

# Maintaining the Health of Aged Horses: Practical Tips for the Equine Practitioner

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Aging in the horse has been a focus of interest and research in the past two decades. Although endocrine dysfunction in the form of pituitary pars intermedia dysfunction (PPID) is the most specific age related disease, all body systems are affected by aging. This report will highlight how these other body systems are most affected in an attempt to develop a diagnostic and therapeutic plan for maintaining our older horses. Author's address: Tufts Cummings School of Veterinary Medicine, 200 Westboro Road, North Grafton, MA 01536; e-mail: MaryRose.Paradis@tufts.edu. © 2013 AAEP.

## 1. Introduction

What is considered old in the horse? Many have asked questions about aging in the horse, and our definition of "old" is changing. In the past 20 years, we appear to be seeing more horses over the age of 20 years in our hospital. A small study indicated that from 1989 to 1999 we saw an almost six-fold increase in horses presenting with problems who were 20 years of age or older.<sup>1</sup> Numbers rose from 2.2% of the hospital population to 12.5%. In a 2007 survey of equine veterinarians in New England, all practitioners responded "yes" when asked if they had horses 20 years of age or older. Thirty percent of responding veterinarians stated that between 21% and 40% of their caseload was composed of horses 20 years of age or older (unpublished data).

So, are horses living longer than before? It is hard to separate all the different factors—from economic to increased longevity. In the 1998 National Animal Health Monitoring System (NAHMS) study, 7.5% of resident equids were 20 years of age or older.<sup>2</sup> In the New England study in 2007, the

proportion of horses over the age of 20 years was double the national average. However, this does not necessarily mean that horses are living longer from 1998 to 2007, because the NAHMS survey only looks at horses at farms in which there are more than five horses. Many retired horses live on small home farms and may be underestimated by the NAHMS study.

There is some controversy in research concerning the age at which a horse is considered geriatric. In early studies and more recent studies in Australia and Great Britain, researchers would consider horses old if they were 15 years or older.<sup>3,4</sup> When owners of older horses were asked at what age did they notice aging changes in their horse, the answer was around 23 years of age. Age was considered a negative factor in the purchase of a horse if they were 16.5 years old or older.<sup>5</sup>

Are there specific breeds that live longer than others? There does not appear to be any breed of horse that has a "longevity gene," with the exception of the pony. In multiple studies, ponies have a higher percentage of animals in the more-than 30

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## NOTES

years of age category especially when compared with the percentage of ponies in the younger population.<sup>1,5,6</sup> Anecdotally, mules are also stated to have long lives. Why the difference? Some say that ponies originally come from areas of the world that require a hardier constitution. Others state that perhaps the smaller body size plays a role as seen in other species. Wilmlink et al<sup>7,8</sup> found a difference in second-intention wound-healing between horses and ponies. Ponies healed faster than horses from a standardized wound, so perhaps there are physiologic differences that contribute to longer life span.

## 2. Are the Changes We See Caused by Old Age or Disease?

It is difficult to clearly denote whether some of the signs we see in the aging animal are caused by normal aging changes or by disease processes. For instance, older animals are known to have decreased spontaneous activity. In the older horse, we may wonder if the decrease in spontaneous activity is not secondary to old age but a result of degenerative orthopedic disease. The general signs of aging in the horse include loss of “top line” muscle mass—sway back, graying of haircoat, and musculoskeletal stiffness. However, one could also argue that decreased muscle mass is secondary to decreased activity or pituitary pars intermedia dysfunction (PPID) and that stiffness is secondary to arthritis.

Older horses have many of the same medical issues as young horses, but some conditions appear to increase with age. The specific disease most commonly associated with old age in the horse is PPID, commonly known as equine Cushing’s disease. This was covered in the previous talks in this session. Although changes can be seen in all body systems of the aging horse, the gastrointestinal system, the musculoskeletal system, and the respiratory system are the most commonly presented for veterinary care in the older horse. When owners were asked about the use of medications for chronic problems, 25% of old horses versus 6% of young horses were on regular medications. The medications fell into three categories of treatments: pain relief, recurrent airway inflammation, and PPID.<sup>1</sup> The rest of this discussion will look at these body systems plus a few other problems that are most commonly encountered in the horse more than 20 years of age.

## 3. Gastrointestinal Problems

Colic was the most common reason for geriatric animals to be evaluated at a referral center in the study performed by Brosnahan et al.<sup>1</sup> Williams<sup>6</sup> looked at the body systems represented in horses more than 15 years of age at postmortem examination and found that lesions in the gastrointestinal system were the most common reason for death. The lesions varied, but included intestinal volvulus, displacements and ruptures.

Brosnahan et al<sup>1</sup> showed that 45% of horses 20 years of age or older presenting to a hospital for colic had large-colon problems, whereas 40% of the cases were small-intestine lesions. Forty-four percent of small-intestine problems were caused by lipomas.<sup>1</sup> Strangulating lipomas of the small intestine were the second most common disease problem of geriatric horses. This finding is supported by results of studies that indicate a significant increase in the incidence of strangulating lipomas with increasing age of horses.<sup>9</sup> Large-colon impaction was the fifth most common specific disease diagnosed in the horses studied by Brosnahan et al. Gastric lesions, including ulceration and neoplasia, were found in 18% of horses presented with abdominal pain.<sup>1</sup>

Dental disease probably plays a large role in the incidence of large-colon impaction and in esophageal choke in the older horse. Older horses are significantly more likely to have a history of dental disease than younger horses. In the old horse study from Britain, 95% of the horses more than 15 years of age had dental abnormalities.<sup>4</sup> This was often overlooked by owners who reported that only 10% of their old horses had dental disease, whereas an additional 15% of owners reported that their horses exhibited “quidding” of hay. Owners reported that dental care was provided less than once yearly in 11% of older horses. Dental care was provided by doctors of veterinary medicine 49% of the time in older horses, with the remaining care being provided by dental technicians.<sup>1</sup>

As the horse ages, the teeth continue to wear down. Even the horse that has had good dental care all its life can develop a “smooth” mouth. Smooth mouth occurs from normal wear of the enamel ridges of the teeth over time. This process may be hastened by chronic ingestion of sand or overly aggressive floating practices. As the tooth continues to wear down, it may appear as two teeth—this is because the tooth is worn to the level of the roots.

Other dental conditions that are commonly encountered in the older horse include wave mouth, step mouth, hooks, shear mouth, and equine odontoclastic tooth resorption and hypercementosis (EOTRH).<sup>10,11</sup> Wave mouth is the result of uneven wearing of the cheek teeth. Because molars are always permanent teeth, the first molar or fourth cheek tooth is the oldest tooth in the mouth. In wave mouth, the upper PM4 and M1 are often worn to the gum line, whereas the lower opposing teeth are longer, creating an arcade that wears and grinds food abnormally. A step mouth is similar but is usually caused by the absence of one tooth and the overgrowth of the opposing tooth. Hooks develop on the upper first cheek tooth and the lower sixth cheek tooth in response to malocclusion of the dental arcade and decreased wearing surfaces. Shear mouth is a condition in which the lingual points of the lower teeth come in contact with the hard palate. Laceration of the gums or palate may occur in these

problems. EOTRH is a painful disorder of incisor and canine teeth in some aged horses. The etiology is unclear but thought to be related to periodontal inflammation. Extraction of affected teeth appears to be the treatment of choice.<sup>11</sup>

Radical correction of severe dental disease may not be effective in improving the animal's ability to eat forage. Shortening the height of abnormally long and sharp teeth should be considered to improve the comfort of the animal. Changes to dietary management may be necessary.

#### 4. Body Condition and Nutrition in the Older Horse

When one thinks of older people and animals, thinness and frailty come to mind. In one study, 68% of the horses more 20 years of age were rated as having good to moderate body condition.<sup>1</sup> This was comparable to that of the younger animals. Twenty-eight percent of the older individuals were rated as fat or very fat, and only 4% had a poor or very poor score.<sup>5</sup> It was concluded that older horses did not have difficulty maintaining weight and that obesity might be more of a concern than thinness.<sup>5</sup> When asked what the diet of the older horse consisted of, 89% said that they fed hay, with 7% feeding a hay substitute and 4% not receiving hay in any form. Fifty-one percent of the older subjects were on some type of senior feed. More than half of them received a supplement: 66% received a general vitamin/mineral supplement and 47% received a joint care product.<sup>5</sup>

What do we actually know about nutritional needs of the older horse, and how do they differ from the younger animal? Essentially, when dealing with healthy older horses, their nutritional requirements may not differ from that of the younger adult. The problems arise in that many of our older individuals are not normal. Dr Ray Geor has provided us with guidelines for feeding the older horse with endocrine abnormalities in the previous talk. Obesity and insulin resistance can put the older horse at high risk for laminitis. This should be diagnosed, and these horses should be fed according to his recommendations.

There have been recommendations that the older horse needs a different diet because of decreased ability to digest food. Feeds may come in the extruded form to increase the surface area of the feed pellets exposed to digestion. Prebiotic and probiotic compounds may be added with the idea of increasing the geriatric horse's digestive flora. Because the older person and the older horse tend toward decreased muscle mass, many of the senior feeds will have a higher protein content than their performance horse feeds. Certain amino acids, such as lysine and biotin, may be added to the senior feed to help in "muscle maintenance," haircoat, and hoof care. The senior feeds are often advertised as complete feeds for the horse that has trouble ingesting long-stem roughage, and fat is added to increase the caloric content.

Often, feeding of the geriatric horse comes down to feeding whatever they will eat. Horses with poor dentition will have problems with hay and whole grains. Alternative forages include grass, hays with minimal stem, and soaked hay cubes or haylage. The use of current senior diet formulations can be helpful in keeping weight on the geriatric animal because of the increased digestibility of these products. One must be careful when switching to a senior feed because some of these feeds are not calorie-dense and cannot be fed on a volume basis. By continuing to feed the same volume, one may actually be decreasing the total caloric intake for the animal, which may result in unexpected weight loss.

#### 5. Weight Loss in the Older Animal

The diagnostic workup for weight loss in the older horse is the same as for horses of any age. The amount of weight that is gained or lost is dependent on the calories that are taken in versus the calories that are used. The decreased intake in the older animal may be caused by lack of good-quality feed, poor appetite secondary to a debilitating disease, poor dentition, maldigestion, and malabsorption. Reasons that an older horse may have an increased utilization of calories may relate to environmental cold, increased level of exercise (less likely), and increased catabolism secondary to a debilitating disease. Recurrent airway obstruction (RAO) is a good example of a debilitating disease in the older horse. Not only does the increased respiratory rate and effort increase the caloric need of these animals, the affected animals cannot take time away from breathing to actually eat enough to meet this need. Neoplasia should be on a list of differential diagnoses for weight loss in the older horse. Although it is not as common as it is in other species, it is still seen. Abdominal neoplasia may include lymphosarcoma, squamous cell carcinoma, adenocarcinoma, leiomyosarcoma, melanoma, and mesothelioma.<sup>12</sup>

A good nutritional history is important, and it should include grain and forage analysis. A thorough physical examination and a complete blood cell count and chemistry profile should provide a minimum data base. From this point, a per rectum palpation and an abdominal ultrasound will be important to check for abdominal masses or intestinal abnormalities. Abdominocentesis is helpful in ruling out peritonitis but less helpful in diagnosing neoplasia because tumor cells are rarely shed by the tumors. Gastroscopy is useful in determining the presence of gastric ulcerations and squamous cell carcinoma of the stomach. A rectal biopsy may be useful in diagnosis of inflammatory bowel disease. If a diagnosis is not found after this workup, an exploratory laparotomy may be the best option.

#### 6. Musculoskeletal Disorders in the Older Horse

Musculoskeletal problems were the second most common presenting complaint in the Brosnahan

hospital study. Of the horses presenting for lameness, 37.5% had laminitis (mostly in conjunction with PPID), and 55% had lameness classified as degenerative disease. Older horses were significantly more likely to be given long-term medications than were younger horses. The most prevalent medication given to older horses fell in the non-steroidal anti-inflammatory drug (NSAID) and chondroprotective categories. One can assume that this is an indication of chronic musculoskeletal pain.<sup>1</sup>

It is hypothesized that earlier injury to joints, muscles, tendons, and ligaments set up the geriatric horse for progressive degenerative changes in the musculoskeletal system. Loss of shock absorption is caused by chronic inflammatory changes in the synovial fluid, cartilage defects, and sclerosis of subchondral bone. Osteophytes are a hallmark of osteoarthritis. Cartilage research in old horses demonstrated that glycosaminoglycan (GAG) levels remain constant throughout life, but there are age-related decreases in proteoglycan size though the loss of GAG chains.<sup>13</sup> Older horses also have greater pentosidine crosslinks, which may predispose older horses to osteochondral disease caused by stiffer and more brittle cartilage.<sup>14</sup> A progressive degeneration of the suspensory ligaments in the hind limb is seen in some geriatric horses (particularly older broodmares). Clinically, these horses have straight hock conformation and progressive sinking of the fetlocks.

Management of osteoarthritis in the older horses involves judicious use of NSAID drugs and increasing mobility. Increasing the mobility of the animal plays a role in decreasing pain. One should avoid stall rest in these animals. Unlimited turnout is preferred. If the older horse is still in work, modifications to the training program may need to be implemented. Older horses will probably take longer to become physically fit. Older horses fatigue quicker than younger horses. Continuous low-level work will be better for the older horse than a "weekend warrior" session. The addition of nutraceuticals such as glucosamine-chondroitin sulfate has been shown to improve lameness grade, flexion test grade, and stride length in horses with osteoarthritis. Acupuncture, chiropractic treatment, and massage therapy may be helpful in the older horse that has multiple problems.

### 7. Respiratory Problems in the Older Horse

Respiratory tract disease was the third most common body system affected among the geriatric horses in the Brosnahan study. Although RAO or heaves is not restricted to old horses, age has also been determined to be a risk factor for RAO. It was the most common specific respiratory tract disease diagnosed in our study population. In the survey study, 19% of the older horses that were receiving medication were receiving drugs that were compatible with the treatment of heaves.<sup>5</sup> RAO is an in-

flammatory airway disease similar to asthma in humans. Inflammation of the airway plus bronchoconstriction leads to severe obstruction.

Clinical signs of RAO include increased respiratory rate and effort, cough, the development of hypertrophied muscle along the ventral rib cage, exercise intolerance, and increase crackles and wheezes on auscultation of the lung fields.

Treatment of RAO is aimed at decreasing inflammation and bronchoconstriction. Environmental reduction of allergens is a main objective in the treatment of this disease. Providing 24-hour turnout, eliminating hay from the diet, improving ventilation, and decreasing dust in the environment are important elements of the treatment. For a more rapid reduction in lung inflammation, oral or inhaled steroids are the primary anti-inflammatory drug of choice. Dexamethasone and prednisolone are the system drugs of choice, and beclomethasone is the most commonly inhaled steroid.

Bronchodilation can be achieved with several different drugs, including the following: albuterol (inhaled), clenbuterol (oral), and aminophylline (oral). Inhaled albuterol is probably the most effective.

### 8. Ophthalmology in the Older Horse

Although not commonly reported by owners, 94% of horses more than 15 years of age had at least one abnormality identified by external ocular and ophthalmologic examination by a veterinary investigator. Degeneration of the vitreous was the most common lesion seen in the aging horse.<sup>15,16</sup> In aging humans, the vitreous liquefies and creates "floaters." This may be seen in horses as a consequence of recurrent uveitis. Senile retinopathy is the second most common ophthalmologic problem seen in geriatric horses. The findings consist of irregular linear hyperpigmentation in the non-tapetal fundus and depletion of pigment in the adjacent areas.<sup>15</sup> Ireland et al<sup>15</sup> reported that the median age for senile retinopathy was 24 years. In the same study, 58% of the geriatric horses examined had evidence of cataracts. The median age for affected animals was 23 years; for bilateral cataracts, the median age was 25 years.<sup>15</sup>

### 9. Neoplasia

Squamous cell carcinoma and melanomas are the two tumor types that increase in incidence with age. Squamous cell carcinoma is the most prevalent. It is most commonly seen on the eye and equine penis and prepuce.<sup>17</sup> Masses may be single or multiple. In one study, affected animals had a mean age of 16.5 years of age.<sup>17</sup> The lighter, non-pigmented skin is more susceptible to development of squamous cell tumors. It spreads by metastasis to local lymph nodes. Preputial lesions metastasize to the corpus cavernosum penis and inguinal lymph nodes.

Approximately 80% of older gray horses have evidence of external melanomas. These rarely metas-



tasize, but in a study of central nervous system tumors, melanomas were the second most prevalent and appear to be age-related.<sup>18</sup>

### 10. Extending or Ending Life

The long duration of life of horses enhances the bond with their owners, despite their loss of performance and reproductive capacity by sometimes one to two decades. Older horses can lead healthy lives into their 30s, particularly if care is taken to address problems as soon as they are recognized. The development of an annual or biannual geriatric assessment is important in helping to identify treatable problems. This assessment should include a thorough physical examination with special attention paid to the body condition of the animal, dental wear, appetite, presence of long hay fibers or whole grain in the manure, haircoat abnormalities, musculoskeletal stiffness or lameness, ophthalmic abnormalities, and the development of cardiac murmurs. Blood work should include a complete blood cell count, chemistry profile, adrenocorticotropic hormone levels, and perhaps insulin levels. Fecal examination for parasites should also be included. Therapeutics will often be directed at improving the quality of life by reducing pain, improving nutrition, and relieving the stress of chronic respiratory or endocrine problems.

The veterinarian is often asked when it is best to euthanize the older horse. The NAHMS study stated that "old age" was the most frequent cause of death in horses more than 30 years of age. Ireland et al<sup>19</sup> reported that lameness, colic, chronic illness, acute illness, laminitis, and fracture were the top six reasons for euthanasia. Factors that influenced owners to euthanize their older horses were a hopeless prognosis, veterinary advice, and poor quality of life.

### References

1. Brosnahan MM, Paradis MR. Demographics and clinical characteristics of geriatric horses: 467 cases (1989–1999). *Am Vet Med Assoc* 2003;223:93–98.
2. National Animal Health Monitoring System. Part 1: baseline reference of 1998 equine health and management. US Department of Agriculture, Animal Plant and Health Inspection Service; 1998.
3. McGowan TW, Pinchbeck G, Phillips CJC, et al. A survey of aged horses in Queensland, Australia, part 2: clinical signs and owner's perceptions of health and welfare. *Australian Vet J* 2010;88(12):465–471.
4. Ireland JL, Cleff PD, McGowan CM, et al. Comparison of owner-reported health problems with veterinary assessment of geriatric horses in the United Kingdom. *Equine Vet J* 2012;44:94–100.
5. Brosnahan MM, Paradis MR. Assessment of clinical characteristics, management practices, and activities of geriatric horses. *Am Vet Med Assoc* 2003;223:99–103.
6. Williams N. Disease conditions in geriatric horses. *Equine Pract* 2000;22:32.
7. Wilmink JM, Stolk PWT, Van weeren PR, et al. Differences in second-intention wound healing between horses and ponies: macroscopic aspects. *Equine Vet J* 1999;31:53–60.
8. Wilmink JM, Van weeren PR, Stolk PWT, et al. Differences in second-intention wound healing between horses and ponies: histological aspects. *Equine Vet J* 1999;31:61–67.
9. Edwards GB, Proudman CJ. An analysis of 75 cases of intestinal obstruction caused by pedunculated lipomas. *Equine Vet J* 1994;26:18–21.
10. Lowder MQ, Mueller POE. Dental disease in geriatric horses. *Vet Clin North Am Equine Pract* 1998;14:365–380.
11. Staszuk C, Bienert A, Kreutzer R, et al. Equine odontoclastic tooth resorption and hypercementosis. *Vet J* 2008;178:372–379.
12. Dickinson CE, Lori DN. Diagnostic workup for weight loss in the geriatric horse. *Vet Clin Equine* 2002;18:523–531.
13. Platt D, Bird JLE, Bayliss MT. Ageing of equine articular cartilage: structure and composition of aggrecan and decorin. *Equine Vet J* 1998;30:43–52.
14. Brama PA, Tekoppele JM, Bank RA, et al. Influence of site and age on biochemical characteristics of the collagen network of equine articular cartilage. *Am J Vet Res* 1998;60:341–345.
15. Ireland JL, Clegg PD, McGowan CM, et al. Disease prevalence in geriatric horses in the United Kingdom: veterinary clinical assessment of 200 cases. *Equine Vet J* 2012;44:101–106.
16. Chandler KJ, Billson FM, Mellor DJ. Ophthalmic lesions in 83 geriatric horses and ponies. *Vet Record* 2003;153:319–322.
17. Howarth S, Lucke VM, Pearson H. Squamous cell carcinoma of the equine external genitalia: a review and assessment of penile amputation and urethrostomy as a surgical treatment. *Equine Vet J* 1991;23:53–58.
18. Paradis MR. Tumors of the central nervous system. *Vet Clin North Am Equine Pract* 1998;14:543–561.
19. Ireland JL, Clegg PD, McGowan CM, et al. Factors associated with mortality of geriatric horses in the United Kingdom. *Prev Vet Med* 2010;101:204–218.