

TITLE: AN OUTBREAK OF *Burkholderia ambifaria* IN COVID-19 PATIENTS RELATED TO A SINK CONTAMINATION WITH A COMMON ENVIRONMENTAL ISOLATE

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ABSTRACT

Burkholderia ambifaria is a member of *Burkholderia cepacia* Complex (BCC) which consists of opportunistic Gram-negative pathogen, naturally occurring in soil and water. There is scarce information about health risks of less common species of the BCC, such as *B. ambifaria*, and the specific identification can be important for the clinical therapy, and investigation and management of outbreaks. In 2021, a possible outbreak of *B. cepacia* complex occurred in COVID-19 patients in a hospital and the isolates were referred to Instituto Adolfo Lutz (IAL) for epidemiological typing. This study was conducted to characterize the isolates (from clinical and environmental samples) through phenotypic and molecular analysis. A total of 24 patients admitted to intensive care units (21 with COVID-19) presented clinical manifestations of pyrogenic reactions but only four isolates recovered from bloodstream infection were available for molecular testing. One additional isolate recovered from the hand washing sink was also included in the analysis. Isolates were initially identified as *B. cepacia* Complex by the Vitek system in the hospital, and sequencing of a 1,040pb fragment of *B. cepacia* rpoB (BCR) gene definitely identified the isolates as *B. ambifaria*. For epidemiological typing, isolates were submitted to pulsed-field gel electrophoresis (PFGE) and analysis in BioNumerics software. All the five isolates (four from patients and one from the environmental source) presented the same pulsotype (100% similarity), indicating that the sink could be the likely contamination source in this outbreak. After implementation of measures as: cleaning and disinfection of the faucet, increasing the frequency of water reservoirs cleaning, placing an acrylic barrier between the hand washing sink and the nursing station bench, no more cases were identified in the hospital. During the COVID-19 pandemic, many adverse and unusual situations contributed to the occurrence and the increase in health-care acquired infections caused by opportunistic pathogens. Therefore, accurate bacterial identification with establishment of the contamination source is fundamental to manage and control the outbreak, and to prevent new ones.

Keywords: *Burkholderia ambifaria*; *Burkholderia cepacia* complex; identification; PFGE; rpoB.