ANTIMICROBIAL RESISTANCE IN PASTEURELLACEAE FROM CATTLE HERDS WITH ENDEMIC BRONCHOPNEUMONIA

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Introduction

Pasteurellaceae are important causes of pneumonia in cattle and antimicrobials are widely used to control these infections. To date, little information on antimicrobial resistance in Pasteurellaceae from herds with endemic, often subclinical, bronchopneumonia is available.

Aim

The objective of the present study was to determine antimicrobial susceptibility of Pasteurella multocida, Mannheimia haemolytica and Histophilus somni isolated from dairy and beef herds with endemic, often subclinical, bronchopneumonia.

Materials and methods

- Non-endoscopic broncho-alveolar lavage (BAL) samples
- February - July 2017
- 60 Flemish herds (28 dairy, 27 beef, 5 mixed)
- BAL fluid:
  - Bacterial culture
  - Antimicrobial susceptibility testing for 10 antimicrobials (ampicillin 10 µg, ceftiofur 30 µg, tetracycline 30 µg, enrofloxacin 10 µg, penicillin 10 U, florfenicol 30 µg, tyllosin 150 µg, trimethoprim 5 µg, sulfonamides 240 µg (Neosensitabs™) and tulathromycin 30 µg (BD BBL™ Sensi-Disc™)
  - CLSI standardized disk diffusion (CLSI 2013, 2015), clinical breakpoints
  - One isolate per species per farm was used for antimicrobial susceptibility testing.
- Multiresistance was defined as resistance to 2 or more of the antimicrobials tested for each pathogen.

Results

Pasteurella multocida (n=44), Mannheimia haemolytica (n=29) and Histophilus somni (n=7) were isolated from 73%, 48% and 12% of the herds, respectively. Mixed infections were present in 43.3% (26/60) of the herds mainly consisting of co-infection with P. multocida and M. haemolytica (30% of the herds, n=18) followed by co-infection of P. multocida and H. somni (8.3% of the herds, n=5). Co-infection of M. haemolytica and H. somni was present in 3.3% (n=2) of the herds and in one of the herds all of the pathogens mentioned above could be isolated. From 15% (9/60) of the herds no Pasteurellaceae could be isolated. Antimicrobial resistance levels for each pathogen and (multi)resistance on herd level are shown in figure 1 and 2.

Conclusion

Compared to the historical reference data on healthy animals1 and national monitoring data on diseased animals2 (multi)resistance in Pasteurellaceae has increased.

In Flemish herds with endemic, often subclinical, pneumonia antimicrobial resistance levels are low for P. multocida in contrast to M. haemolytica and H. somni where macrolide resistance is more common.


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