Prevalence of primary ethambutol resistance in new smear-positive pulmonary TB cases

Shima Seif, Donya Malekshahian *, Mahdi Shamsi

Mycobacteriology Research Center, NRITLD, Masih Daneshvari Hospital, Shahid Beheshti University of Medical Science, Tehran, Iran

ARTICLE INFO

Article history:
Received 13 November 2014
Accepted 17 November 2014
Available online 24 December 2014

Keywords:
TB
Ethambutol
Primary resistant

ABSTRACT

Introduction: Ethambutol (ETB) is an antimycobacterial agent that is most commonly used in combination with other drugs in the treatment of tuberculosis (TB). There is evidence that the drug exerts its bacteriostatic activity by inhibition of the enzyme that is a constituent of a mycobacterial cell wall. Studies have been shown that primary (pretreatment) resistance rates of Mycobacterium tuberculosis (MTB) to ethambutol vary widely, i.e., from 1% to as high as 14%. In the present study, the aim is to investigate the percent of primary resistance among new pulmonary TB cases.

Material and methods: One hundred sixty-five (n = 165) newly positive TB patients were included in this study. The susceptibility and molecular typing were performed on all culture-positive isolates. Both nested allele-specific PCR and PCR-RLFP were used to identify ETB resistant isolates.

Results: Out of 165 newly diagnosed patients, 145 (88%) were sensitive to all drugs tested. In total, 20 drug-resistant isolates (13%) were detected by both methods. Four were MDR-TB (3%) and the remaining were mono-drug resistant (10%). Only 6 isolates showed resistance to ETB (4%).

Conclusion: The results showed a lower rate of ETB mono-drug resistance in Iran, but more extensive studies are needed to get a clearer picture. Additionally, it was found out that the molecular methods are useful tools to rapidly identify resistant isolates.

© 2015 Asian-African Society for Mycobacteriology. Published by Elsevier Ltd. All rights reserved.

* Corresponding author at: Mycobacteriology Research Center, National Research Institute of Tuberculosis and Lung Diseases (NRITLD), Shahid Beheshti University of Medical Sciences, Tehran, Iran.
E-mail address: dmalekshahian@yahoo.com (D. Malekshahian).
http://dx.doi.org/10.1016/j.ijmyco.2014.11.017
2212-5531/© 2015 Asian-African Society for Mycobacteriology. Published by Elsevier Ltd. All rights reserved.