AMERICAN SOCIETY FOR MICROBIOLOGY | Journal of Clinical Microbiology

LETTER TO THE EDITOR

Is One Colony Enough?

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Carbapenem-resistant enterobacteriaceae (CRE) have emerged as important health care-associated pathogens that cause significant morbidity and mortality (1). CRE with carbapenemase production (CP-CRE) possess a more stable and transferable resistance mechanism. Detection of CP-CRE is performed by inoculation of a rectal swab tip on CHROMagar *Klebsiella pneumoniae* carbapenemase (KPC) and further culturing of a single isolated colony from plates exhibiting growth. Detection of CP is performed either by phenotypic methods (modified Hodge test or carbapenem hydrolysis tests) or by molecular methods (PCR for detection of genes with CP) (2).

We report five patients that, upon rectal screening in 2015, demonstrated growth of carbapenem-resistant *K. pneumoniae*. A carbapenem hydrolysis test performed using one colony from a single isolate grown on each plate was found positive in all 5 patients; however, a PCR test for carbapenemase-producing genes performed on another colony from each plate provided negative results. For the purpose of clarifying the discrepancies between the results and in light of reports of false-positive hydrolysis results from the literature, we examined 5 different single isolated colonies originating from each plate using both methods. Surprisingly, we found that few colonies from each patient were hydrolysis and PCR positive for carbapenemase-producing genes (3 patients for KPC and 2 patients for OXA 48), while other colonies originating from the same plates were found negative by both methods. All samples were sent to the central reference microbiology laboratory for confirmation, where the same results were obtained.

These findings raise the reasonable possibility that a single patient might harbor strains of carbapenemase-producing and carbapenemase-non-producing enterobacteriaceae from same species, emphasizing the complexity and difficulty of devising a reliable method for detection of CP-CRE from a single isolated colony. A recent paper reviewed the problems in detection of carbapenemase-producing CRE and concluded that an ideal and universal method is not available; however, the issue of potential errors caused by sampling of only one colony was not discussed (3). We raise the issue of the need to determine how many colonies should be sampled in order to determine the real state of carbapenemase production.

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Accepted manuscript posted online 4 May 2016

Citation Peretz A, Pastukh N, Nitzan O. 2016. Is one colony enough? J Clin Microbiol 54:1925. doi:10.1128/JCM.00689-16.

Editor: A. B. Onderdonk, Brigham and Women's Hospital

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