

THE ROLE OF SELENIUM PREPARATIONS AND VITAMIN E IN NUTRITIONAL MYODYSTROPHY (WHITE MUSCLE DISEASE) IN SHEEP

ROLUL PREPARATELOR PE BAZĂ DE SELENIU ȘI VITAMINA E ÎN MIODISTROFIA DE NUTRIȚIE (BOALA MUȘCHILOR ALBI) LA OVINE

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Abstract

The nutrition myodystrophy, also known as white muscle disease is a nutritional origin disorder (hypovitaminosis E and Se), characterized by the muscle degeneration that begins to the limbs and then it covers the entire musculature with locomotory and cardio-respiratory clinical manifestations. This necropsy study, performed on five sheep, wants to make a short recall on morphological histological and clinical aspects specific to this disease as a small field guide for the veterinarians.

Rezumat

Miodistrofia de nutriție, denumită și Boala mușchilor albi este o boală de origine nutrițională (hipovitaminoză E și Se), caracterizată prin degenerescență musculară care debutează la nivelul membrilor și care, ulterior, cuprinde întreaga musculatură, cu manifestări clinice locomotorii și cardio-respiratorii. Prezentul studiu necropsic efectuat pe 5 cadavre ovine dorește să facă scurte rememomări cu privire la aspectele morfo-histo-clinice specifice ale acestei boli ca un mic ghid de teren destinat veterinarilor.

Introduction

Adult sheep do not show clinical signs, health problems lambs appearing in the form of enzootic degenerative myodystrophy or "*white muscle disease*" [1, 2, 4].

Lambs may show signs of the disease soon after birth or at age 1-3 months (at birth are normal). Modification occur most often in the hind limb muscles, cervical, intercostal and diaphragmatic. Those in whom the disease is manifest after birth is seen as becoming adynamic, are risen with great difficulty and much prefer to lie down, walking is stiff and ataxic. Disease progression leads to para paretic and feeding is difficult because myodystrophy [1, 2, 4].

At the age of 1-3 months lambs installs locomotory disorders, adynamic, fatigue, falling

behind flock lambs, reduce weight gain, there are delays in growth and development.

If animals are not treated, evolution of locomotory disorders gets worse and the animals can die. In cardiopulmonary myodystrophy breathing is difficult, accompanied by arrhythmia and tachycardia (1, 2, 4).

Research has aimed the diagnosis of nutrition myodystrophy based on macroscopic and histopathological lesions.

1. Materials and methods

The research was conducted during March - April 2016 through necropsy 5 Merinos sheep cadavers, aged 1-3 months, from the household, providing a 300 heads sheep herd.

Necropsy was performed by specific technique mammals.

Suspicion of nutrition myodystrophy arose from the necropsy examination of the first body, when on section the skeletal muscle was observed as grey-white. The affected areas have had a dry aspect and a crumbly consistency [3, 5, 6].

Macroscopic examination covered the recording of the modified structural peculiarities, in order to carry the microscopic examination [3, 5, 6].

The *samples preparation* was carried out after the classical method described in literature as follows: 24 h alcohol fixation at room temperature (to prevent the tissue alteration due to the enzymes activity and preserve the tissue's texture and to improve the optical differentiation), alcohol dehydration (five steps: 70, 80, 90, 100% and 100% alcohol, each step for two hours), clearing with benzene, paraffin wax at 56°C, embedding tissues into paraffin blocks, trimming of paraffin blocks to 6 µm sections and mounting on the glass slides (using the Meyer albumin), haematoxylin - eosin [7].

Staining was performed as follows: deparaffination of tissue sections in benzene, rehydration using decreasing concentrations of alcohol, rinsing in distilled water, haematoxylin staining, alcohol, eosin staining water removal using increasing concentrations of alcohol, and cover slide mounting.

Haematoxylin will stain the nuclei in blue and the mucins in light blue.

Eosin will stain the cytoplasm in pink, collagenin pale pink, red blood cells in bright red, and colloid in red. The microscopic examination is useful as differentiating diagnosis method only if chemical preparation of samples is applied [7].

2. Results and discussions

On the *clinic examination* lambs showed signs of disease manifested by adynamy were high with difficulty and therefore more preferred to lie down, walking being ataxic type

Lambs with severe died and in those with mild preparations were administered

intramuscularly selenium and vitamin E with good results.

At necropsy bodies, macroscopic muscle level hind limbs, cervical, intercostal and diaphragmatic were found whitish-grey areas, dry bulk, alternating with areas of normal.

Microscopic evidenced a strong hyaline damaged muscle fibbers (Figure 1).

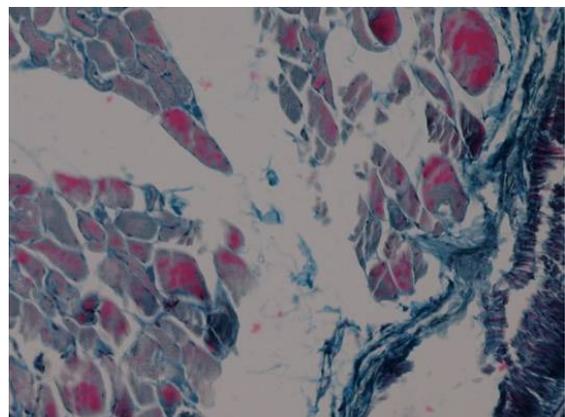


Figure 1. Aspects in white muscle disease in lamb: **a.** clinic, **b.** macroscopic **c.** microscopic (Col HEA x 20).

Conclusions

White muscle disease suspected based on clinical signs and pathological - macroscopic was confirmed by histopathology.

Lambs with clinical resemble light following administration of preparations selenium and vitamin E, they disappeared, which proves the effectiveness of treatment.

Sheep disease has been reported in the coming years it is recommended that preventive administration of preparations based on vitamin E and selenium lambs from the first day of life.

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References

1. **American Sheep Industry Association (ASIA)** (2016). Sheep production Handbook. Available:https://www.sheepusa.org/NewsMedia/WeeklyNewsletter/2016/July/July152016_UpdatedSheepProductionHandbookAvailable
2. **Reilly LK, Baird AN, Pugh DG.** (2012). Diseases of musculoskeletal system, Chapter 11, in: Sheep and Goat Medicine, Eds. DG Pugh, and AN Baird, 2nd Edition, Elsevier, Saunders, USA, pp. 223-254.
3. **Stancu A** (2013). Diagnostic necropsic veterinar, Editura Mirton Timișoara.
4. **Stancu A** (2014). General veterinary pathological anatomy. Agroprint, Timișoara.
5. **Stancu A** (2014). Practicum of veterinary pathological anatomy. Agroprint, Timișoara.
6. **Stancu A** (2014). Special veterinary pathological anatomy. Agroprint, Timișoara.
7. **Șincai M** (2000). Tehnici de citohistologie normală și patologică. Mirton, Timișoara.