Nocardia cyriaciigeorgica—an Established Rather than an Emerging Pathogen

In their recent report, Schlaberg et al. declare *Nocardia cyriaciigeorgica* to be an “emerging pathogen” (3). However, no evidence is provided to support this claim. They refer to the review by Millar and Moore (2) for a definition of “an emerging pathogenic entity” but do not specify into which of the categories of emerging and reemerging pathogens distinguished by these authors they would place *N. cyriaciigeorgica*. The only possibly applicable category would seem to be that of “an increase in reporting of novel pathogens as a result of improved identification and diagnosis such as those based on molecular techniques.” The key word here, however, is “novel,” and in a recent report also cited by Schlaberg et al., organisms previously described as members of *Nocardia asteroides* drug pattern VI were demonstrated by DNA-DNA hybridization to belong to the species *N. cyriaciigeorgica* (1). In that publication, it was explicitly stated that *N. cyriaciigeorgica* “is not a ‘new’ organism or an ‘emerging’ pathogen; rather, it is a newly named but long-recognized agent of human disease.” In the initial report describing six different “drug patterns” of *N. asteroides* (plus an additional “miscellaneous” group which included the *N. asteroides* type strain [ATCC 19247T]) (4), *N. asteroides* drug pattern type VI was recognized as the most common of the clinical nocardial isolates studied. Therefore, *N. cyriaciigeorgica* is not “novel” and we are not aware of any data suggesting that its incidence is increasing.

Schlaberg et al. introduce additional confusion by referring to the “*N. asteroides* drug pattern VI type strain ATCC 14759T.” This strain should be referred to as a “reference strain,” not a type strain. Type strains can only be designated for species named and described according to the accepted nomenclatural rules, and “*N. asteroides* drug pattern type VI” is not such a name. The type strain for the species to which the organism “*N. asteroides* drug pattern type VI” belongs is *N. asteroides* DSM 44484T.

Our concerns may seem trivial to many. But the taxonomy of the genus *Nocardia* (and indeed of numerous other bacterial genera) is becoming increasingly complex as more and more species are delineated, often by dividing a previously recognized species into two or more species. Increasing diligence is thus required to assure that whatever clinically or otherwise useful information has been accumulated continues to be associated with the appropriate taxonomic entity.

**REFERENCES**


**Authors’ Reply**

We are grateful for the opportunity to respond to the letter by Witebsky et al. commenting on our recent publication (1). They note that in our paper we refer to strain ATCC 14759 as the “type” strain for the *N. asteroides* complex drug pattern type VI (hereafter referred to as pattern VI) classification, when in fact it is simply a reference strain for isolates with a pattern VI antimicrobial susceptibility pattern. It is true that the pattern VI strain has not been recognized as a “type” strain by the international bodies which establish such rules (4). Nor is it denoted as a “type” strain in the ATCC catalogue (www.atcc.org), although as of this writing it remains listed as “Nocardia asteroides.” The difference between a “type” strain and a reference strain is most definitely an important distinction. As people come to accept the assimilation of the pattern VI designation into *N. cyriaciigeorgica*, we hope this error will have little impact in the long run.

Witebsky et al. have also taken exception to our characterization of *N. cyriaciigeorgica* as an emerging pathogen. We chose to refer to this pathogen as emerging by following suggestions cited in a recent review by Millar and Moore in which many categories of emerging pathogens are described (2). An important take-home message of Millar and Moore’s review is that the term “emerging pathogen” has evolved and expanded beyond its original limited definition. Indeed, we prefer a broader interpretation of “emerging pathogen” to also include those agents that (i) are known to exist elsewhere in the world but which are causing disease in a new locale (i.e., the United States in this case) and (ii) may have been a cause of disease for some time but that we are only now beginning to recognize and distinguish. We agree with Witebsky et al. that *N. cyriaciigeorgica* is not a novel pathogen, as it has been described as a cause of disease in many other countries. However, we do consider it an emerging pathogen in the United States for the following further reasons. First, *N. cyriaciigeorgica* has yet to be definitively proven to encompass all pattern VI strains. Indeed, to the best of our knowledge, a comparative evaluation of the two by a combined molecular and phenotypic approach has not been done using a critical sample size of strains. Second, *N. cyriaciigeorgica* remains to become established and distin-
guished from N. asteroides within the collective consciousness of the North American medical establishment. By these criteria, we therefore feel that we are justified in characterizing N. cyriacigeorgica, for the time being, as emergent in the United States.

Lastly, we are in agreement that a correct taxonomical delineation of N. cyriacigeorgica/pattern VI strains is an important intellectual and epidemiological endeavor with real clinical implications, especially given that a correct nocardial species level identification can help guide the choice of treatment and predict patient outcome. Rather than introducing further confusion, our combined publications (1, 3) go far to clarify the taxonomy of N. cyriacigeorgica and finger a species that is (probably) a major cause of serious nocardiosis in the United States.

REFERENCES


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