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Poster abstract submission

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Poster title
The clinical strains of Mycobacterium abscessus with the rough colony morphotype showed the increased or sustained lung bacterial burden in a mice lung infection model

Poster abstract
Background: Although Nontuberculous mycobacteria (NTM) is known as the resistance pathogens against the many antimicrobials, Mycobacterium avium complex(MAC) and Mycobacterium abscessus (MAB) are not included in the priority pathogen list of WHO. MAB has the two major morphotypes of the colony; one is the rough(R) and the other is smooth(S). The R morphotype has been reported as a factor which is associated with poor clinical outcome. There are several reports which elucidate that the R and S show different phenotypes in vitro and in vivo. However, almost all of these studies have been conducted using the laboratory strain of ATCC19977. In this study, we demonstrated that the clinical isolates of the R morphotype showed higher rate of the increased lung bacterial burden compared to the S and determined the efficacy of imipenem known as a recommended drug for MAB.
Methods: The clinical isolates in Japan were provided from Gifu University Center for Conservation of Microbial Genetic Resource through National BioResource Project. MIC was determined by the broth dilution method based on the CLSI guidelines. The infection model was constructed according to the previous report. Briefly, BALB/c mice were rendered neutropenic by cyclophosphamide and infected with the isolates. The in vivo efficacy of imipenem was determined in the strain of GTC15110.
Results: Among the 11 clinical isolates, 5 was R and 6 was S morphotype. The ratio of the strains of R/S strains was consistent with that of the previous report from Japan. The MIC ranges of the tested compounds are as follows, Clarithromycin(day11): >128, Amikacin: 4-16, Imipenem: 8-32, tigecycline: 0.25-0.5, linezolid: 1- 32 μg/mL. Considering the in vitro results, the isolates from Gifu University would be representing the population of the isolates in Japan. All of the R isolates showed increased or maintained lung bacterial burden while none of the S isolates. The clinical equivalent dose of imipenem showed small decrease in the lung bacterial burden compared to the initial but there was the trend that the larger decrease was observed at the higher dose.
Conclusion: The ratio of the strains with increased lung bacterial burden was higher for the R morphotype compared to that of the S one. This finding is thought to be consistent with the poor clinical outcome caused by the R. The efficacy of imipenem suggested that the in vivo efficacy of the candidate compounds can be evaluated in our mice infection model.

Research topic

Microbiology