

Equine Metabolic Syndrome

EMS should be suspected in obese horses with regional adiposity and recurrent or chronic laminitis

Overview

Equine metabolic syndrome (EMS) is a term used to describe horses with both a metabolic and a hormonal disorder characterized by obesity, regional adiposity (fat deposits), insulin resistance, and laminitis.¹ EMS is important to the equine industry due to the high prevalence of chronic, recurrent laminitis in horses with EMS.

EMS typically affects easy keepers (i.e., metabolically efficient and can thrive on pasture alone). Horses with EMS might also be insulin-resistant. Insulin is a hormone produced by the pancreas that binds to receptors on specific cells throughout the body, resulting in glucose (sugar) uptake from the bloodstream into the stimulated cell. In horses with insulin resistance the insulin is not as effective as it should be, and glucose is not taken up as efficiently by the target cells. In response, the pancreas secretes more insulin to keep blood sugar levels within normal ranges. Thus, blood insulin concentrations are high.^{1,2}

EMS more commonly affects ponies or hardier breeds such as Morgans, Spanish Mustangs, Peruvian Pasos, and Paso Finos. The disorder often is observed in horses that are 5 to 15 years of age.^{1,2}

Clinical Signs

Horses with EMS typically present with Cushing's-like signs such as abnormal fat deposits in the neck ("cresty neck") and fat pads near the tailhead, in the sheath, close to the mammary gland, or above the eyes. Some horses have a pot-bellied appearance and can present with polydipsia and polyuria (excessive drinking and urination, respectively). Unlike Cushingoid horses, those with EMS do not usually have delayed shedding or thick, wavy haircoats.³

Typical signs of recurrent laminitis include characteristic rings on the hoof wall, white line separation, and abnormal positioning of the coffin (pedal) bone within the hoof as seen on radiographs (X rays).



EMS typically affects easy keepers—horses that are metabolically efficient and can thrive or even become obese on pasture alone.

Diagnosis

EMS should be suspected in obese horses with regional adiposity and recurrent or chronic laminitis episodes.¹ Horses suspected of suffering from EMS can be screened for insulin resistance by collecting a blood sample after fasting the horse for approximately 12 hours and measuring the glucose and insulin concentrations. Horses with abnormally high insulin concentrations, but normal glucose concentrations, are considered to have EMS.

Unfortunately, insulin and glucose testing alone does not often provide a definitive diagnosis because multiple factors can impact insulin and glucose testing, such as stress, time of day (i.e., hormone levels naturally fluctuate throughout a 24-hour period), time of year/season, when and what the horse was last fed, and the horse's normal dietary components.

Therefore, horses suspected to have EMS, but with normal insulin blood levels, are advised to undergo "dynamic testing."

The two main dynamic tests are the euglycemic insulin clamp and the combined glucose-insulin tolerance tests, or CGIT.

The euglycemic insulin clamp is currently considered by some as the gold standard for diagnosing insulin resistance. This test involves a slow, constant infusion of both insulin and glucose into the horse's bloodstream followed by a series of blood tests to calculate the amount of insulin necessary to reduce the artificially elevated blood glucose levels. Since this is neither a simple nor inexpensive test to perform or interpret, it is therefore not widely employed for diagnosing EMS.

Similarly, the CGIT involves administering both glucose and insulin intravenously to the horse. Blood glucose and insulin levels are then measured over the next several hours to determine the horse's response to administration. Both the euglycemic insulin clamp and the CGIT are typically performed at a referral center.

In considering convenience, cost, and

the horse's stress level, veterinarians commonly elect to obtain a single blood sample on the farm to measure blood glucose and insulin levels to help diagnose insulin resistance in horses with clinical signs consistent with EMS.

According to the experts in this field, glucose to insulin ratios are not useful for diagnosing insulin resistance or EMS due to the variability in the levels of each.

Treatment

Although various drugs to treat EMS are being studied, to date there is no specific treatment or cure for horses with this syndrome. Drugs typically reserved for horses with equine Cushing's disease, such as pergolide and cyproheptadine, are inappropriate for horses with EMS. Instead, the primary tools used for managing these horses include dietary changes and increased exercise.

First, it is important for owners to accept that most horses, particularly older, inactive horses, can be maintained on a forage-only diet and do not require supplementation with concentrates to maintain a healthy body weight. Owners are

encouraged to recognize a healthy body weight and to feed horses appropriately to achieve, then maintain, this weight. Horses with metabolic syndrome, particularly those with laminitis, should have only limited (or no) access to pasture.

Owners also are recommended to increase an EMS horse's exercise level. This involves daily or near-daily exercise in the form of hand walking, longeing, long-lining, driving, riding, ponying, or any combination of the above.

It might not be possible to immediately institute an exercise regimen if the horse is currently suffering from a laminitis episode. Instead, institute dietary changes, wait for the episode to resolve, then slowly increase your horse's exercise level.

Prognosis

EMS cannot be cured, but the overall health, well-being, and laminitis episodes can be improved by instituting the necessary diet and lifestyle changes described above. The most important factor impacting prognosis is laminitis and the degree of rotation or sinking of the coffin bone at the time of diagnosis.

Prevention

Since there is no specific treatment for EMS, experts recommend horse owners make every effort to minimize the chances of their horses developing the condition. This involves feeding a balanced, forage-based diet void of concentrates and molasses to maintain a healthy body condition. Do not let your horse become overweight or obese (ask your veterinarian to help determine your horse's body condition score if you are unsure). Regularly exercising your horse will also help maintain a healthy body condition and minimize the chances of developing EMS later in life. 🐾

KEY REFERENCES

1. Oke, S. "Is it Cushing's or Metabolic Syndrome?" *The Horse*, March 2010.
2. Ralston, S.; Williams, C.A. "Metabolic problems in the horse: Sorting out the diagnosis." www.esc.rutgers.edu/publications/general/fs1067.htm.
3. Multiple authors. "Equine Endocrine Disorders Discussed at AAEP." www.TheHorse.com/15560.

Further reading and free horse health e-newsletter: www.TheHorse.com/Metabolic-Syndrome

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Metabolic Support Every Step of the Way



Horses with metabolic issues may benefit from a diet including Omega-3 fatty acids to help control glucose metabolism and to help maintain normal levels of inflammation, which may be beneficial in horses that suffer from laminitis. Trace Minerals may also be beneficial to these horses as a potential defense against insulin insensitivity. Platinum Performance® Equine is a good source of these Omega-3 fatty acids and trace minerals as well as antioxidants, vitamins and more.

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Supports Healthy Levels of Blood Glucose and Insulin

For Advanced Metabolic Support

Platinum Performance® Equine

Recommended to support healthy metabolic function

Platinum Performance® Equine + Chromium Yeast

Recommended to support insulin regulation

Platinum Performance® Equine + Platinum Metabolic Support

Recommended for horses requiring advanced metabolic support



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