

reasons for the heterogeneity of disease distribution in Ningxia to better prepare for future echinococcosis control strategies throughout the region.

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Mycobacterium neoaurum Contamination

To the Editor: In reviewing "Rapidly Progressive Dementia due to *Mycobacterium neoaurum* Meningoencephalitis," by Heckman et al. (1), I found, contrary to the authors' conclusion, that *M. neoaurum* was more likely a contaminant than a cause. First, within the granulomatous brain lesions, the strongest evidence for the authors' conclusion, no acid-fast bacilli were isolated or identified on special stains; thus, the Koch postulates were not satisfied. Rather, the lesions were likely rheumatoid nodules. Longstanding rheumatoid arthritis commonly causes

granulomalike rheumatoid nodules. I did a PubMed search using "rheumatoid nodule in the brain" and 7 articles were found (2,3). A "rheumatoid endarteritis" search found 25 articles. Heckman et al. failed to exclude or discuss this possibility.

Second, *M. neoaurum* is a rare environmental mycobacterium that grows in ≤ 2 days on sheep blood agar and is not difficult to culture. As the authors stated, there have been 8 reports of this organism, 7 isolated from blood and 1 from urine. The blood isolates were associated with either central venous catheter or intravenous drug use. Thus, *M. neoaurum* is of low virulence and unlikely to cause spontaneous infection in tissue unless inoculated accidentally, perhaps. Third, polymerase chain reaction (PCR) is exquisitely sensitive and prone to contamination. The problem is worse when bacterial DNA is amplified by using highly conserved primers. The PCR reagents, from the Taq polymerase (of bacterial origin) to water, contain sufficient, despite minute quantity, bacterial DNA to be amplified (4). Although direct sequencing of the amplicon is often blurry because of its low quantity and mixed content, when cloned, each amplicon may be ligated to the vector and proliferates and gets sequenced later.

Therefore, I believe the presence of *M. neoaurum* DNA, not the organism itself, represented contamination. Generally, drawing cause-disease conclusion based on PCR sequencing needs vigilance to satisfy the modified Koch postulates (5).

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In Response: In response to our report on a case of rapidly progressive dementia (1,2), Dr. Han argues that *Mycobacterium neoaurum* was "more likely a contaminant than the cause" and that the actual cause of death was most likely rheumatoid pachymeningitis. Dr. Han bases his argument on the absence of positive acid-fast stains or mycobacterial cultures and his assessments that the identification of *M. neoaurum* DNA was due to contamination and that the pathologic findings represented rheumatoid nodules.

The inability to stain or culture an organism in this case is not unusual, as paucibacillary mycobacterial infections, such as tuberculous lymphadenitis and leprosy, are common (3,4). Though the possibility is not inconceivable, environmental contamination is unlikely, because tissue samples were positive with *M. neoaurum*-specific primers, whereas controls containing identical reagents but no tissue were not.

Dr. Han expresses a valid concern that rheumatoid pachymeningitis was not given due consideration.

Rheumatoid pachymeningitis is a rare complication of rheumatoid arthritis, in which patients may exhibit headache, cranial neuropathies, focal deficits, seizures, or cognitive dysfunction (5,6). Rheumatoid pachymeningitis usually, but not exclusively, occurs in patients with long-standing rheumatoid arthritis characterized by erosive disease and extra-articular manifestations, although the systemic disease may be quiescent when neurologic complications arise. Cerebrospinal fluid analysis is generally non-specific. Magnetic resonance imaging may show prominent meningeal enhancement. Pathologic features may include vasculitis, rheumatoid nodules, and meningeal inflammation, with the latter 2 features being most common (5). The dura may demonstrate inflammation with fibrinoid necrosis (6). We reviewed the pathologic specimens of this case and confirmed the presence of abundant giant cells, endarteritis proliferans, and, most notably, extensive caseation necrosis typical of mycobacterial infection. We found no evidence of rheumatoid nodules, dural inflammation, or fibrinoid necrosis.

Though this case does not satisfy Koch postulates, neither do most novel infectious diseases. Substantial international efforts were required to satisfy the postulates in the case of SARS (7). In this case, the identification of DNA from a "rare environmental mycobacterium" in a patient with overwhelming pathologic evidence of mycobacterial infection provides strong, though not foolproof, evidence of a possible causal role.

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Yersinia pestis Genotyping

To the Editor: Drancourt et al. (1) report the development of an original genotyping system for *Yersinia pestis* based on intergenic spacer sequencing. However, the approach appears to rely upon the characterization of polymorphisms due to tandem repeat variation. Eight spacers are used in the report, 7 of which contain tandem repeats, and the sequence variability used to produce the typing data and