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Successful control of the first carbapenem-resistant *Klebsiella pneumoniae* outbreak in a Chinese hospital 2017–2019**Jiaying Zhu**

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Purpose: Carbapenem-resistant *Klebsiella pneumoniae* (CRKP) increasingly cause high-mortality outbreaks in hospitals globally. Our study aimed to investigate and control the first outbreak of CRKP in our hospital.

Methods We set up a multimodal and multidisciplinary working group on the antimicrobial stewardship (AMS) to control the outbreak. Strict infection control programs were implemented. Medical records of patients were reviewed. Resistance mechanisms, virulence genes, and serotypes were detected by PCR. Whole-genome sequencing of three CRKP isolates was used to identify carbapenem resistance and virulence. In vitro combinations antimicrobial sensitivity testing with tigecycline as the main drug were performed by microdilution checkerboard method.

Result: 31 strains were collected during the outbreak. NDM (64.5%) was the main resistance mechanism and 21 of them were ST11. Only one strain was hypermucoviscous as judged by positive string test. The serotype of the majority strains was KL22KL137 (58.6%). A novel sequence types 4564 was detected co-production of NDM-1, CTX-M-9 and mcr-1. TGC+IPM, TGC+MEM, and TGC+ATM combinations were high synergistic against 96.8 %, 87.1 %, and 90.3 % of CRKPs, respectively. With all precautions taken, the outbreak began to weaken in September 2018, returning to the previous sporadic stage.

Conclusions: The establishment of AMS workers is an effective strategy to successfully control the outbreak. A multimodal and multidisciplinary infection control strategy proved to be crucial. The emergence of this outbreak highlights the importance of continued monitoring of these isolates.

Biography

Jiaying Zhu is a postgraduate student in Shanxi Medical University, China. She won the second prize in national competitions and won scholarships many times. She has published 03 papers in reputed journals and has been serving as an outstanding students in Shanxi Medical University. She will go to China Pharmaceutical University as a PhD student in September this year.

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