Tuberculosis in contacts need not indicate disease transmission

U R Dahle, S Nordtvedt, B A Winje, T Mannsaaker, E Heldal, P Sandven, H M S Grewal, D A Caugant


Background: Traditional contact investment is an important tool for controlling tuberculosis. It may also help to indicate drug susceptibility patterns when Mycobacterium tuberculosis cultures are not available. Such investigations often underestimate the degree of transmission found by genotyping, but overestimation may also occur. This report is the result of a routine successive DNA restriction fragment length polymorphism (RFLP) analysis of M tuberculosis isolated in Norway.

Method: Fifteen immigrants belonging to the same community were notified with tuberculosis during February to September 2003. The mycobacterial isolates were analysed by RFLP.

Results: All 15 patients had social contact with each other and 13 belonged to the same church community. A total of 14 cultures were positive for M tuberculosis. Among these isolates, six different genotypes were found. Five patients had not acquired the infection from the putative source.

Conclusions: Reactivation of tuberculosis may occur in contacts during the development of an outbreak. In such situations, traditional contact investigations may overestimate the rate of transmission found by genotyping of M tuberculosis. When cultures are unavailable and presumed drug susceptibility patterns are based on that of contacts, such overestimation may lead to incorrect treatment of a patient. Contact investigations must be combined with genotyping of M tuberculosis to conclude how tuberculosis is transmitted. This is especially important in persons with several risk factors for infection.

DISCUSSION

This report shows that simultaneous reactivation may occur in contacts during an outbreak in a community of people originating from high incidence countries. The assumed transmission link to the index case is especially important when presuming drug susceptibility patterns in culture negative cases. In this report 15 persons in a community were notified with tuberculosis during a period of 6 months. Based on contact investigations it was reasonable to suspect that an outbreak was ongoing. It was unexpected that six different genotypes of M tuberculosis were found among these persons. The study included 15 patients and generalisations are difficult to make. It was noticed, however, that genotyping of M tuberculosis confirmed the assumed transmission links within the family and for the included children. This
was not the case for all persons of more distant contact, including a landlord and his tenant. The observation that five of 13 contacts did not acquire their infection from the putative source does not invalidate the usefulness of contact investigation as a public health intervention. It emphasises, however, that traditional contact tracing needs confirmation by genotyping before transmission patterns of *M tuberculosis* can be concluded. This is also the case when contact exists, especially between patients with several risk factors for infection.

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Competing interests: URD is a scientist working with genotyping of *Mycobacterium tuberculosis*. 

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