

ANTIBIOTIC ANTAGONISM: A NEED FOR A RETHINK BEFORE PRESCRIBING ANTIBIOTIC COMBINATION

Antibiotic resistance is a big issue to be solved with multiple strategies such as development of new drug, rational use of antibiotics, and use of synergistic drugs. Emerging antibiotic resistance increases the duration of hospital stay, and overall cost of treatment along with mortality of the patients. WHO has also made antibiotic prescribing policy for physicians to deal with the issue. Anti-microbial combination therapy is a rational approach specifically in intensive care setup to prevent and overcome emerging antibiotic resistance; however they may exhibit risk of antagonistic drug interaction. It is necessary to evaluate antibiotic combinations for possible interactions prior to prescription.(1)

Antagonism occurs among combinations of bacteriostatic and bactericidal drugs. The bacteriostatic drugs antagonize the action of bactericidal antibiotics only if it is highly sensitive; because bacteriostatic drugs act on growing cells, thus inhibition of microbial growth by them may reduce the efficacy of bactericidal drugs. It defies the intention of antimicrobial therapy. Antagonism is also associated with the level of drug resistance. Stronger MDR pathogens exhibit stronger antagonistic interactions compared to the intermediate MDR strains, when protein synthesis inhibitor antibiotics are combined.(1)

Few drug combinations which can lead to antibiotic antagonism and resistance; and should be avoided are Vancomycin with Linezolid /

Clindamycin / Teico-planin, fluoroquinolones with Nitrofurantoin/ chloram-phenicol, B-lactams with Macrolide for streptococcal pneumonia, Clindamycin with Penicillin/ Cephalosporin/ Macrolides, Clarithromycin with Chloramphenicol, Amikacin with chloramphenicol in strong and intermediate MDR strains, Colistin with Vancomycin for MRSA infection and fluconazole with Amphotericin B.(2-5)

Antibiotic antagonism is often ignored by clinicians as it cannot be well appreciated in-vivo and outcome of antimicrobial agents depends on multiple factors. Antibiotic antagonism would be a worthwhile concern to analyse and taken care of while prescribing, as it is likely to contribute inappropriate and erroneous use of antimicrobial combinations.

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