Molecular epidemiology in Chile: First confirmed study of cross-contamination of *Mycobacterium tuberculosis* through MIRU-VNTR15 in a regional laboratory

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Tuberculosis is one of the main causes of mortality of infectious disease in the world. Chile is considered a low incidence country and maintains an active surveillance through the National Tuberculosis Control Program (NTCP). The tuberculosis diagnosis in clinical laboratories requires qualified equipment and personnel in microbiology techniques. The increase of performed samples, in certain periods of time, might exceed the capacity of some laboratories, added to, due to bad microbiological practices, may produce false positive results by cross-contamination cases. This study details the confirmation process of a cross-contamination case detected in a regional laboratory in Chile. A group of 31 strains identified as *Mycobacterium tuberculosis* by line probe assay (LPA), from patients' samples with negative baciloscopy and positive culture, which had a low count of colonies, were studied. Those samples were processed in the same period by the same operator in a regional laboratory. The study included cultures with (+) to (+++) bacilloscopic results, since they could correspond to a contamination source. The suspicious strains were sent to the Chilean Tuberculosis Reference Laboratory and analyzed by MIRU-VNTR15. The MIRU-VNTR15 assay showed 4 different genetic patterns among the 31 strains. Two pairs of patients were related to each other, while the rest of them had not epidemiological connection. MIRU-types results, including the patients' epidemiological backgrounds analysis, allowed the first confirmation case of cross-contamination in the country. A direct supervision to the regional laboratory was needed to train and implement corrective actions to the laboratory staff. In this way, the molecular and epidemiological analysis as well as the direct supervision enabled the definition and implementation of a surveillance strategy to detect an early, suspicious, cross-contamination case in the country, furthermore determine the follow-up actions to the clinic and epidemiological control of the involved patients.

Speaker Biography

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