CONCEPTION ABOUT ETIOPATOGENY AND TREATMENT OF ACUTE LAMINITIS IN HORSES

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Abstract: Acute laminitis is an affection of keratogene membrane with a very acute phase of evolution which need a treatment very quickly. His caused by consumption of histaminergic fodder and by exaggerated consumption of same cereals or concentrated foods contaminated by yeasts. Lack of a proper treatment applied in first signs lead to irreversible physiopathological changes and passage in chronic phase of laminitis with a grave prognosis. It was applied two therapeutic proceedings: one, classical, based on venisection, cald hydrotherapy and antihistaminical medication, and second based on antiinflammatory, analgesical medication, neutralization of intestinal toxines and digital circulation re-estabilishment of keratogeneous membrane. Using in therapy Flumixine Meglumine, Phenylbutasone, Acepromasine, in association with a local treatment by warm compresses and Heparine, lead to significant better results then classical terapeutical behavior. It insists on clinical signs of disease, a precocious diagnosis of disease and choose quickly a treatment for prevention of phyiopathological and morphopathological changes which can interfere still after first twelve hours after debut of disease.

INTRODUCTION

A disease with sporadical frequency, but with grave consequences for dinamics in horses is acute lameness, a disturb of circulatory equilibrium of vascular system from hoof region, which can due to a disintegration of place gearing podophilo-keraphilous.

Are affected most frequently the horses with age between 3 and 15 years, but it seems not to be in relationship with bodyweight and race of the horse.

The causes of the circulatory lack of balance of keratogeneous membrane are divers, some good justified, other less, being also cases, rarely, for which can not be explained the cause.

In literature of speciality, there are preoccupations for the study of lameness matter the etiology, phisical and morphopathological mechanisms from keratogeneous membrane level and for the diagnosis and treatment of this disease 1, 2, 3, 5.

Always the lameness was a problem for horses; many theories were elaborated, used than leaved and in some case braught back in actuality. Still from 1933, Baird (mentioned by William, 1990) sugested shortering the lenght of hoof, rarefaction the solear region and even the opening of this region by angle of forck level for permiting the hemoragy.

Hallet (1936) declare that lameness begin with hiperremy of keratogeneous membrane and suggest a treatment who consist in applying of cold and warm compresses, purgatives, diuretics, venisections and local infiltration with adrenaline at the level of palm nerves. In 1936 Backus established 3 stadies in lameness: a) congestion and
infiltration of keratogeneous membrane; b) exudation with accentuation of congestion and reparation of membrane; c) the treatment was the maintaining of the animal with limbs in cold water.

The researches beside treatment, in time suffered different conceptions and medicamentary methods and in last time was tried with success antiinflammatories, combined with analgesicals and neuroleptics (4, 6, 7, 8, 9, 10, 11).

Thus, we proposed to apply on clinical cases, two medicamentous procedures for treatment and stopping the lameness in acute phase.

MATERIAL AND METHOD

Our researches was effectuated on a member of 45 horses with different ages and races, used majority of them for traction less the horses for horsemanship (Table 1).

<table>
<thead>
<tr>
<th>Number of horses</th>
<th>Age (years)</th>
<th>Sex</th>
<th>Race</th>
<th>Service</th>
<th>Status of welfare</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3-10</td>
<td>M</td>
<td></td>
<td>Traction</td>
<td>F.B.</td>
</tr>
<tr>
<td></td>
<td>10-20</td>
<td>F</td>
<td></td>
<td>Horse manship</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>28</td>
<td>17</td>
<td>30</td>
<td>15</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>9</td>
<td>15</td>
</tr>
</tbody>
</table>

It was table the notes of **anamnesis** about the employment, the conditions in which was effectuated the traction, training or absence of this, the mode of feeding and the food ingested: young (stage of vegetation), concentrates, what kind of concentrates and the quantity, and also the antecedent about health status, the debut of disease, the signs and the evolution till the examination time.

For **diagnosis** we used semiological methods of examination: inspection, deep palpation with the tongs for trying the hoof, anamnesis associated with clinical signs identified. It was take in estimation the general status of the animal, the position in station and in movement (the difficulty movement on a hard field), the body and local temperature, the temperature of the hoof walls, etc.

For treatment we used two medicamentary proceedings based on antiinflammatories, analgesicals, antihistaminicals and antibiotics.

**Proceeding nr. 1:**
- Hygienic comfort with bulk sheets of straws
- Large venisection: 4 – 8 litres
- Romergan, Phenergan: 15 – 25 ml
- Oleum parafini 100 ml per os as Magnesium Sulphate 200 g in 2 – 3 litres of water p.o.
- The palm nerves anaesthesia with Procain 4%
- Cold compresses or with ice (river)

**Proceeding nr. 2:**
Generally
- Phenylbutasone 3 – 4 g i.v., than 1 – 2 g 2 times/day orally
Flumixin Meglumine 1,1 mg/kg i.v., repeated at 12 hours, 3 – 5 days
Mineral oil 500 ml
Aspirin 40 – 50 g/kg p.o.
Digital nerves anaesthesia with Procain 4%
Heparin 40 mg/kg i.v., than s.c. repeated at 8 – 12 hours

Local
- Cold compresses alternating with warm compresses

The animal is taken under treatment 48 hours and will be monitorized 72 hours.
We mention that the first therapeutical proceeding was used by us with little changes from case to case, than once with the appearing of antiinflammatories and antiendotoxicals we applied the second proceeding.

Our observations followed acute lameness, in its first manifestations, but the application of the treatment began different, depending by presentation of the animal for consultation.

RESULTS AND DISCUSSIONS

Acute lameness has an etiology quite good specified, but etiopathogenetical mechanisms are still now hard to supposed, because of very rich circulatory structure in hoof area. In our cases, the most frequent lameness have food nature, especially because of an exaggerated consumption of immature cereals.

It knows that in July appear furbra caused by an exaggerated consumption of hay and in autumn because of consumption by mais shortcoming in baking. We had also cases in which the horses slipped to wheat sack and consuming in big quantities or if its wasn’t good kept, presenting by content of yeasts and in 3 cases was with consuming by horses of concentrates used in birds feeding. Two cases was by an exaggerated consuming of green lucerne.

The diagnosis was established based on clinical signs which have again a particularity: suddenly debut of lameness, acute pain at limbs affected by disease, depressings with hypothermy (40 – 41°C), congestion of mucous, the animal preferring recumbency.

More sure are the signs when the animal is moving: hesitant movement, it put the limb on soil very carefully, it prefers soft soil and most obviously sign is the support on heel. It are affected the posterior limbs, the posterior is under it back and if are affected the anterior limbs the position is camping in front. Usually there are not difficult problems for establishing the diagnosis.

We didn’t use for diagnosis the radiological exam, not but that some authors recommend this (Hood si col. 1978, Karin, 1990). We believe that after an experience in some cases, the veterinarian can establish, after clinical signs, certainty diagnosis.

Respect the therapy of acute lameness, it must be effectuate most quickly possible, because after approximate 12 hours by beginning of clinical signs may appear standing lesions at the podophilous tissue and can due to irreversible lesions. This is one of conditions for success of the treatment in acute phase of lameness, otherwise are installed chronic lameness with important changes in third phalang topography. For this, also the treatments applied in our country wasn’t always quickly, the owners
pointing on the disease only after 1-2 days. Thus a part of cases treated and monitorized by us, excelled acute phase passing in chronical phase with irreversible lesions (Table 2).

Table 2. Rezultatele tratamentului aplicat în laminita acută

<table>
<thead>
<tr>
<th>Treatment applied</th>
<th>Nr. of treated animals</th>
<th>Age (years)</th>
<th>Sex</th>
<th>Period</th>
<th>Result of treatment</th>
<th>Healed percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>F</td>
<td>Healed</td>
<td>Improved</td>
</tr>
<tr>
<td>Proceeding 1</td>
<td>27</td>
<td>2-18</td>
<td>18</td>
<td>9</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>Proceeding 2</td>
<td>18</td>
<td>3-15</td>
<td>13</td>
<td>5</td>
<td>16</td>
<td>-</td>
</tr>
<tr>
<td>TOTAL</td>
<td>45</td>
<td>31</td>
<td>14</td>
<td></td>
<td>34</td>
<td>1</td>
</tr>
</tbody>
</table>

Like we can see in table 2, the results obtained after applying those two therapeutical proceedings were different.

The first therapeutical proceeding was based on large venisection in hope of reducing keratogeneous membrane hypercongestion and eliminating on sangvin way the endotoxines presented in intestine. Romergan and the Pheniramine were used for histamine neutralising, but we believe that not always was the most bankable results. More poorly results was owed in some cases and tardy diagnosis of acute phase and the absence of digestive neutralisants or antihistaminicals more efficiency.

In last time, appeared in our country new medicamentous products and conceptions which arised the vallue of acute lameness therapy. Like it observe also from results obtained by aplication of the second medicamentary proceeding, they were much better (88,7%) against the first. They justify the therapeutical efficiency of the medicamentary products by their effects on digital vascularization, antihistamininical, neutralisant and local analgesia. Different autors (Karin şi col., 1990, William 1990, Garnier 1980, Matthews 1986, Hood et al 1982) give a special importance for therapeutical protocol of acute lameness, increasing promptitude of diagnosis and for emergency therapy (Parksa 2003, Susan et al 2005).

By synthenising our results obtained with other mentioned autors, we can establish the phases, the medication and regime of aplication. In this way we schematize the sequence of the medication which must be applied.

1. **Improvement of comfort** for the animal, which consists in first way by: absolutely rest, thick bed from straw, weakening of horseshoe nail if is the case. Than the analgesia, which is an important phase of the treatment because it contribute for diminish of pain, muscular spasm and favor the returning of a normal suport for limb. The canadian autors recomend Phenylbutasone in dose of 2 – 3 g i.v. which has also analgesical qualites beside this antiinflamatory effects.

2. **Intestinal endotoxines neutralising** by emptying or laving of the digestive tract and by laxatives per os (it recomeds oleum parafin which by its laxative effect help to prevent intestinal toxines absorption. Flumixine Meglumine, in acute phase, for its antiendotoxical qualities (after Karin, 1990) in dose of 0,1 – 0,25 mg/kg, with cardiovascular effects and its antitoxical and analgesical qualities alleviates the animal and assure a more comfortable recumbency. Fluidotherapy assure o good perfusion of the tissues and the important diuresis in endotoxine elimination.
3. Antiinflammatory medication it based on Phenylbutasone in dose of 4.4 mg/kg, orally or i.v., repeted at 12 hours, q 3 – 4 zile and Flumixin Meglumine. We used in some cases Dex-pyranal in dose of 20 – 30 ml i.v. once per day with very good results.

4. Re-estabilishment of the digital circulation, by local heat, is contrary by those applied by us in first phase. Local heat by baths or compresses provokes vascular dilatation and implicitly reduces hyperemie by keratogeneous membrane level. Also, Acepromasine with neuroplegic effects, but also peripheral vasodilatation. It administers in dose of 0.03 – 0.06 mg/kg in interval of 6 – 8 hours, 3 – 5 days depending by evolution of the disease.

In 1938, Rodebough sugessted removal the lateral lacuna till at keratogeneous membrana and finishing with forck (obviously including than the left size). Histamine from food was than sugessted like the cause of lameness, the antihistaminicals being sugessted like therapy.

Kocker in 1948, reported 3 averse cases which responded at antihistaminical therapy and in 1965 Roberts sugessted i.v. therapy with corticosteroids in acute lameness, which today is contraindicate and even promoters of this disease.

Coffman and Gavner (mentioned by Karin et al.), based on the model of carbohydrates excess, suggest that the bacterian endotoxines initiate astriction of the arteries and veins, conducing to appear of the bridges between those two that recross the chorion of keratogeneous membrane. The edema between the spaces of hoof favourise the ischemia. The autors mentioned upper recomended systematic usage of the Phenylbutasone, diureticals and antihistaminicals. Also they observed the dramatic increase of the sangvin pressure in acute painful phase, but also in cases intractable at lameness. Therefore they sugessted the administering adition of the treatment upper, by phenotiasinical sedatives in hope of digital dilatation and the blocking of the digital nerves for favoring the movement and for improving the circulation.

Respect the theorie of physiopathological mechanism of sangvin circulation in acute lameness, exist two theories: one of vasoastriction and one of vasodilatation. The first shows that the contribution of blood in hoof level is totally disgraced (Susan, 2005) and the second one, which is in contradiction with first, sustaines that still before the debut of acute lameness increase sangvin circulation, so cause vasodilatation.

CONCLUSIONS

The study effectuated by us by using of those two medicamentous proceedings in acute lameness, lined out:

- The necessity in treatment of new medicamentary products with high therapeutical qualities.
- Reducing of limb pain or limbs involved by using of the digital nerves anesthesia, the neuroplegy with Acepromasine and an hygienic comfort by rich sheets.
- Using the antiinflammatory medication based on Phenylbutasone, Flumixine Meglumine and Dex-pyranal.
- Neutralising of the endotoxines by gastro-intestinal emptying or laving, or laxatives administered with sound, for example mineral oil type.
- The application of Heparine and warm baths for improving of the digital vascular circulation.
BIBLIOGRAPHY