

ORIGINAL ARTICLE

Obesity and pony breed are associated with plasma L-lactate in horses with acute gastrointestinal disease

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SUMMARY

Background: Plasma L-lactate (lactate) is widely used as a prognostic marker in horses with acute gastrointestinal disease (colic), but association with obesity is unclear. In humans, lactate is correlated with obesity and insulin resistance.

Objectives: This study aims to evaluate the association of obesity (body condition score $\geq 7/9$) and equine type (horse vs. pony) with lactate concentrations in equines presenting with colic.

Study design: A prospective observational cross-sectional study.

Methods: The study included 190 equines (74 ponies, 116 horses) admitted with colic at a referral hospital. Multivariable linear regression was used to assess the associations of body condition type (obese vs. lean), equine type (pony vs. horse), lesion type (simple obstruction vs. severe intestinal disease) and circulatory status (compromised vs. not) with lactate concentrations.

Results: The overall prevalence of obesity was 27.3%, and higher in ponies (44.6%) than horses (16.4%). The final model included body condition, equine type, lesion type, circulatory status and interaction terms between equid type and body condition type and lesion type and circulatory state. The model predicted an obese pony with a simple obstruction without circulatory compromise to have a plasma lactate of 5.8 mmol/L. The prediction for a lean horse with a severe intestinal disease and circulatory compromise is 6.94 mmol/L.

Main limitations: Limited number of obese horses and lean ponies in the study.

Conclusions: Obesity and breed are associated with lactate concentration in horses with colic. Lactate concentrations were higher in ponies than in horses with colic of similar severity and particularly elevated in obese ponies. This increase is clinically relevant when using lactate for decision-making in acute abdominal disease.

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Clinical relevance

- Plasma lactate concentrations may be higher in ponies with gastrointestinal disease compared to lean horses with the same severity of illness.
- Breed and body condition should always be considered when interpreting plasma lactate concentration, especially before making decisions regarding surgery or euthanasia.
- Ponies showed a higher prevalence of severe gastrointestinal conditions, such as strangulating intestinal lesions and enterocolitis, compared to horses.