

Oral presentations

Evaluation of the adequate timing to administrate an intramuscular prophylactic penicillin G (procaine benzylpenicillin suspension) in Belgian blue cow before the caesarean section realisation

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Antibiotics (AB) are widely used to limit infectious complications after caesarean section (CS), the most common surgery in Belgian bovine veterinary practice. Most vets administer AB, mainly benzylpenicillin procaine suspension (BPG), during or after CS. However, to maximise their efficiency, AB should be administered preoperatively, and result in plasma concentrations above the minimal inhibitory concentration (MIC) throughout the surgery. We aimed to determine the time after intramuscular (IM) injection of BPG necessary to reach sufficient plasma concentrations, in order to rationalize prophylactic AB use in CS. Twelve non-pregnant Belgian blue cows received an IM injection of BPG (21000 IU/kg). Blood samples were collected in heparinized tubes from a jugular catheter at -15, 15, 30, 45, 60, 120, 240 and 480 minutes relative to injection, centrifuged and stored at -80°C. Plasma BPG concentrations were measured by high performance liquid chromatography.

Although MIC depends on the AB molecule and the germ, plasma BPG levels of 500 ng/mL are generally considered to inhibit the majority of bacteria encountered during CS. At 15 minutes after injection, plasma BPG levels were 668 ± 255 ng/ml (374 to 898 ng/ml), exceeded 500 ng/mL in 8/12 cows, and were close to 500 ng/mL in the other 4/12 cows. Plasma BPG concentrations reached a maximum of 1495 ± 629 ng/ml (919 to 2882 ng/ml) at 60 to 240 minutes after injection, and remained elevated until 480 minutes after injection (1002 ± 323 ng/ml; 667 - 1642 ng/ml).

In conclusion, IM injection of BPG 15 minutes before CS is sufficient to reach satisfactory BPG concentrations from the beginning to the end of surgery.

In vitro assessment of the bactericidal effect of nebulized silver nanoparticles on *Streptococcus equi* subsp. *zooepidemicus* and *Actinobacillus equuli* subsp. *equuli*

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Antimicrobial resistance is increasing in both human and veterinary medicine. Bacteria can be part of the etiology of respiratory disorders in horses. Antimicrobial actions of silver have been largely described and are currently used in veterinary therapeutic applications such as wound dressings. The aim of this study was to assess the *in vitro* bactericidal effects of nebulized silver nanoparticles (AgNP) on 2 common equine respiratory bacteria, *Streptococcus equi* subsp. *zooepidemicus* (*S. zooepidemicus*) and *Actinobacillus equuli* subsp. *equuli* (*A. equuli*). Minimum inhibitory concentration of AgNP was first determined. Consequently, bacterial growth inhibition was tested after instillation or nebulization of low and high concentrations of AgNP. The bacterial growth was poorly inhibited at low concentration and completely inhibited at high concentrations of instilled AgNP. The bacterial growth was completely inhibited after nebulization of low concentrations of AgNP for *A. equuli* and high concentrations of AgNP for *S. zooepidemicus*. Therefore, nebulization of AgNP could represent a new therapeutic way against bacterial respiratory disorders in horses. Further investigations are required to assess the *in vivo* potential of nebulized AgNP and its possible toxicity.