outbreaks at pediatric dental clinics in Atlanta, Georgia, and Anaheim, California. A 25-year-old female with Systemic Lupus Erythematosus who was graduating from veterinary medicine school in Portugal was diagnosed with disseminated *M. sugar* infection [1, 2].

Discussion

Avoidance of non tuberculous mycobacteria exposure

There are good reasons to look hard for NTM resources for patients. It demonstrates that a comprehensive approach to the treatment and prevention of pulmonary Mycobacteriosis is the common goal in Italy. In addition to administering antibiotics, it aims to take the following four preventative measures: 1) avoiding environments that have been colonized by NTM and assessing the patients' habits and lifestyles; 2) putting into action an individualized plan for pulmonary rehabilitation as well as airway clearance techniques to enhance symptoms, exercise capacity, health related quality of life, and functional capacity for activities of daily living; (3) assessing the patient's nutritional status, intervening to enhance the patient's health related quality of life and manage gastrointestinal side effects during antimicrobial therapy

(particularly in patients who have a low BMI and a history of weight loss); and (4) managing comorbidities that influence disease outcomes, such as structural lung diseases, an evaluation of one's immune status, and psychological support [3-5].

Environmental non tuberculous mycobacteria present new dangers

Plant fertilization products containing peat or bat guano were the subject of a market survey in the Czech Republic from 2020 to 2021. We discovered a high prevalence of NTM, which tainted anywhere from 80 to 100 percent of these goods [6].

Benefits of Studying Mycobacteria's Ecology

We frequently encounter only a hazy statement that their source for humans or animals is "most likely" the environment in many known and newly described mycobacterial species. At least the element of this environment (such as water, dust, or soil) in which the species "most likely" occurs is mentioned in the "better cases." Finding comprehensive information regarding the ecology of the specific mycobacterial species that frequently causes serious diseases in animals and humans is not at all simple. Few scientific teams have conducted systematic research on the ecology of mycobacteria. Biologists, zoologists, ecologists, climatologists, pedologists, microbiologists, biostatisticians, molecular biologists, and other specialists frequently collaborate closely on these teams' research. They are able to connect these relatively "closed parallel highly specialized worlds" in this way. Through plumbing, specifically,

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humans have created ideal habitats for the NTM. The following plumbing characteristics have been specifically chosen to increase the presence of NTM: surfaces that encourage biofilm formation and adhesion; disinfection to eliminate competitors from the microbes; heating, which makes more NTM exist; and stagnation, which allows NTM to grow while preventing other pathogens from doing so. As a result, a number of findings, viewpoints, and conclusions regarding various environmental matrices and mycobacteria are presented in this Special Issue. In 1938, *M. fortuitum* was the first new species to be described. A total of sixteen members of the *M. fortuitum* group have been described since then [7].

Conclusion

Globally, the prevalence of NTM diseases has recently increased, making them a new health concern. The prevalence of NTM-related pulmonary disease is rising and the prevalence of HIV co-infection has also increased abruptly. The majority of NTMs are difficult to treat due to their resistance to the drugs used to treat TB infection in all healthcare systems, including public, private, and TB-specific hospitals. However, it is difficult to distinguish MTBC-caused diseases from NTM-caused diseases [8-10].

Acknowledgement

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Conflict of Interest

None

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