

Equine Medicine and Surgery

Complete Primary Care

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Henry Greenwald, DVM

Raising the Standard in

Horse Health

(206) 264-5152 (425) 222-7555

Insulin Resistance (IR) / Equine Metabolic Syndrome (EMS) - A Brief Overview

Equine Metabolic syndrome is a complex disease of the endocrine system which causes a number of abnormalities and is usually characterized by insulin resistance. Insulin is a pancreatic hormone which regulates the amount of glucose (sugar) in the blood. During insulin resistance the blood glucose level doesn't properly respond to insulin. Humans with metabolic syndrome are at greater risk of developing adult onset non-insulin dependent diabetes (type II diabetes). Equine Metabolic syndrome results from three main causes: genetics, lack of exercise and fat accumulation. Daily exercise enhances insulin's effectiveness. Excess fat actually acts as an endocrine gland secreting hormones that inhibit insulin's effectiveness. Fat may also be a source of chronic inflammation.

SYMPTOMS: Affected horses tend to be 6 to 20 years old of either sex. The problem is more commonly seen in ponies, domesticated Spanish Mustangs, Peruvian Pasos, Paso Finos, European Warmbloods, American Saddlebreds, Arabs, and Morgans. Obesity is a common sign with abnormal fat deposits at: the crest of the neck, the shoulders, high on the back, above the gluteal muscles, and in the sheath (geldings). Often called, "easy keepers", these horses have "thrifty genes" which cause them to hold fat deposits despite attempts to reduce their weight. Prevention of obesity is our best protection, but this is easier said than done. Owners of these breeds, or horses that fit this description, need to be diligent because EMS horses are prone to laminitis and founder. These hoof problems can be slow to appear and non-painful; or anywhere from a low grade lameness to crippling. Affected mares tend to be difficult breeders and show abnormal estrus behavior.

Horses at risk for EMS may not have symptoms. They may not be fat, especially those getting regular exercise. The first signs may be the farrier noticing an abnormal white line ("seedy toe") or hoof growth pattern and/or there may be abnormalities on radiographs.

DIAGNOSIS OF METABOLIC SYNDROME: Diagnosis of metabolic syndrome is based on the horse's physical characteristics and is supported by tests for high blood insulin levels and glucose intolerance. EMS has often been confused or associated with Hypothyroidism and Equine Cushing's Disease (Pituitary Pars Intermedia Dysfunction, PPID), these are separate disease conditions.

TREATMENT OF METABOLIC SYNDROME: EMS is a complex metabolic problem that is not completely understood but we can often manage the disease. Horses with EMS need to achieve and maintain a normal weight. Reduction of inappropriate fat and the hormones it secretes requires strict compliance to an appropriate diet and adequate exercise. Begin a graduated program of regular exercise. Laminitic horses should not be exercised until the laminitis has resolved. It is wise to have your hay analyzed and have an equine nutritionist or knowledgeable veterinarian formulate a weight loss diet with appropriate vitamins, minerals and anti-oxidants. Be wary of "friendly advice" from other horsemen or feed store employees.

Some General Guides to Limit Calories and Carbohydrates
(these guidelines may change as we learn more about this condition)

- Diet and exercise are the keys to managing this condition
- NO GRAIN, or high carbohydrate feeds
- NO apples, pears, molasses, wheat bran or sweet treats
- NO high fat,
- Grazing pasture can be dangerous, especially short grass, a grazing muzzle may be helpful. This is a complex area that is just beginning to be understood. Set up a consultation to review your individual situation.
- Weigh hay to ensure proper feeding - usually 1½ to 2% of body weight per day
- Soak hay in water may decrease carbs (½ - 1 hour in cold or ½ hour in hot water)
- Don't over restrict calories, especially in ponies & minis
- Feed an adequate vitamin / mineral supplement

MONITOR: Regularly monitor your horse for changes in weight and fat deposition. Learn how to Body Condition Score your horse. Use a weight tape, Body Condition Score Chart and keep a record of this information.