Outbreak Investigation of Vancomycin-resistant Enterococcus faecium Healthcare-associated Bloodstream Infection in a Medical Intensive Care unit at a Medical Center in Northern Taiwan

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Enterococcus is frequently associated with healthcare-associated infection (HAI), and vancomycin-resistant enterococcal infection is increasing in Taiwan. During the retrospective analysis of HAI records in 2010, a significant increase of vancomycin-resistant E. faecium (VREf) bloodstream infection (BSI) was identified in an intensive care unit (ICU) at a medical center in northern Taiwan. Thirteen of the 14 E. faecium infection were caused by VREF. The 13 VREF were isolated from 11 patients in 9 beds. They were distributed among 10 months with less than 3 cases per month. All isolates were of different pulsotypes except that 4 isolates identified in March and April were grouped into one pulsotype B or its subtype. Analysis by a BioNumerics software identified two separate groups of VREF cases. One consisted of 7 isolates that were all recovered after June. The other contained 6 isolates identified before April with one exception found in July. One patient was found to have 3 episodes of VREF BSIs that occurred in 3 different months and with different pulsotypes. Although there was a small cluster of infection cases caused by a pulsotype-B clone in March and April, no investigations were subsequently conducted due to the fact that no additional cases were found in May. There was also no evidence of a predominant clone of VREF that was circulating among the patients. Although the major problem associated with the sudden increase of the VREF BSIs was not identified, interventions by infection control personnel had led to the significant decrease of the subsequent infection cases. Only 3 such cases were identified in the ICU in 2011. Monitor of HAI records should not only analyze the change of the case numbers among each month, but the accumulated results should also be examined. In this way, the increase of infection cases may be possibly discovered in the early stage, the effective surveillance may then be executed, and the problem be well controlled before it becomes more deteriorated.

Keywords: Vancomycin resistance, Enterococcus spp., healthcare-associated infection, genotyping

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