

Misuse of common antibiotic is creating resistant TB

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Use of a common antibiotic may be undercutting its utility as a first-line defense against drug-resistant tuberculosis (TB). Fluoroquinolones are the most commonly prescribed class of antibiotics in the U.S. and are used to fight a number of different infections such as sinusitis and pneumonia. They are also an effective first line of defense against TB infections that show drug resistance. New research shows, however, that widespread general use of fluoroquinolones may be creating a strain of fluoroquinolone-resistant TB.

The results are published in the August 15 issue of the American Thoracic Society's [American Journal of Respiratory and Critical Care Medicine](#).

"While fluoroquinolone resistance in TB strains has been reported since the mid 1990's, to our knowledge no one had investigated the direct causes of it," said Dr. We wanted to determine whether and to what extent clinical practices were having an effect of creating that resistance," said Rose A. Devasia, M.D., M.P.H., clinical instructor of Vanderbilt University.

To investigate the causes of the small but growing proportion of fluoroquinolone-resistant TB cases, Dr. Devasia and colleagues performed a retrospective case-control study using data from the Tennessee Department of Health. They analyzed the records of every newly diagnosed patient with culture-confirmed TB who was also enrolled in Tennessee's Medicaid program, TennCare between January

2002 and December 2006. Using the TennCare pharmacy database, they were able to obtain information on the patients' use of fluoroquinolone for the 12 months prior to their TB diagnosis. They used *M. tuberculosis* isolates taken from each patient to test for fluoroquinolone resistance in each case.

After excluding those who were not enrolled in TennCare or whose culture were either unavailable or unusable, the researchers analyzed data for 640 patients. Age, race and other demographic factors were not significantly associated with resistance, but when researchers further analyzed the data they found a linear association between previous fluoroquinolone exposure and fluoroquinolone resistance.

Overall, patients who had used fluoroquinolones within 12 months of diagnosis were almost five times as likely to have a fluoroquinolone-resistant strain of TB than those who had not used fluoroquinolones, and there was a linear association between length of fluoroquinolone use and fluoroquinolone resistance.

"Patients who had undergone shorter treatment (less than 10 days) had a relatively low rate of resistance of only 1.6 percent," said Dr. Devasia. "[But] for every additional 10 days of fluoroquinolone use, we found that patients had a 50 percent increase in the likelihood of having resistant TB. Of the 116 people who had taken fluoroquinolones, 13 percent had fluoroquinolone-resistant TB."

Interestingly, Devasia and colleagues found that fluoroquinolone resistance was highest among those who had undergone treatment more than 60 days prior to TB diagnosis. "Exposure to fluoroquinolones early in the course of disease may select for and allow a fluoroquinolone-resistant strain to predominate," explained Dr. Devasia.

John Bernardo, M.D., of Boston University School of Medicine and

Wing Wei Yew, M.B., of Grantham Hospital in Hong Kong, noted that pressure on doctors, particularly in settings such as emergency rooms, to inappropriately prescribe antibiotics may contribute to this growing problem. "For now, we all need to be more careful when considering the use of these drugs in the community setting and limit the use of prolonged or repeated courses of fluoroquinolones, or even avoid them altogether, in patients who are at risk of having active TB," they wrote in an accompanying editorial in the same issue of the journal.

"These findings underscore the importance of considering TB in people with symptoms consistent with it and to limit the use of fluoroquinolone in those patients until TB can be definitively ruled out and that repeated courses of fluoroquinolones for the same clinical symptoms may be an indication that TB is the real problem," said Dr. Devasia.

More information:

Link to original article: www.thoracic.org/sections/publications/081809devasia.pdf

Link to original editorial: www.thoracic.org/sections/publications/081509bernardo.pdf

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