



Basic concepts and recommendations about Osteochondrosis, elaborated by the ANCCE radiological consultants under the leadership of Dr. Manuel Novales Vasco at the University of Cordoba Veterinarian Hospital.

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INTRODUCTION

Concept of the disease

Osteochondrosis is a disease that produces a failure in the normal ossification of joints in horses, which gives way to the accumulation of synovial fluid (causing esthetic defects), pain, and, in some cases, lameness. In general, this problem appears in the locomotive system of the horse, but it is especially located in the hocks, fetlocks and stifles. The disease may appear during the first months of life (in which case, there may be spontaneous recovery and stabilize after the first year. The symptoms can be detected either while the horse is young or after it has reached adulthood.

In Holland, a country that has traditionally studied this disease, it has been calculated that some 3,000 (or 25% of all foals born) foals are born annually with osteochondrosis. This represents an estimated ten million euros a year in economic costs.

This disease is included within the group of growth diseases found in foals generically called *Developmental Orthopedic Diseases*. Other diseases included in this group are subchondral bone cysts, angular limb and flexing deformities, spyphysitis and the Wobbler syndrome (which affects cervical vertebrae and causes a lack of coordinated movement in animals).

The following are among the causes of osteochondrosis: genetic pre-disposition (this accounts for up to 25% of the causes behind the disease), bio-mechanical traumas, mechanical stress due to inappropriate exercise, obesity, excessively fast growth and imbalanced or inappropriate nutrition. One or several of these factors combined can produce the disease. Both environmental factors and the way in which a horse is handled are determining factors for a foal to finally develop the disease.

Phases in controlling the disease in Spain

In Spain, controlling the disease among PRE horses is divided into three phases:

- 1) 2003-2006. A number of radiological studies were performed without having defined where and how the disease was to be detected. Even after having studied 1,500 horses, the desired results were not attained.
- 2) 2007. An Interpretation Center was created in order to standardize the quality of the studies undertaken and the diagnostic criteria for the disease. In the 2007

season, the following studies were performed utilizing a total of 335 horses, 50 of which had not been approved. The results by country were as follows:

	Spain	Costa Rica	United States	Mexico	TOTAL
Total:	284	11	9	31	335
Approved:	247	7	8	23	284
Not approved:	37	4	1	8	50

The Interpretation Center declared that 14.2% of the horses studied had not been approved.

- 3) 2008. Having analyzed the results of the previous season, and following international recommendations, only those horses with *serious* signs of the disease evident in X-rays were eliminated. With this in mind, degrees of injuries were established, based upon gravity. Prior to beginning the season, all the horses eliminated during the 2007 season were reviewed, and breeders were informed whether their horses were considered acceptable in this system. Moreover, instructions were given to the veterinarians who review the horses based on the new classification criteria. The horses that were not sent to the Interpretation Center in the 2007 season can now be sent, if the vets consider that these horses could be approved under the new classification criteria. The University of Cordoba Veterinary Hospital website (www.uco.es/corporacion/hcv/) offers complete information about the diagnostic criteria for this disease and the work undertaken during the 2007 season.

Basic norms to control the disease at stud farms

Once the disease has been detected at a stud farm, it is good to keep the following concepts in mind:

It is a good idea to check all young horses, stallions, mares and their descendents. For this, vets usually perform a clinical inspection (seeking lameness or the accumulation of fluid in joints) and give advice about basic X-ray studies for the risk groups at each stud farm. This type of study can be performed on yearlings when the injury is stable, thus diagnosing the disease in its early stages. The study of a foal's ancestors facilitates discovering the genetic causes of the disease on the affected stud farms.

Stud farm **nutrition** must be checked, especially the amount of calories consumed by the colts/fillies, caloric sources and mineral imbalances, among others. One of the most common problems in young horses is the *excessive amount of substances ingested*, which causes accelerated growth or fattens the horses subject to these practices. Both situations may contribute to the appearance of Developmental Orthopedic Diseases.

A four year study published in 1996 in the US by Dr. Joe Pagan (1996) evaluating the presence of OCD in fetlock, hock, stifle and back reached the following conclusions:

1. The horses that developed osteochondrosis in the hock and stifle tended to be larger foals at birth, and grew quickly between three and eight months of age.
2. Horses that develop OCD in the fetlocks have normal growth rate the first 110 days, but grow much faster than the rest of the population later.

From this, it can be deduced that excessive body weight and fast growth were the main factors to be taken into consideration in controlling the disease.

Not only must the amount of calories be controlled, but also the relationship among the various minerals; care must be given not to give excessive phosphorus. Another study indicates that the importance of the relationship between copper and zinc, especially in the case of pregnant mares and while the foal is growing, as imbalances in these two minerals could pre-dispose the horse toward these diseases (Harris, 2005).

Dr. Pat Harris (2005), a world-renowned specialist in equine nutrition, provided the following recommendations for reducing the incidence of Developmental Orthopedic Diseases, including osteochondrosis, in stud farms:

- 1) Try to get foals to increase their size and body weight slowly.
- 2) Avoid foals growing too quickly.
- 3) Avoid sudden growth after a period of apparent lack of growth.
- 4) Avoid foals getting too fat.

There are two very basic conclusions about nutrition and its effect on Developmental Orthopedic Diseases given by two major world experts in nutrition:

1.- Even though the mare and foal have been provided the appropriate nutrition during pregnancy and lactation, there is *no guarantee* that adult horses will be healthy and able to compete; there is evidence that, in the medium and long-term, proper nutrition will *help reduce the risk* of suffering problems and diseases (Harris, 2005).

2.- Once a foal has developed osteochondrosis to such an extent that the clinical signs and symptoms can be identified, diet has a *minimal* effect on solving existent injuries. However, it is recommended to reduce caloric intake and avoid excessive body weight while maintaining an adequate amount of proteins and minerals (Pagan, 2003).

One last factor to keep in mind is **controlling exercise** during the first year. As a general rule, it could be said that the level of exercise in foals is logically important in maintaining the quality of its cartilage, joints and bones (McIlwraith, 2005). To date, there is contradictory data about the level of exercise that can be performed. Studies in Holland (Van Weeren & Bravenfeld, 1999) conclude that while exercise does not influence the number of injuries that appear, there is a tendency for these injuries to be more serious in colts/fillies that rest in stalls. The exact amount of exercise that PRE colts and fillies need to protect them against the appearance of osteochondrosis is still unknown, but it is certain that if colts and fillies spend a limited amount of time in stables during their first year, and if they are free to exercise at will, this will contribute to preventing the disease.

BIBLIOGRAPHY

Harris PA. Hints on nutrition for optimal growth. In: Harris PA, Hill SJ and Abeyasekera LA editors. Proceedings of the 1st Waltham International Breeding Symposium. Newmarket (England). June 2005. p. 41-50.

McIlwraith CW. What are the major problems associated with growth and how important are they really? In: Harris PA, Hill SJ, Abeyasekera LA, editors. Proceedings of the 1st Waltham International Breeding Symposium. Newmarket (England). June 2005. p. 25-31.

Pagan JD, Jackson SG. The incidence of developmental orthopedic disease on a Kentucky Thoroughbred farm. World Equine Vet. Rev. 1996; 1: p. 20-26.

Van Weeren PR, Barneveld A. The effect of exercise on the distribution and manifestation of osteochondrotic lesion in the Warmblood foal. Equine Vet. J. Suppl. 1999; p. 19.