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A MODERN PROTOCOL FOR THE TREATMENT OF LAMINITIS IN HORSES IN ISRAEL

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Summary. *The effectiveness of a modern laminitis treatment protocol in horses was studied at the private «Alhamed Stud» in Israel. Successful laminitis treatment in horses depends on a multifaceted approach that considers both the systemic factors that trigger the disease and the mechanical stability of the hoof. By combining pharmacological interventions with advanced biomechanical support, we significantly reduce the risk of irreversible damage to the hoof structure.*

Аннотация. *Изучена эффективность современного протокола лечения ламинита у лошадей на базе частной конюшни «Alhamed Stud» в Израиле. Успех лечения ламинита у лошадей зависит от многогранного подхода, учитывающего как системные факторы, провоцирующие заболевание, так и механическую стабильность копыта. Сочетанием фармакологического вмешательства с усовершенствованной биомеханической поддержкой мы значительно снижаем риск необратимого повреждения структуры копыта.*

Key words: laminitis, laminar interface inflammation, coffin bone, mechanical displacement, Cushing's syndrome, hormonal imbalance, resistance, sepsis and endotoxemia, tachycardia.

Ключевые слова: ламинит, воспаление ламинарного интерфейса, копытная кость, механическое смещение, синдромом Кушинга, гормональный дисбаланс, резистентность, сепсис и эндотоксинемия, тахикардия.

Equine laminitis is a serious orthopedic emergency characterized by disruption of the internal support system of the hoof. The underlying cause is inflammation of the laminar interface, the "Velcro-like" connection between the hoof wall and the bone.

Under normal conditions, the distal phalanx (P3), also known as the coffin bone, is held within the hoof capsule by these laminae. In laminitis, this attachment is disrupted, causing P3 to become unstable. If the inflammation progresses, it can lead to mechanical displacement (rotation or subsidence) of the coffin bone within the hoof capsule. The most common causes are:

- carbohydrate overload (excessive consumption of soluble carbohydrates (sugars and starches). This occurs when horses consume rich, high-sugar grass or are given unlimited access to grain.

- endocrine disorders (obesity is a significant risk factor). Horses with PPCD (Cushing's syndrome) are at higher risk of laminitis, as hormonal imbalances and insulin resistance directly weaken the laminar junctions and cause tissue damage.

- sepsis and endotoxemia (the presence of bacterial toxins in the blood resulting from infections such as retained placenta or pneumonia, which leads to disruption of the laminar layer) [1-11].

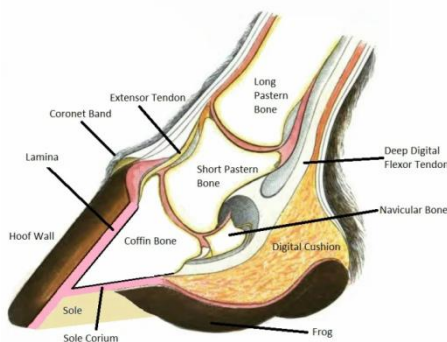


Figure 1 – Hoof Anatomy

The aim of the study was – to evaluate the effectiveness of a modern laminitis treatment protocol in horses at the private stable "Alhamed Stud" in Israel.

The study was conducted at the private Alhamed Stud in Israel. The subject was a 6-year-old Arabian stallion named "Khaled." Daily nutrition (feeding, drinking, and exercise) was maintained according to Arabian horse care protocols.

To assess the clinical status and establish a diagnosis, clinical and instrumental examinations were used, including the use of specialized hoof testers (instruments used to test hooves for pain in the toe area during localized pressure), and radiographic examination. Radiographs are an important tool for assessing any rotation or sagging of the distal phalanx (P3) relative to the hoof wall.

During the initial examination of the animal, the following clinical signs were identified: systemic – signs of depression, increased sweating, increased heart rate (tachycardia), tenderness on palpation; laminar stance was characterized by the following signs: the horse stood with its forelimbs extended and drew its hind limbs forward to transfer weight from the painful toes (fig.2); digital impulses were characterized by a pulsating movement of the toes at the back of the fetlock joint, the hooves were hot to the touch (increased local temperature); mobility – the horse often resisted lifting its leg and showed severe lameness when turning on hard surfaces.



Figure 2 – Characteristic posture of a horse with acute laminitis

X-ray examination revealed a lateral-medial (LM) type of rotation of the distal phalanx (P3) (Fig. 3).

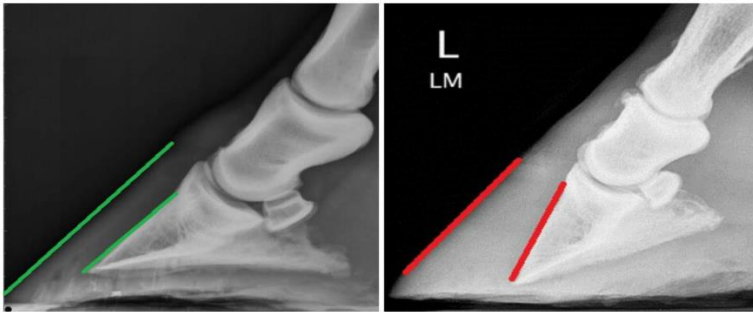


Figure 3 – Comparison of a healthy hoof (green) and a hoof with laminitis (red)

After diagnosis, the following pathogenetic therapy was prescribed: cryotherapy—constant cooling of the hooves with ice—helps manage inflammation and suppress matrix metalloproteinases (MMPs), which are destructive enzymes. It was combined with the NSAID (non-steroidal anti-inflammatory drug) phenylbutazone for intramuscular administration as follows: 16 ml on the first day, 8 ml on the second through sixth days. Local biomechanical stabilization of the distal phalanx (mechanical and plantar support) was performed using silicone impression material (paste) and/or polystyrene foam pads, which allows for weight redistribution, relieving stress on the painful hoof wall and supporting the frog. To soften the moment of toe-off, that is, the moment the hoof leaves the ground, specialized shoes, such as Heart-bar or open-toe shoes, were used to reduce tension on the deep digital flexor tendon (DDFT) on the sensitive hoof laminae (Fig. 4,5).

At the same time, dietary management and exercise were prescribed, specifically avoiding grains, concentrated feeds, and high-sugar feeds, and limiting access to lush grass, especially in the spring, using a shepherd's muzzle. Low-non-structural carbohydrate (NSC) hay or soaking it in water to reduce the sugar content were recommended.

Based on clinical and instrumental examinations and the prescribed treatment, a favorable outcome was predicted.



Figure 4 – Strategic plantar support using medical grade silicone impression material helps redistribute weight and stabilize the distal phalanx (P3) by distributing pressure evenly across the entire sole and frog of the foot



Figure 5 – Therapeutic shoeing: heart-shaped shoe (left) for structural support and open-toe shoe (right) to ease transitions from step to step

Successful treatment of equine laminitis depends on a multifaceted approach that considers both the systemic factors that trigger the disease and the mechanical stability of the hoof. By combining pharmacological interventions (to control pain and endotoxemia) with improved biomechanical support (using silicone paste and specialized shoes), we significantly reduced the risk of irreversible damage to the hoof structure. Strict nutritional control is an etiopathogenetic factor for maintaining the integrity of the laminar interface and ensuring the horse's long-term comfort and mobility.

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