Correspondence

Colistin: Potential for Dosage Error

To the Editor—We read with interest the article by Dalfino et al [1] that evaluated a high-dose extended-interval colistin dosage regimen for critically ill patients. Colistin is experiencing resurgence in use given the rise in multidrug-resistant infections [2]. As a result, studies that provide outcome data to support clinical dosage regimens are valuable.

From a safety perspective, the variability that exists with product nomenclature and dose needs to be highlighted [3]. Colistin is available in 2 salt forms, colistin sulfate and colistimethate sodium (CMS) [4]. Relative to the sulfate salt, CMS is safer when given parenterally [2]. On administration, CMS is hydrolyzed to colistin, which is the base component that is responsible for antibacterial activity [4]. Confusion frequently surrounds colistin dosage because of the lack of a universal dose unit (international units vs milligrams) [3, 4]. This dose variability is further complicated by differences in product labeling, which can express the dosage in terms of salt or base [3, 4].

In the United States, the dosage of all Food and Drug Administration–approved CMS for injection products is defined in terms of the colistin base and not the salt [5]. The base is to be expressed in milligrams [5]. Following a recent fatality with colistin, a National Alert Network communication reminded clinicians that colistin should only be prescribed in terms of base activity and to be cognizant of references that refer to the dose in terms of international units or milligrams of CMS [5]. A dose that is based on CMS will yield a dose that is 2.5 times higher than if calculated on the basis of the base [5].

Dalfino et al [1] used a dosage regimen based on CMS. It expressed the CMS activity in international units. A loading dose of 9 million IUs was followed by a maintenance dose of 4.5 million IUs every 12 hours. To safely prescribe this regimen in the United States, the dosage would need to be converted from CMS to milligrams of colistin base activity, using the following equivalency: 30 000 IUs = 1 mg of colistin base [6]. This would produce a loading dose of 300 mg of colistin base, followed by a maintenance dose of 150 mg of colistin base every 12 hours.

From a medication safety perspective, there is a need to standardize product labeling (milligrams vs international units; dosage using salt vs dosage using base) for colistin products [2–4]. However, until this occurs, practitioners need to be familiar with the product labeling of the colistin products that are available in their area because these may be different from the products that were used in clinical trials [2]. If differences exist, these dosages from clinical trials should be converted into dosages that are appropriate for the locally available colistin product. Equivalencies have been published in recent reports [3, 4].

Colistin remains a useful agent. However, there is the potential for dosage error given the variability in product labeling [2, 4, 5]. Before clinicians prescribe colistin, familiarity with local products is recommended.

Note

Potential conflicts of interest. Both authors: No reported conflicts.

Both authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest.

Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

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