Two case reports on the management of chronic exertional rhabdomyolysis (ER) by rearrangement of feeding and training plans

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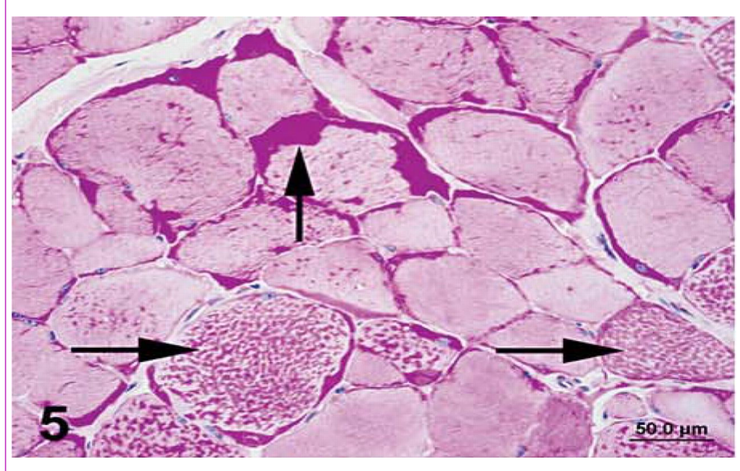
Introduction

Horses can develop chronic ER due to intrinsic/inherited dysfunction of muscle metabolism/contraction. Successful strategies to manage this condition consist of diet and exercise rearrangement.



Semimembranosus muscle biopsy from QH with PSSM. Intracytoplasmic accumulations of abnormal polysaccharide (horizontal arrows) and subsarcolemmal glycogen (vertical arrow). From A. M. Firshman et al., 2006

Case report 1

A 12-year-old Quarter Horse (QH) with chronic tying-up episodes during exercise

Case report 2

A 8 years old warm-blood horse (WB) with light stiffness-difficulties to do specific exercise such as circles, and croup and shoulder mm athrophy

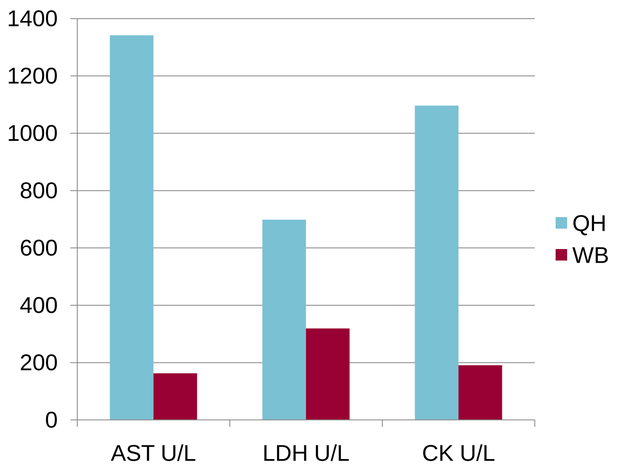
Diagnosis

Semitendineus biopsy:
PAS stain positive, intracytoplasmic/ subsarcolemmel vacuoles contain material consistent with glycogen

Analysis

Case 1 1.8 years before diagnosis

Case 2 2.5 years before diagnosis;



Muscular enzymes (UI) measured in the two years before the diagnosis for QH and WB

Diet goal

Case 1

• Calculation of the maintenance plus work requirements
•Provision of 1.5% of BW of forage (plus grass less than 2 hour day) using soaked first cut meadow hay
•Concentrate fat-fiber type (87% DM, CP% 12, CF 10%)
•Addition soya oil to provide a theoretical % of fat on the daily caloric intake of 19% based on up to 15 to 25% of DE from fat (*Geor, 2005)*

Case 2

•Calculation of the maintenance plus work requirements
•Provision of 1.5% of BW of forage (plus grass less than 2 hour day) using haylage with 50% of DM
•Concentrate fat-fiber type (87% DM, CP% 12, CF 10%)
•Addition soya oil to provide a theoretical % of fat on the daily caloric intake of 19%

Management goal

•Turn-out in dry-lot: when kept in the stable lactic acid >1 mm/L

•Gradual increase of work: 2 work session/die (lunge-walker or riding)

•No day rest

•Training with HR monitor

Outcome

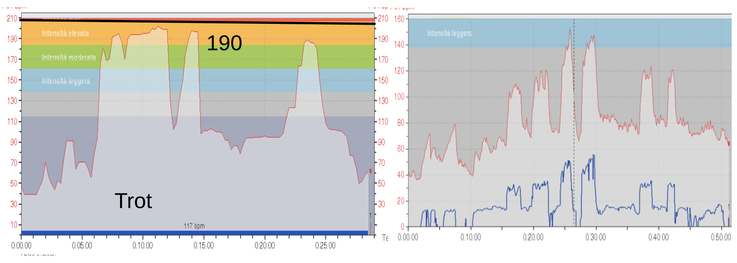
With a diet with 19% of Fat on the daily caloric intake and exercise twice daily the horses returned to competition

After 2 months

After 18 months

At the beginning the horses presented high HR for simple exercise at walk or trot.

With time a more strict relationship between HR and speed was observed



When kept in stable the lactic acid measured in blood by portable lactacidomter was >1 mmol/L; but a decrease at values < 0.8 mmol/L was observed when horses were kept in dry lot arena

Conclusions

Hr monitoring could be a very helpful technology to train horses with polysaccharide storage myopathy.

Riders learn quickly to understand the relationship HR/speed and to recognize excitation or painful conditions

Even if according to Valberg *et al* 1999, lactate per se did not appear to be responsible for the muscle cell damage, we can hypothesed the use of lactacidometer to monitor the progress of diet and exercise.

Training and diet both are important to improve muscle function with better glycogen metabolism and oxidative capacity to utilize fat

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