A case of Providencia rettgeri sepsis biochemically misidentified as *Escherichia coli*

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**Introduction:** Automated identification systems that use biochemical reactions are known to accurately identify Enterobacteriaceae species. However, the accurate identification of some Enterobacteriaceae by the automated identification systems may be problematic because of their inconsistent biochemical profiles. We report the case of P. rettgeri misidentified as E. coli with VITEK 2 system from patients with sepsis.

**Case Report:** A 77-year-old female admitted with drowsy mental status. Two sets of blood cultures were obtained before administration of antibiotics. After 24-hour incubation of blood culture bottles, gram negative rods were detected, subculture showed non-hemolytic grayish colonies on blood agar and colorless colonies on MacConkey agar. The VITEK 2 Gram-negative (GN) identification card was used to identify the strain. The VITEK 2 system identified this strain as E. coli with an ambiguous confidence level. In addition, MALDI-TOF MS was conducted and we could obtain result of P. rettgeri. The sequence analysis of 16S rRNA gene confirmed P. rettgeri.

**Discussion:** In this case, two biochemical test results of the VITEK 2 GN card (negative for adonitol fermentation and citrate utilization) varied between the previously identified P. rettgeri strains. It was demonstrated that nearly 0% of P. rettgeri is negative for adonitol fermentation, whereas 95% of E. coli is negative for that. Moreover, it was demonstrated that 4-5% of P. rettgeri is negative for citrate utilization, whereas 99% of E. coli is negative for that. The infrequent negative results for adonitol fermentation and citrate utilization may mislead the GN card to misidentify P. rettgeri as E. coli. This shows that we have to be aware of the limits on the automated VITEK 2 system to identify some strains which have variable biological characteristics.

**Biography**

Soo hyun Kim is MD graduated from Hanyang university of medicine and completed his residency course at Hanyang University Hospital. He is the director of special immunology center of Seegene medical foundation in Korea.