EDITORIAL

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Fluoroquinolone resistance in multidrug-resistant tuberculosis patients

Hyun-Woo Lee and Jae-Joon Yim

Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, Seoul National University College of Medicine, Seoul, Korea

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Tuberculosis (TB) remains a major cause of morbidity and mortality. Globally, 6.4 million new cases of TB were identified in 2017. Among them, 558,000 patients developed rifampin-resistant TB, and 82% of these patients had multidrug-resistant TB (MDR-TB), defined as resistance to rifampicin and isoniazid [1]. MDR-TB poses a threat to public health as a result of the associated high treatment costs and unsatisfactory outcomes. In South Korea, the treatment success rate for MDR-TB was only 65.7% between 2011 and 2014 [2]. Patients who fail to be cured of MDR-TB have an average life expectancy of 9 years, during which time they are capable of infecting others in the community [3].

In this issue of the *Korean Journal of Internal Medicine*, Kim et al. [4] report the recent prevalence and trends regarding drug resistance of TB based on a 5-year retrospective cohort study in Busan, Ulsan, and Gyeongsangnam-do, South Korea. According to this study, the rate of MDR-TB decreased from 6.0% to 3.0% in newly diagnosed patients and from 28.6% to 24.1% in previously treated patients between 2010 and 2014. However, the rates of fluoroquinolone resistance were 26.2% among MDR-TB patients and 0.8% among non-MDR-TB patients, and these rates did not change throughout the observation period.

Fluoroquinolone inhibits DNA synthesis in bacteria by suppressing DNA gyrase, and is one of the pivotal drugs used in the treatment of MDR-TB [5]. Based on better treatment outcomes and reduced mortality with fluoroquinolone use [6], it is classified as one of three "group A" drugs, along with bedaquiline and linezolid, that are strongly recommended in the most recent World Health Organization guidelines for MDR-TB treatment [7]. Unfortunately, resistance to fluoroquinolones could emerge through mutations in the quinolone resistance-determining regions in *gyr*A and *gyr*B [8]. Fluoroquinolone resistance is clearly associated with poor treatment outcomes among MDR-TB patients [9]. The observation that a considerable proportion of MDR-TB patients have fluoroquinolone resistance and that the rates did not change in the study by Kim et al. [4] underscore the importance of adequate management of patients in terms of treatment as well as isolation during the infectious period. Furthermore, the presence of fluoroquinolone resistance among TB patients without MDR suggests that the active adoption of antibiotic stewardship in the community is urgently required.

Although Kim et al. [4] reported that

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Correspondence to
Jae-Joon Yim, M.D.
Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, Seoul National University College of Medicine, 101 Daehak-ro, Jongno-gu, Seoul 03080, Korea
Tel: +82-2-2072-2059
Fax: +82-2-762-9662
E-mail: yimjj@snu.ac.kr

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the rates of fluoroquinolone resistance did not change amozng 378 MDR-TB patients diagnosed between 2010 and 2014, the analysis based on nationwide notification data, including 5,192 patients, revealed a decrease in fluoroquinolone resistance from 34.2% to 16.9% in South Korea between 2011 and 2015 [2]. Further detailed studies are required to explain the persistent rates of fluoroquinolone resistance in Busan, Ulsan, and Gyeongsangnam-do.

Conflict of interest

No potential conflict of interest relevant to this article was reported.

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