Lifetime prognosis and factors associated with survival in cases of cattle with intussusception

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Objectives
Intussusception is among the main causes of mechanical ileus in cattle, and can be induced by several disorders of intestinal motility. Given that a complete obstruction can occur, and spontaneous healing with a spasmolytic is rarely effective, a rapid surgical correction is often necessary. However, surgical intervention for intussusception is associated with a guarded prognosis, as the lifetime prognosis (survival until slaughter) is unknown, and factors associated with survival are hardly documented. Nevertheless, such information could support decision-making when confronted with affected cattle. Therefore, the first objective of this study was to determine lifetime survival of cattle with intussusception. The second objective was to identify factors associated with mortality.

Materials and methods
A retrospective cohort study was conducted based on the medical records of the Large Animal Internal Medicine clinic, Ghent University. Records between January 1, 2001 and December 31, 2022 of cattle diagnosed with intussusception were included in the primary database. Anamnesis, clinical examination, blood gas analysis, ultrasound examination, surgical records and hospitalization records were used to complete the dataset. These were matched with the national cattle identification, registration and movement database. A multivariable cox proportional hazard model was used to perform a survival analysis.

Results
A total of 249 bovines met the inclusion criteria during the 22 year study period. Of these animals, 241 could be matched with the national database and were used to conduct the survival analysis. Overall, the mortality risk was 60.1% (146/241) and the average survival time was 283.8 days (median= 4.0 days; standard deviation (SD)= 483.9; min-max= 0-2607). Mean and median survival time in slaughtered animals were 717.4 days (SD= 546.6; min-max= 98-2607) and 573.0, respectively. The mean and median survival times of animals that did not reach slaughter and died were 43.2 days (SD= 192.1; min-max 0-1490) and 0.0 days, respectively. Univariously, gender, age at admission, corticosteroid therapy before admission, pulse, pale mucosa, colic signs, dilated or tensed abdomen, hematocrit, potassium and anatomical location of the intussusception were significantly linked with mortality (P-values <0.05). The multivariable survival analysis revealed that a heartrate of >95 beats per minute (hazard risk (HR)= 1.54; 95% confidence interval [CI]= 1.08-2.19; P-value= 0.016) and male gender (HR= 1.96; 95% CI: 1.31-2.94; P-value= 0.001) resulted in an increased mortality risk. This model had a sensitivity, specificity and accuracy of 66.7%, 92.6%, 76.1, respectively.

Conclusions
This study provides an overview of short and long term prognosis of intussusception in hospitalized cattle. In general, the survival chance of cattle with intussusception is low, as the majority dies during or shortly after surgery. However, long and productive life post-surgery is definitely possible. Two possible risk factors for mortality (heart rate >95 bpm and male) were identified. These findings can be taken into account by veterinarians when facing cattle with intussusceptions.