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TITLE

OPTIMIZATION OF ANTIMICROBIAL TREATMENTS USING PHARMACODYNAMIC PARAMETERS FOR SWINE RESPIRATORY PATHOGENS UNDER FIELD CONDITIONS

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CONTENT

Introduction

Antimicrobials (AB) are essential tools to control clinical outbreaks involving swine respiratory pathogens. The selective pressure exerted by these compounds could contribute to the emergence of antimicrobial resistant (AR) bacteria that may be decreased by choosing of the most suitable AB. There are many guidelines about AB but a more practical approach is urgently needed to put these recommendations into practice. The aim of this research work is to describe a method based on pharmacodynamic determination to select the most suitable AB for swine respiratory pathogens.

Material & Methods

Samples coming from respiratory clinical cases were cultured on suitable medium cultures. After 2-3 days of culture, colonies were selected and cultured again for identification and further analysis using VITEK 2 COMPACT system. Antimicrobial susceptibility tests for MIC determination were performed for a battery of twelve AB, using the broth microdilution method, according to CLSI guideline M31-A3 with modifications to automate the procedure (Thermofisher scientific proposal). This MIC value was used to select the most suitable antimicrobial taking into account also pharmacokinetic information, clinical breakpoints and recommendations published by the European Union about the different antimicrobial categories.

Results

The MIC value for 65 Actinobacillus pleuropneumoniae (APP) and 24 Pasteurella multocida strains was determined from January to October 2018. Both bacteria were highly susceptible to many families of antimicrobials with the exception of tetracyclines for both pathogens and amoxicillin for APP. This prediction was checked with clinical information from the field after applying the treatments.

Discussion & Conclusion

These results highlight the relevance of determining pharmacodynamic parameters (MIC) to optimize antimicrobial treatments in pig medicine. The generated information can justify an antimicrobial treatment for the present and future clinical cases if this epidemiological information is linked with the sow origin.