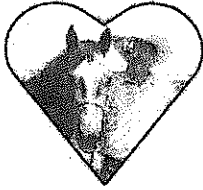


Hey Neighbor



## For The Love Of Horses

By Frank J. Buchman

### 'HYPP' Horses Are Serious Problem For Conscientious Breeders

Really, what is all of this talk about horses with Impressive bloodlines being bad? What is the acronym: HYPP?

Many people don't have any idea what is being referred to when somebody insists they won't buy a horse with the Quarter Horse stallion Impressive in the pedigree. Sometimes comments referring to HYPP and the initials N-N, H-N and H-H are added to the conversation, making the discussion more complicated.

One prospective buyer wants, or at least doesn't care if there are Impressive lines, and the next person contends he wouldn't take one with that lineage even if given to him. It is a complex situation.

HYPP stands for hyperkalemic periodic paralysis. "It is a muscular disease that affects both horses and humans," according to Dr. Sharon Spier, doctorate equine researcher in veterinary medicine at the University of California at Davis. The world's leading

expert on the subject, Spier has been investigating the disease since its discovery in 1992.

"Cause is a hereditary genetic defect that disrupts a protein in the membrane of muscle cells," she explained. "In the muscle of affected horses, a point mutation exists in the sodium channel gene and is passed on to offspring."

This gene mutation is not a product of inbreeding, but it became widespread when breeders sought to produce horses with heavy musculature. "While associated with heavy muscled horses, not all horses with well-devel-

oped musculature are afflicted with the disease," Spier emphasized.

The genetic defect has been identified in offspring of the American Quarter Horse sire, Impressive.

Since Impressive descendants are so numerous, the genetic mutation in the bloodline is widespread. Theoretically, it is possible that other mutations causing HYPP may be difficult to identify because they are not so widespread.

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known mutations at this time. For example, HERDA, SCID, GBED, and JEB all have genetic tests available so that breeders can avoid

undesirable traits. HYPP is considered an undesirable trait.

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"We understand more about HYPP than most of the other equine diseases. We understand the genetics, pathogenesis ... exactly how the mutation affects muscle," Spier described.

Diagnosis of HYPP can be difficult based solely on observance of the horse. There are different indications which can mimic other diseases such as colic.

"Classic signs include periodic attacks of muscle spasm, tremors, weakness and sweating," Spier identified. "During any attack, a horse may have rapid, labored or difficult breathing."

Horses with HYPP can experience unpredictable attacks of paralysis which could lead to collapse and sudden death, usually due to cardiac arrest and/or respiratory failure.

Different horses are affected in various ways. "Under ideal management practices, the defective gene does not appear to have adverse effects, but stress and/or increased potassium in the serum can trigger clinical signs of muscle dysfunction," Spier recognized.

Some horses manifest acute signs and others exhibit little or none, and research for the reasons is under way. "Unfortunately, a horse carrying the defective gene, but showing minimal signs, has the same chance of passing the gene to future generations as does the affected horse with severe symptoms," Spier verified.

Complicating the discussion, HYPP is an "autosomal dominant genetic trait, which means only one copy of the gene is required to produce the disease, and the disease can occur equally in both sexes," Spier elaborated.

Meanings of different combinations of N and H in relation to horses with HYPP were reviewed. A mare tested H/N means she is heterozygous, or carries one copy of the HYPP gene. Mating her to a normal, N/N, sire will result in a 50 percent chance the offspring will carry the N/N gene and 50 percent chance of the foal being normal.

When the mare is bred to a heterozygous sire, H/N, the offspring will have a 25 percent chance of being

normal, 50 percent chance of carrying the gene (N/N) and 25 percent chance of being homozygous (H/H), carrying both copies of the HYPP gene.

"A carrier of the defect (H/N) is affected with HYPP. These horses can show clinical signs of the disease and can pass the gene on to their offspring," Spier calculated. "Though horses which are homozygous show more severe clinical symptoms, heterozygotes also obtain the disease because it is a dominant trait."

In order to verify if a horse has HYPP, a blood analysis must be performed. In 1996, the American Quarter Horse Association recognized HYPP as a genetic defect or undesirable trait.

To increase public awareness, mandatory testing for HYPP, with results designated on the registration certificate, began for foals descending from Impressive born after January 1, 1998. This laboratory work is done at the University of California in Davis.

Responding to member-

ship requests, the AQHA Stud Book and Registration Committee ruled in 2004 that foals born in 2007 or later that test homozygous affected for HYPP (H/H) will not be eligible for registration.

"Breeders opposed to restrictions argue that the disease can be controlled through diet and medication and that these horses are highly successful in the show ring," Spier said.

For control of HYPP, Spier recommended a regular feeding and exercise schedule and to avoid fasting or water deprivation. Horses do better if allowed an exercise area rather than stall confinement.

Alfalfa mixed with grass or oat hay and fed in equal amounts with oats two or three times daily helps decrease potassium content of the diet. Corn syrup added to rations can be beneficial. Horses often do best on hay or pasture alone.

Horses can be administered the drugs epinephrine or acetazolamide with a veterinarian's prescription to help control prob-

lems.

"In most cases, HYPP is a manageable disorder," Spier contended. "However, recurrent bouts may occur, and severe episodes can be fatal.

"Because HYPP is a dominant trait, all affected horses share the same mutation, regardless of whether or not owners witness symptoms in their horses," Spier acknowledged.

"Affected horses are not suitable for young or inexperienced riders," Spier continued. "Owners of affected horses should advise veterinarians of HYPP status before anesthesia or procedures requiring heavy sedation."

HYPP gene frequency

has not changed since the advent of the genetic test 15 years ago. The Impressive horses' success in the halter show ring is the most likely reason that breeders don't select away from the disease.

"However, owners of affected horses should be strongly discouraged from breeding these animals for the long-term health of the Quarter Horse breed and other breeds," Spier challenged.

The Impressive bloodline is immense with a population approaching 400,000. "I'm afraid that in our lifetime, we will not see this disease eliminated," Spier analyzed.

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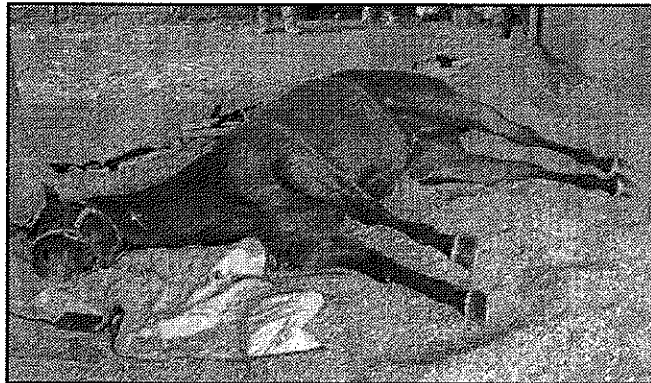
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