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Chloramphenicol-florfenicol resistance (*cfr*) gene and methicillin resistant *Staphylococcus aureus*

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To the editor,

The methicillin resistant *Staphylococcus aureus* (MRSA) becomes an important problem in clinical microbiology. At present, this kind of bacteria causes infections worldwide and the use of antimicrobial management is usually difficult[1]. The important problem is the loss of effectiveness of vancomycin against MRSA, which resulting in the requirement of new antibacterial drug[2]. Due to the increased resistance to vancomycin, MRSA is presently accepted for its harmful of causing the pandemic of multidrug resistant bacterial infections[3]. Using vancomycin at standard dose is presently relating with clinical failures and adjustment for higher dosage is usually difficult due to unwanted renal toxicity[3].

Apart from vancomycin, linezolid is another antibacterial drug that proposed for its present effectiveness against MRSA. Linezolid is the drug of choice for vancomycin resistant MRSA. This drug is widely used for many infections including pneumonia, soft-tissue infections, endocarditis and osteomyelitis[4]. Pharmacologically, linezolid is classified in the group of oxazolidinone[5]. In fact, linezolid has antibacterial activity against several difficult-to-treat bacterial species including MRSA and vancomycin-resistant *Enterococci*[5]. Linezolid is considered safe and effective. However, there are some adverse effects such as gastrointestinal disturbance and headache[5]. In rare cases, myelosuppression can also be seen[5].

Although linezolid is a good drug against MRSA, some reports had mentioned for the new emerging problem of linezolid failure. There are several possible causes of linezolid failure for treatment of vancomycin resistant MRSA. The interesting case is the co-morbidity between vancomycin resistant MRSA and morbid obesity[6]. In this case, the suboptimal linezolid concentration is usually derived after administration of standard dosage of linezolid[6]. Nevertheless, the widely mentioned etiology for linezolid resistance is the genetic underlying. Resistance to linezolid is reported to be due to the presence of chloramphenicol-florfenicol resistance (*cfr*) gene[7]. The prevalence of this *cfr* gene is relating to the prevalence of linezolid resistant MRSA in each setting[7]. Pathobiologically, methylation of A2503 of 23S rRNA leads to resistance against linezolid and the *cfr* gene which locates on transmissible plasmid stimulates this process[7].

Assessment of *cfr* gene epidemiology can be very useful in clinical epidemiology. The derived data can help predict the emerging of linezolid resistant MRSA. Also, this data can be useful for preventive action planning. With the possible emerging problem on linezolid resistant MRSA, finding for new drug is the required ongoing research[8].

Conflict of interest statement

We declare that we have no conflict of interest.

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