Assessment of Acid-Base Imbalances in Horses With Atypical Myopathy

Gaby van Galen, DVM, MS, Diplomate ECEIM*; Simona Cerri, DVM, MS**; Sarah Porter, DVM, MS, PhD; Claude Saegerman, DVM, PhD; Laurence Lefere, DVM; Katja Roscher, DVM, Diplomate ECEIM; Celia Marr, BVMS, MVM, PhD, DEIM, Diplomate ECEIM; Helene Amory, DVM, PhD, Diplomate ECEIM; and Dominique M. Votion, DVM, PhD

Horses with atypical myopathy often show acid-base alterations from increased lactate and derangements in electrolytes and respiration. Authors' addresses: Equine Clinic, University Uppsala, Uppsala, Sweden (van Galen); FVM University of Liege, Liege, Belgium (Cerri, Amory, Porter, Saegerman); Equine Clinic, FVM University of Giessen, Giessen, Germany (Roscher); Rossdales and Partners, Newmarket, United Kingdom (Marr); Equine European Centre of Mont-le-Soie, Vielsalm, Belgium (Votion); Equine Clinic, FVM University Ghent, Ghent, Belgium (Lefere); e-mail: gaby@equinespecialists.eu. *Corresponding author; **Presenting author. © 2011 AAEP.

1. Introduction
Only limited descriptions on acid-base parameters in atypical myopathy (AM) are available, but they are important concerning therapy and might be prognostic indicators.

2. Materials and Methods
Case records of 34 AM cases were searched for venous blood gas analysis, electrolytes, total protein, [lactate], packed cell volume, urea, creatine kinase, and heart and respiratory rate on admission. Base excess (BE) of free water (BEfw), chloride (BEcl), total protein (BEtp) and unidentified anions (BEua), anion gap (AG), and measured strong ion difference (SIDm) were calculated. Statistical analysis compared these variables in AM cases versus 15 healthy control horses and AM survivors versus AM nonsurvivors. Relationships between acid-base variables and shock grades, respiratory rate, and CK were explored with linear regression.

3. Results
AM horses often had metabolic acidosis combined with respiratory acidosis or alkalosis, electrolyte abnormalities, and increased AG and [lactate]. They had significantly lower pH, pCO₂, HCO₃⁻, BEfw, BEua, [sodium], and [chloride], compared with controls, and significantly higher [lactate], AG, SIDm, and BEcl. Survivors had lower packed cell volume than nonsurvivors, and a discriminatory tree for
survival was developed with BEcl, urea, and heart rate. [Potassium] was positively correlated to shock and respiratory rate. Creatine kinase was negatively correlated to $\text{HCO}_3^-$ but positively to AG and urea.

4. Discussion
Hypochloremic alkalosis, hyponatremic acidosis, lactic acidosis, and respiratory alkalosis or acidosis are common in AM. These data help in assessing prognosis and refining therapy.