

Microbial Repercussion on Hemodialysis Catheter-Related Bloodstream Infection Outcome: A 2-Year Retrospective Study: An Escape Mechanism Comment [Letter]

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Dear editor

I read with interest the article by Abd El-Hamid El-Kady.¹ I would like to add some comments in support of their finding and suggest the criteria for diagnosis of catheter-related bloodstream infection (CRBSI) and performance standards for antimicrobial susceptibility testing needs to be urgently revisited.

Looking at their Table 4 “Primary Clinical Presentations and Complications of CRBSIs in Relation to the Causative Organism” it is clear that albeit the authors have correctly applied the latest version of Criteria for Diagnosis of CRBSI (eg 2009 Infectious Diseases Society of America (IDSA) diagnostic criteria)² and have interpreted antibiotic sensitivity results as per the published criteria of the Clinical and Laboratory Standards Institute (CLSI),^{3,4} finding on the correlation between the complications of CRBSI and the causative organism are relatively remote from clinical expectations. This may suggest that these diagnostic criteria and performance standards for antimicrobial susceptibility testing are not inclusive. For instance, cell wall deficiency has been recently proposed as an escape mechanism from phage infection⁵ which has not been included in the latest versions of IDSA diagnostic criteria.

It is proposed that some bacteria may have complementary mechanisms to escape from phage attack. Furthermore, some bacteria are capable of shedding their cell wall following environmental stresses, yielding cells that temporarily lack a cell wall. In this state, the bacteria may be transiently protected against phages, because they lack the necessary entities that are required for phage binding and consequent infection. Since lack and/or deficiency of cell wall can be triggered by a range of antibiotic administration, phage escape is proposed as an undesirable repercussion⁵ that can practically limit the use of phage therapy in special settings like hemodialysis units.

These comments apply not only to the paper by Abd El-Hamid El-Kady¹ but more generally to “all” studies investigating drug resistance either in hospital setting or at home.

Considering that antibiotic resistance is a major global health problem per se, and bringing in mind the newly emerged viral infections such as the COVID-19, the critical importance of revisiting and updating current standards in the control and spread of antimicrobial resistance and secondary infections should not be underestimated.

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This might also facilitate the discovery of better preventive measures and therapeutic agents for the treatment/management of primary and secondary infections and lead to better choice of first-line medicines to avoid further antibiotic resistance.

Disclosure

The author reports no competing interests nor conflicts of interest for this communication.

References

1. Abd El-Hamid El-Kady R, Waggas D, AkL A. Microbial repercussion on hemodialysis catheter-related bloodstream infection outcome: a 2-year retrospective study. *Infect Drug Resist.* 2021;14:4067–4075. doi:10.2147/IDR.S333438
2. Mermel LA, Allon M, Bouza E, et al. Clinical practice guidelines for the diagnosis and management of intravascular catheter-related infection: 2009 Update by the Infectious Diseases Society of America. *Clin Infect Dis.* 2009;49(1):1–45.
3. Wayne PA. Performance standards for antimicrobial susceptibility testing. In: Wayne PA, editor. *CLSI Supplement M100*. Clinical and Laboratory Standards Institute; 2018.
4. Wayne PA. Performance standards for antimicrobial susceptibility testing. In: *CLSI Supplement M100*. Clinical and Laboratory Standards Institute; 2020.
5. Ongena V, Briegel A, Claessen D. Cell wall deficiency as an escape mechanism from phage infection. *Open Biol.* 2021;11(9):210199. doi:10.1098/rsob.210199

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