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Evaluation of a Micro/nanofluidic Chip Platform for the High-throughput Detection of Bacteria and their Antibiotic Resistance Genes in Post-neurosurgical Meningitis

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Highlight

1. We construct a rapid detection device (MNCP) based on Micro/nanofluidic Chip technology.
2. We evaluate this device for bacterial identification from CSF-positive culture broth.
3. We compare the drug-resistant phenotypes and genotypes of bacteria detected from this device from CSF-positive culture broth.
4. With many merits, MNCP will probably extend the conventional culture-based standard diagnostics in clinical microbiology laboratory.

Abstract

Post-neurosurgical meningitis (PNM) is one of the most severe hospital-acquired infections (HAI) worldwide, and a large number of pathogens, especially those possessing multi-resistance genes, are related to these infections. Existing methods for detecting bacteria and measuring their response to antibiotics lack sensitivity and stability, and laboratory-based detection methods are inconvenient, which require at least 24 h to complete. Rapid identification of bacteria and the determination of their susceptibility to antibiotics are urgently needed, in order to combat the emergence of multi-resistant

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