Alarming Pandrug Resistance (PDR), Extensive Drug Resistance (XDR), and Multidrug Resistance (MDR) Gram-Negative Bacilli

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Antibiotic resistance is alarming worldwide. Many novel antibiotics are now resistant to many gram negative bacilli. Irrational use of antibiotic is the main reason of it. Among these resistant bacteria, Paterson and Doi1 mentioned the necessity of accepted definitions for the various grades of antimicrobial resistance among gram-negative bacilli. Polymyxins are a “rediscovered” category of antimicrobial agents2 and tigecycline is also a new drug3. These two drugs are very important to the clinicians which are very much effective against highly resistant gram-negative bacteria.

It has been proposed the term “extreme drug resistance” (XDR) to signify resistance of pathogens that are gram negative to all potentially effective antibiotics4. The meaning of the already-used term “pan-resistance” is to refer to the pathogens that are specifically resistant to 7 antimicrobial agents named as cefepime, ceftazidime, imipenem, meropenem, piperacillin-tazobactam, ciprofloxacin, and levofloxacin5. The prefix “pan-” has its origin in the ancient Greek language, meaning “all” or “whole.” In this respect, the term “pan-resistance” or “pan-drug resistance” (PDR) cannot be interpreted in a sense other than signifying resistance to all antibiotics5. In this regard to the term “extreme drug resistance,” it was first used in the field of onco-hematology to designate tumor cell colonies that exhibit significantly decreased responsiveness in vitro to a studied chemotherapeutic agent. In the field of infectious diseases, “XDR” has been used to abbreviate “extensively drug resistant” Mycobacterium tuberculosis which is defined by resistance to both rifampin and isoniazid, as well as to fluoroquinolones plus an injectable agent6. Presumably, Paterson and Doi1 introduced the term “extreme drug resistance” for gram-negative bacteria to designate a wider resistance pattern than “extensive drug resistance.” In fact, apart from the term pan drug resistance, notable diversity has been observed as well in the medical literature regarding the use of the term “multidrug resistance” (MDR), which has rather arbitrarily been used to denote resistance of gram-negative pathogens to a varying number of antimicrobial agents6.

When all these issues are considered, the terms “pandrug resistance,” “extensive drug resistance,” and “multidrug resistance” should designate, respectively, resistance of a pathogen to all, resistance to all but 1 or 2, and resistance to 3 classes of antimicrobial agents3.

“Extensive drug resistance” is a better term than “extreme drug resistance” which will mitigate the confusion with the different meaning of the latter term in the context of neoplastic diseases4. In addition to that, the definitions of PDR and extensive drug resistance will retain their semantic properties in time8, without the need of introduction of new terms in cases in which more therapeutic options against highly resistant bacteria become available.


References

4. Falagas ME, Karageorgopoulos DE. Pandrug Resistance (PDR), Extensive Drug Resistance (XDR) and Multidrug...