As Far as Travelers’ Risk of Acquiring Resistant Intestinal Microbes Is Considered, No Antibiotics (Absorbable or Nonabsorbable) Are Safe

To the Editor—I warmly thank Drs Bradley Connor and Jay Keystone for their meritorious editorial commentary [1] on our research showing that antibiotic use predisposes travelers to colonization with extended-spectrum beta-lactamase-producing Enterobacteriaceae (ESBL-PE) [2]. They cogitate about fundamental problems associated with refraining from antibiotics for travelers’ diarrhea (TD), listing potential alternative approaches. Acknowledging their valuable discussion on the whole, I was, however, concerned about one proposition—chemoprophylaxis with nonabsorbable antibiotics as an alternative—which essentially contradicts our purport, caution with antibiotics.

Although attacking the pathogen, antimicrobials also kill innocent bystanders, members of microbiota providing colonization resistance against invaders [3, 4]. Disrupting this barrier within the gut, antibiotics—absorbable or not—make space for newcomers. Rifaximin, a non-absorbable antimicrobial used, for example, for TD, has a broad-spectrum in vitro activity against aerobic and anaerobic, Gram-positive and -negative bacteria [5–8]. From our present perspective, the broader the spectrum, the greater the damage. Although possibly less efficient than fluoroquinolones and azithromycin in selecting multidrug-resistant microbes [8], rifaximin ultimately functions like any antimicrobial: it opens a door to local newcomers. When taken in an environment with a high prevalence of (multi-) resistant intestinal bacteria plus poor hygiene, the newcomers inevitably also include resistant bacteria. Therefore, with respect to colonization, nonabsorbables are not safe for travelers, either; and prophylactic antimicrobials against TD would, indeed, be the last alternative, putting anyone involved at an unnecessary risk.

I also wish to comment on one point presented, not in the editorial, but in professional online discussions triggered by our study. I agree with the view that travelers’ antibiotics probably do not contribute greatly to the total increase in the resistance, representing a minor proportion of the antimicrobials consumed in developing countries. Here, the central point seems to be missed: what travelers do is facilitate the spread of resistant bacteria to low-prevalence countries. With around 300 million annual visits to (sub)tropical regions [9], travelers’ role is obvious. In our data, 67% had TD; ESBL-PE was contracted by 11% of healthy travelers (TD–AB–), 21% of those with TD not using antimicrobials (TD+AB–), and 37% with TD using antimicrobials (TD+AB+) [2]. Applying these figures to the total of travelers, and hypothesizing that nobody took antibiotics for TD, 300 million annual travelers would make 53 million ESBL carriers. If antibiotics were used in all TD cases, the count would be 85 million: 30 million extra carriers returning to low-prevalence regions—and still more, if all travelers took antibiotics as chemoprophylaxis. Even with these rough figures the result is unignorable. By advising travelers, we can protect them from colonization and potential infections with resistant bacteria and significantly reduce the numbers of carriers ending up in our countries.

The resistance problem, although primarily to be tackled in developing regions, is incontestantly global. Besides supporting the struggle in high-risk regions, we in developed countries have a responsibility to fight the global spread—and the right to protect our countries and hospitals. Travel medicine practitioners not wishing their clients to import resistant bacteria should advise them against antibiotics for mild/moderate TD.

Note

Potential conflict of interest. Author certifies no potential conflicts of interest.

The author has submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

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