

Feeding the Geriatric Horse

David G. Pugh, DVM, MS, Diplomate ACT, Diplomate ACVN

Geriatrics who appear healthy and are maintaining a good body-condition score may not need dietary modification. Those experiencing weight loss or loss of body condition will need a physical examination, complete blood count, and serum clinical chemistry evaluation. These evaluations can be used to correct either physical problems (dentition) or institute feeding modifications in horses where specific medical conditions are diagnosed. Older horses with indications of kidney or liver disease should be fed with these problems in mind. Thin yet otherwise normal geriatric horses may require easy-to-digest feed-stuffs with higher dietary protein and possibly, higher energy concentrations. Author's address: 1154 Barnard Avenue, Waverly, AL 36879; e-mail: pughdag@fdah.com. © 2007 AAEP.

1. Introduction

Horses should be expected to live into their 20s, 30s, and beyond. Obviously, a health-care program designed for the horse should take into account the potential for long-term survival; if they are kept healthy and fully disease-free while young, they will have a better chance of living a longer, healthier life.¹ As horses age, attention should be placed on maintenance of body condition in the 4–6 range (on the 1–10 scale), parasite prevention, dental care, and overall general health. Many geriatric horses can be safely fed a normal maintenance ration without modification if they are able to maintain a good body condition. Chronic parasitism can potentially affect long-term digestive ability. Therefore, strict attention to parasite prevention is paramount for a long, healthy life.

2. General Geriatric Care

Whenever presented with the geriatric horse, a complete physical examination, including a thorough oral examination, should be performed. Although all manner of ill health and disease may exist, the practice of geriatric equine medicine in most in-

stances should emphasize: (1) dentistry, (2) medical problems, (3) arthritic conditions, (4) dietary modifications to accommodate existing problems, and (5) general health maintenance/husbandry. Because competition for feed, arthritis, or failing eye site may alter feed intake in the geriatric, the clinician should help the owner/caregiver insure that adequate feeding space and safe feeding areas are provided. Additionally, fresh water supplies, mineral containers/feeders, and feed bunks must be designed for adequate nutrient intake.

On the initial visit, blood should be collected for a complete blood count and serum biochemistry panel to help identify medical or metabolic conditions that may be present. Loving² has suggested that aging-horse nutrition may be similar to that of young growing horses. This is an excellent analogy, because both may require more dietary protein and energy. Body-condition loss can result from inadequate intake or digestion, dental disease or other physical conditions, metabolic disease, endocrine disease, or infectious disease. In cases of body-condition loss, underlying causes should be diagnosed and corrected. The geriatric horse may also have a

NOTES

compromised ability to digest dietary fiber.³ Feeding superior-quality feedstuffs, pre-digested feeds, or extruded feeds may aid in feed digestibility. If no other existing disease is diagnosed, diets with slightly higher protein content (12–16%) should be fed, because digestibility of protein seems to be depressed compared with younger horses.^{3–5} Lysine and threonine are reported to be limiting amino acids in typical horse diets;⁶ better-quality feedstuffs containing these and other potentially deficient amino acids should be included in the diet.⁷ Diets where the predominant non-forage source of protein is soybean meal may be adequate.² Including alfalfa in the diet might be beneficial in limiting muscle mass/weight loss.⁷ Clinical chemistries should suggest both normal hepatic and renal function before the protein portion of the diet is increased.⁸ The addition of 1–2 cups of vegetable oil or rice bran will greatly improve maintenance of optimum body condition. Vegetable oil added to either beet pulp or forages pellets is usually a readily acceptable feed for horses. Regardless of how depressed body-condition scores are addressed, concentrate feeding should not be in excess of 0.5% of the horse's body weight per feeding. Providing a salt-mineral (trace mineral salt with 10–12% Ca and 8–10% P for grass pasture/hay) free choice to geriatric horses may be all that is required for body-condition score improvement.

3. Specific Dietary Recommendations

Ralston^{3,4} also reported a higher incidence of renal calculi in aged mares and geldings fed alfalfa hay, which is rich in both protein and calcium. This coupled with the potential for an increased incidence of renal disease in aged horses indicates that dietary Ca should be maintained at <1%. Apparent digestion of calcium seems to be consistent in horses over time, but apparent digestion of phosphorus seems to decline.^{3,7,8} A slightly elevated dietary phosphorus (0.4–0.5%) may be valuable in cases with existing renal disease.^{3,5} Maintaining a Ca:P ratio of close to 1.5:1.0 is recommended; therefore, legumes should be avoided, because they have Ca to P ratios of 4–8:1 with renal calculi. In cases where additional protein intake is needed and excess Ca intake is of concern, feeding soybean meal along with a grass-based diet would be preferred to feeding legumes (e.g., alfalfa).

Older horses may be afflicted with a variety of different forms of dental disease. An annual to bi-annual oral examination should be performed on all geriatric horses. Just as other parts of the body wear out, so do the teeth. Geriatric horses may also be prone to choke, and they seem to have a higher incidence of colic caused by impactions compared with younger horses.⁸ Long incisors or broken, missing, misshaped, sharp, pointed, and/or misaligned teeth are common findings of the oral examination of the geriatric horse. When possible, corrections should be made, but care must be taken

to avoid overcorrection. If dental disease is the only apparent problem, pellets and/or cubes can be moistened to a thick-soup consistency. Diets with low fiber or highly digestible fiber may also be of value.⁴ The addition of fat to the diet of these thin, yet normal animals will aid in maintaining body condition. Whenever adding an energy-rich substance such as vegetable oil, the dietary change should be made slowly over a period of 2–3 wk.⁸

The immune system may become compromised as the horse ages.⁹

Ralston et al.¹⁰ compared blood parameters between a group of geriatric (≥ 20 yr of age) and young (<5 yr of age) horses and found decreased plasma ascorbic-acid concentrations in older horses. The addition of supplemental vitamin C has been shown to have some positive affect on the immune system.^{1,7} Supplemental dietary vitamin C (5–10 g/day), vitamin E (4000 IU/day), and protein and maintenance of an adequate body-condition score (5–6 on a 1–9 scale) may all be of value in improving the immune function of the geriatric horse.^{2–5}

If renal disease exists, both high-protein and high-calcium diets should be avoided. In these cases, Ca:P ratios and intakes should be addressed as described for the prevention of renal calculi. Grass-based forages would be a good diet with the addition of corn and/or fat to maintain a good body-condition score. Where serum chemistries suggest the presence of hepatic disease, diets low in both protein (>10%) and fats should be fed. Thus, geriatrics with liver disease will require grass-based diets and additional caloric intake from cereal grains. Always, dietary changes should occur slowly.

Pituitary adenomas can further complicate the feeding of geriatric horses. In these cases, concurrent glucose intolerance is not uncommon, and sweet feeds (>3% molasses) should be avoided.^{7,8} Obesity may further complicate insulin function and increase the incidence of insulin intolerance, particularly in ponies.¹¹ If liver function in these horses seems to be normal based on serum chemistries, the addition of 1–2 cups of vegetable oil added over a 2- to 3-wk period may help maintain body condition. If serum chemistries suggest renal disease, dietary protein should be kept at ~8%, and diets low in calcium should be fed. In the case of hepatic disease, both high fats and high protein diets should be avoided. In cases of either renal or hepatic disease, B vitamin supplementation (e.g., 2–4 oz Brewer's Yeast) may be of value to offset deficiency.⁸

References

- Traub-Dargatz J, Long RE, Bertone JJ. What is an "old horse" and its recent impact? In: Bertone JJ, ed. *Equine geriatric medicine and surgery*. St. Louis: W.B. Saunders Co., 2006;1–4.
- Loving NS. Field approach and wellness management of geriatric horses. In: Bertone JJ, ed. *Equine geriatric medicine and surgery*. St. Louis: W.B. Saunders Co., 2006;12–13.
- Ralston SL, Breuer LH. Field evaluation of feed formulated for geriatric horses. *J Equine Vet Sci* 1996;16:334–338.
- Ralston SL. Clinical nutrition of adult horses. *Vet Clin North Am [Equine Pract]* 1998;339–343.

5. Ralston SL, Squires EL, Nockels CF. Digestion in the aged horse. *Equine Vet Sci* 1989;9:203–205.
6. Graham PM, Ott EA, Brendemuhl JH. The effect of supplemental lysine and threonine on growth and development of yearling horses. *J Anim Sci* 1994;72:380–386.
7. Siciliano PD. Nutrition and feeding of the geriatric horse. *Vet Clin North Am [Equine Pract]* 2002;18:491–508.
8. Pugh DG. Feeding the geriatric animal, in *Proceedings. Am Assoc Equine Pract* 2002;48:21–23.
9. Horohov DW, Dimock A, Guirnalda P, et al. Effect of exercise on the immune response of young and old horses. *Am J Vet Res* 1999;60:643–647.
10. Ralston SL, Nockels CF, Squires EL. Differences in diagnostic tests results and hematologic data between aged and young horses. *Am J Vet Res* 1988;49:1387–1392.
11. Freestone JF, Beadle R, Shoemaker K, et al. Improved insulin sensitivity in hyperinsulinemic ponies through physical conditioning and controlled feed intake. *Equine Vet J* 1992;34:187–190.