Microbiology

The Agreement Analysis Between MALDI-TOF and Two Traditional Methods to Identify the Microorganisms

Li Qian, MD, MLS(ASCP)CM;1 Tracy Camara, MBA, MT(ASCP)SM;2 Salah Uddin;1 Samuel Gasson1;1 Auburn University at Montgomery, Montgomery, AL, 2Baptist Medical Center South, Montgomery, AL

Objectives: Matrix-assisted laser desorption ionization time-of-flight mass spectrometry (MALDI-TOF) is a cost-effective, fast, and accurate new method for the identification of the microorganisms. The purpose of this study was to determine the agreement between MALDI-TOF and two traditional methods to identify the microorganisms.

Methods: A total of 154 clinical specimens were collected by a hospital from January to April, 2016. All specimens, including 65 Gram-positive bacteria, 42 Gram-negative bacteria, 25 anaerobic organisms, and 22 yeasts, were simultaneously identified by Microflex LT MALDI-TOF (Bruker Diagnostics, Germany) and MicroScan Walkaway 96 Plus (Siemens, Germany) or RapID ANA II Panel (Thermo Scientific, UK). For MALDI-TOF, a small amount of the sample mixed with a matrix compound was placed in a chamber. Then the mass-to-charge was determined by its “time of flight.” One traditional method was the MicroScan using rapid and conventional panels from fresh cultures for microbial identification. The other method was the RapID ANA II system, based on the microbial degradation of specific substrates detected by various indicator systems. Kappa values were used to assess the strength of agreement between MALDI-TOF and the two traditional methods on IBM SPSS Statistics version 24 (2016).

Results: Overall, the MALDI-TOF and the two traditional methods were almost in perfect agreement at species level for all 154 samples (kappa 0.900, P < .05). Further analysis between MALDI-TOF and MicroScan on different groups of microorganisms showed that yeast had a kappa of 0.886 (P < .05), Gram-negative bacteria had a kappa of 0.883 (P < .05), and Gram-positive bacteria had a kappa of 0.839 (P < .05). Even anaerobic bacteria showed a kappa value of 0.781 (P < .05) between MALDI-TOF and RapID ANA II Panel.

Conclusion: MALDI-TOF is a reliable system to replace MicroScan 96 and RapID ANA II for identifying the microorganisms.

Mobile Phone Cultures of Healthcare Workers: A Possible Source for Nosocomial Infections

Muhammad Naveed; Allama Iqbal Medical College, Lahore, Pakistan

Materials and Method: This cross-sectional study was conducted at the pathology department of Allama Iqbal Medical College, Lahore, Pakistan, from July 2016 to January 2017. Using sterile cotton swabs, we took 209 samples from healthcare workers (HCWs) at Jinnah Hospital, Lahore, Pakistan. Each swab was first moistened with normal saline, then rotated over the surface of both sides and the keypad of the subject’s mobile phone. All swabs were cultured on blood agar, MacConkey agar, and chocolate agar using standard microbiological techniques. Organisms were identified by colonial morphology, Gram staining, catalase test, oxidase test, and complete biochemical profile.

Results: Out of 257 mobile phones, 169 (65.76 %) were colonized with bacterial isolates. Staphylococcus epidermidis followed by Staphylococcus aureus were predominantly isolated from 36.09% and 23.07% of all mobile phones, respectively. Methicillin-resistant Staphylococcus aureus and methicillin-resistant Staphylococcus epidermidis were identified in 8.74% and 3.9 % of the mobile phones, respectively. Other microbes identified were 22 Acinetobacter species (13.01%), 15 Bacillus species (8.87%), 11 Enterococcus species (6.5%), six Micrococcus species (3.5%), five Escherichia coli (2.95%), three Pseudomonas aeruginosa (1.77%), three Aspergillus species (1.77%), two Klebsiella species (1.18%), one Diphtheroids species (0.59%), and one Enterobacter aerogenes (0.59%).

Conclusion: Mobile phones usage in the hospital setting poses a risk of transmission of a variety of bacterial agents including such multidrug-resistant pathogens as methicillin-resistant S aureus. These results showed that 82.04 % of HCWs’ mobile phones were contaminated with various types of bacterial isolates. Mobile phones used by HCWs in daily practice may be a source of nosocomial infections in hospitals.

Evaluating the Utility of the Fungal Stain in the Microbiology Laboratory

Qiuping Ma, MD, PhD. Kevin Alby, PhD. Laurel Glaser, MD, PhD: Hospital of the University of Pennsylvania, Philadelphia

Objectives: Requests for fungal stain (potassium hydroxide [KOH]-calcofluor stains) for fungal detection have significantly increased in our microbiology laboratory and demand significant laboratory effort. Here we evaluate the added benefit of fungal stain in detecting the presence of fungus in specimens concurrently examined by other methods.

Methods: We calculated the positive rate of all fungal stains (n = 1,752) performed between July and September...