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Managing obesity and EMS
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Equine obesity now affects almost 50% of pleasure horses, ponies and donkeys. In man, the term ‘metabolic syndrome’ has been used to describe a collection of risk factors associated with the development of cardiovascular disease and type 2 diabetes mellitus. Defining this human syndrome was intended to improve public health by promoting recognition of, and screening for, these risk factors which include obesity, insulin resistance and dyslipidaemia. The term equine metabolic syndrome (EMS), as defined by ACVIM consensus in 2010, should also promote the awareness of, and encourage development of prevention and treatment strategies for, a commonly occurring set of risk factors which predispose Equidae to endocrinopathic (pasture-associated) laminitis. These risk factors include obesity, whether generalised (all-over) obesity or regional adiposity (e.g. creasty neck, pendulous prepuce/udder, tail-head bulge) and insulin resistance (IR). Whether ‘insulin resistance syndrome’, as once proposed, would be a more suitable term for horses and humans, has been much debated as the major underlying feature appears to be IR. However, not all outwardly obese animals are insulin resistant and neither are all insulin resistant animals obese. (We have yet to determine if normal-weight obesity [internal obesity] exists in Equidae.) Whether obesity and IR will eventually be determined to be independent risk factors remains to be seen but in the meanwhile both obesity and IR should be considered as risk factors for endocrinopathic laminitis.

In order to manage obesity and EMS, we need to be able to assess and monitor adiposity and insulin sensitivity. Body condition scoring, although a subjective appraisal of the superficial fleshiness of an animal, is at least able to separate ‘thin’, from ‘moderate/average’ from ‘fat/obese’ animals; and whether obese animals can be further subdivided into ‘L, XL, and XXL’ seems less of a worry since, once animals are overweight/obese (body condition score [BCS] ≥7/9), their risk of developing endocrinopathic laminitis is sufficiently increased to warrant intervention. Regional adiposity, especially of the neck crest region, is easily recognised and animals with a creasty neck score ≥3/5 are at increased risk of developing laminitis. As for insulin sensitivity/resistance, various tests have been suggested, some more suitable for field use and others easier to perform in the hospital setting.

The mainstay of management for overweight/obese and EMS animals is dietary restriction to promote weight loss, combined with physical exercise, both of which improve insulin sensitivity. Occasional insulin-resistant but non-outwardly-obese animals will require further work-up for the cause of the IR and careful BCS, dietary and endocrine monitoring.

Weight reduction programmes
- The owner/carer must be committed for the long-term and must be aware that there is no quick fix. A detailed history of the feeding protocol and work load should be obtained.
- Feed analysis (hay/haylage) enables more accurate calculations of future, regulated intakes.
- The readily available carbohydrate content of the feed also requires careful consideration.
- Monitor at least monthly: body mass (BM) (weightbridge or weight tapes [accurate to ±50 kg]), BCS, and girth (neck, trunk).

What to feed
- Removal from pasture (until laminitis is under control) is preferable to enable good control of food intake.
- Offer a forage (low-energy density)-based diet, ideally with nonstructural carbohydrate content <10–12% (i.e. water soluble carbohydrate content <8%). Avoid high starch/sugar diets and tit-bits which have a high glycaemic/insulinaemic index and promote hyperinsulinaemia.
- Forage analysis useful.
  - Caloric dilution by soaking hay for ~12 h can reduce its water-soluble carbohydrate content by ~50%.
  - Caloric dilution can be achieved by substitution of a part of the hay ration with oat straw (relatively indigestible fibre), but beware impaction colics and stomach ulcers.
  - To avoid over-restriction of protein/essential amino acids, a balance with protein, vitamins and minerals is usually recommended.
  - Feed little and often (if practical) to reduce boredom and extend total eating time.
  - Each portion must be weighed.
  - Divide the ration between several, doubled, small-hole haynets at different positions in the stable.
  - Manger obstacles can slow down food intake and alloy boredom for these trickle-feeders.
  - Stable toys may reduce boredom.
  - Use winter as the natural aid to weight loss: turn out as much as possible (as long as pasture is sparse); don’t rug up, consider trace-clipping; but beware sudden cold stress which may precipitate laminitic episodes.

How much to feed
Grazing horses eat around 2–2.5% of their BM as dry matter per day, so, for weight reduction, initial restriction to less than this is necessary. A ‘safe’ rate of weight loss is often advocated as 1% of BM per week. Several equine studies targeting such a rate suggest that dietary restriction can safely (without complications such as stereotypes, stomach ulcers and hyperlipaemia), be initiated at 1.25% BM as daily dry matter intake (DMI), with further restriction to 1% BM as daily DMI if weight loss is negligible after the first month.

Exercise
Exercise combined with dietary restriction will promote weight loss and improve insulin sensitivity but may be contra-indicated in some animals due to laminitis. As a guide, at least 30 min exercise at trot or canter (excluding warm-up and cool-down), and at least every other day, is suggested.

Other strategies
For laminitic animals unable to exercise and/or where weight loss is very slow despite severe dietary restriction, additional treatments may be considered: thyroid hormone supplementation or metformin.

Further reading