

Prevalence of environmental *Burkholderiapseudomallei* in Sri Lanka

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Introduction

During the last decade, 78% of all recorded melioidosis cases throughout Sri Lanka were detected in the years between 2014 and 2016. A growing awareness of the disease and improvements in diagnosis have presumably led to this remarkable increase. In contrast, our knowledge on the environmental distribution of *Burkholderiapseudomallei* and the preferred habitats of the pathogen in Sri Lanka is still limited. Therefore, this study aimed at identifying the environmental prevalence of *B. pseudomallei* in various parts of Sri Lanka using a previously established quantitative molecular screening approach.

Methods

In February 2016, we performed a soil surveillance study including four sites known for their close proximity to diagnosed cases of melioidosis in the North Western Province, the Central Province and the Eastern Province. In December 2016, we extended our surveillance screening to locations throughout the whole country. We included sites of different soil types and cultivated land, e.g. grassland, dry rice fields, wet rice fields, garden soil and tea plantations in North, South, West and Central Sri Lanka. Overall, 249 subsurface soil samples from about 10cm and samples from about 30cm depth were collected, transferred to Austria and subjected to a molecular screening using a quantitative real time PCR with the *B. pseudomallei*-specific TTSS1 gene as the target.

Results

More than 68% of all samples were *B. pseudomallei*-positive, with individual samples displaying a burden of up to 106 genome equivalents per gram of soil. Positivity varied significantly between and within the different sites. Attempts to isolate *B. pseudomallei* in culture in order to analyze the phylogenetic relationship of putative strains compared to clinical strains are ongoing.

Discussion and Conclusions

Our results indicate that *B. pseudomallei* is widely distributed throughout the country. In future, we plan further, extended environmental sampling to unravel the national prevalence of the pathogen in soil and other potential environmental habitats. A thorough knowledge about the

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ecological factors influencing the lasting establishment of *B. pseudomallei* will be important for any future preventive measures.