

Medical Management of Hemorrhagic Bowel Syndrome in Cattle

Joe S SMITH¹, Paul T MERKATORIS¹, Ryan M BREUER¹, Cassandra KLOSTERMANN¹,
Jonathan P MOCHEL¹

¹Sciences and Technology of Iowa State University, College of Veterinary Medicine, Lloyd Veterinary Medical Center, Iowa/USA

Key Words:

hemorrhagic bowel syndrome
lidocaine
pantoprazole
penicillin

ABSTRACT

This is a letter to the editor that has no abstract

Received : 17.02.2020
Accepted : 25.03.2020
Published Online : 30.12.2020
Article Code : 689800

Correspondence:

JS SMITH
(animal197@gmail.com)

ORCID:

JS. SMITH : 0000-0002-4288-2262
PT. MERKATORIS : 0000-0002-2718-3447
RM. BREUER : 0000-0001-9439-102X
C. KLOSTERMANN: 0000-0001-8574-6925
JP. MOCHEL : 0000-0002-0997-3111

Dear Editor of *Veterinary Journal of Mehmet Akif Ersoy University*:

We would like to applaud the review “Hemorrhagic bowel syndrome in cattle”¹ by MAMAK and BORKU in volume 4, issue 2 of the *Veterinary Journal of Mehmet Akif Ersoy University*. In the interest of scholarly outreach, our group has recently published a case report (Medical Management of Hemorrhagic Bowel Syndrome in a Beef Bull) (2), details which could provide some new, complimentary information to their review of Hemorrhagic Bowel Syndrome (HBS) in cattle.

Penicillin remains the gold standard for the treatment of clostridial disease in cattle. Surprisingly, prior to our case report we were unable to identify successful reports utilizing intravenous (IV) potassium penicillin G. IV potassium penicillin G, though expensive, offers benefits such as the ability to achieve high plasma concentrations rapidly. The ability to provide more frequent dosing would also be a benefit of this IV dosing route strategy.

In an equine model of ischemia and reperfusion, IV lidocaine was found to increase the frequency of peristaltic contractility in jejunal segments both *in vivo* and *in vitro* of the control and experimental groups.^{3,4} It is debated whether IV lidocaine improves intestinal motility by anti-inflammatory effects or direct prokinetic methods(5). In a study of horses undergoing colic surgery, there was a reduction in the development of postoperative ileus in horses that received IV lidocaine, with this group being 3.3 times more likely to survive to discharge than those that did not receive IV lidocaine (6). It is unknown

if lidocaine has a prokinetic effect in cattle, however it was well tolerated by the bull in our case, and seemed to have a temporal association with the end of ileus.

In our case report, our bull patient was also treated with the proton pump inhibitor pantoprazole due to initial concerns of abomasal ulceration. This treatment may have aided in the recovery of our case, and recent work has been shown that this drug therapy may be safe to use in hospitalized ruminants(11), as well as case reports demonstrating the use with no adverse effects in other ruminants such as yaks, and small ruminants (2,7-9). Obviously, clinicians should exercise judgement when altering the abomasal pH of patients, as research has shown in humans treated with pantoprazole have been identified as having an increased risk of developing *Clostridial difficile* infections(10).

To conclude, while our hospital (Food Animal and Camelid Hospital of Iowa State University) agrees with the conclusions of the review by Mamak and Borkü, 2019 we would also wish to highlight other additional, potential therapeutic options that our case demonstrated positive response to and may have clinical efficacy for the treatment of HBS in cattle. IV potassium penicillin therapy may be more effective than IM administration and the prokinetic effects of lidocaine in cattle may be beneficial as well for this condition. Additional research efforts are warranted on both of these treatment modalities to confirm repeatability.

Respectfully,

REFERENCES

1. Mamak N, Brk MK. Hemorrhagic bowel syndrome in cattle. *Veterinary Journal of Mehmet Akif Ersoy University* 2019;4(2):108-112.
2. Smith JS, Zhou X, Merkatoris PT, et al. Medical Management of Hemorrhagic Bowel Syndrome in a Beef Bull. *Case Reports in Veterinary Medicine* 2019;2019:1-5.
3. Guschlbauer M, Hoppe S, Geburek F, et al. In vitro effects of lidocaine on the contractility of equine jejunal smooth muscle challenged by ischaemia-reperfusion injury. *Equine Vet J* 2010;42:53-58.
4. Guschlbauer M, Feige K, Geburek F, et al. Effects of in vivo lidocaine administration at the time of ischemia and reperfusion on in vitro contractility of equine jejunal smooth muscle. *Am J Vet Res* 2011;72:1449-1455.
5. Burke M, Blikslager A. Advances in Diagnostics and Treatments in Horses with Acute Colic and Postoperative Ileus. *Vet Clin North Am Equine Pract* 2018;34:81-96.
6. Torfs S, Delesalle C, Dewulf J, et al. Risk factors for equine postoperative ileus and effectiveness of prophylactic lidocaine. *J Vet Intern Med* 2009;23:606-611.
7. Smith JS, Sheley M, Chigerwe M. Aspiration pneumonia in two Tibetan Yak bulls (*Bos grunniens*) as a complication of ketamine-xylazine-butorphanol anesthesia for recumbent castration. *J Zoo Wildl Med* 2018;49:242-246.
8. Smith J, Klostermann C, Harm T, et al. Abomasal hamartoma in a La Mancha wether. *Veterinary Record Case Reports* 2017;5:e000515.
9. Viall AK, Larios Mora A, Brewer MT, et al. What is your diagnosis? Nasal discharge from a sheep. *Vet Clin Pathol* 2018;47:503-504.
10. Trifan A, Stanciu C, Girleanu I, et al. Proton pump inhibitors therapy and risk of *Clostridium difficile* infection: Systematic review and meta-analysis. *World J Gastroenterol* 2017;23:6500-6515.
11. Smith JS, Kosusnik AR, Mochel JPM. A Retrospective Clinical Investigation of the Safety and Adverse Effects of Pantoprazole in Hospitalized Ruminants. Accepted/In press. *Frontiers in Veterinary Science*. doi: 10.3389/fvets.2020.00097