

Effect of fenbendazole treatment in an ovine Dictiocaulosis episode in Timiș County

Efectul tratamentului cu fenbendazole într-un episod de Dictiocauloză ovină în județul Timiș

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Abstract

Dictiocytosis of sheep is known as verminous bronchopneumonia, cosmopolitan geohelminthosis produced by *Dictyocaulus filaria*, which parasites in the trachea and the bifurcation of the large bronchi in sheep and goats. Clinically, it is characterized by severe respiratory syndrome, bronchial obstruction, bronchitis, slimming, decreased production and morbidity, and morphopathologically, by traheobronchitis lesions, chronic bronchopneumonia.

Abstract

Dictiocauloza oilor este cunoscută sub denumirea de „bronhopneumonie verminoasă, o geohelmintoză sezonieră, cosmopolită, produsă de specia *Dictyocaulus filaria*, care parazitează în trahee și bifurcația marilor bronhii la oi și capre. Clinic se caracterizează prin sindrom respirator grav, obstrucție bronșică, bronșită, slăbire, diminuarea producțiilor și morbiditate ridicată, iar morfopatologic, prin leziuni de traheobronșită, focare de bronhopneumonie cronică.

Introduction

Dictiocytosis manifests clinically when worms have reached the adult stage in the respiratory system. The youth of these species is the most affected and has a heavy jet (runny nose), coughing, accelerated breathing, especially in the morning, sudden temperature changes or effort.

The affected animals have no appetite, they weaken a lot, and calves may have asphyxia and even death during coughing.

Sometimes, 2-3 days after contamination, there is also a digestive clinical phase manifested by bad smells and thirst.

Diagnosis is suspected on the basis of clinical signs, corroborated with epizootic

aspects: the outbreak of enzootic diseases in the summer seasons, in rainy years with serious manifestations especially in youth, maintained on wet meadows or in non-dignified shelters with moisture.

Differential diagnosis should be made for other lung or digestive disorders with other causes.

The diagnosis of living animals is confirmed by parasitological examination, and in the case of those deceased by necropsy examination. (3, 5, 8, 10, 11, 12, 13).

Aim

The researches aimed at establishing the diagnosis of Dictiocytosis based on macroscopic lesions and histopathological examination.

1. Materials and methods

The researches were carried out between May 2016 and June 2016 by the necropsiation of 4 ovine sheep, aged 3-4 months, the Merinos breed from the household, 35 sheep with clinical signs of the disease, from 180 heads.

Necropsy was performed by mammalian specific technique. Suspicion of Dictiocytosis occurred when at the necropsy following large bronchial segmentation and bronchiole were found increased amounts of whitish, sparkling mucus in which adult parasites were present in the form of skewers. In the middle bronchi the parasites were very numerous, where they formed skeins that obstructed the lumen of their conduits.

Pulmon samples were taken to perform the histopathological examination.

The *samples* were fixed in alcohol for 24 hours. Fixed samples were passed to the dehydration battery, consisting of alcohol at increasing concentrations, from 70 ° to absolute alcohol. In each of the five wells the samples were held for two hours, after which the alcohol was removed by introduction into benzene to clarify the section, then the paraffin bath was added to the thermostat at 56 °C.

Paraffinization resulted in blocks containing organs with lesions, which were sectioned at the microtome at six micrometres.

The *sections* obtained were fastened on well-defatted blades using Meyer's albumin. The sections glued to the blades were stained by the HEA method.

Staining of histopathological sections was carried out in the following steps: dissolution of paraffin with benzene; rehydration using alcohols with decreasing concentrations and water; passing the blades through the baths with dyes (hematoxylin, eosin, methyl blue); removing water using increasing concentrations of alcohols (70-90 °C amyl-alcohol); assembling the colored sections between the blade and the blade.

Treatment. In animals with clinical signs, Fenbendazole 10% was administered, which is

an endoparasiticide from the broad-spectrum benzimidazole group.

Orally administered is rapidly absorbed and diffused into all organs and tissues causing lysis of the worms, irrespective of the species and category of treated animals, as well as the location of the parasites, either in the respiratory or digestive tract.

The spectrum is considered high, fenbendazole being active against trematodes, cestodes, nematodes in all forms of evolution (egg, larvae, adults).

2. Results and discussions

In the lungs, lobar pneumonia outbreaks located in the postero-dorsal area of the diaphragmatic lobes, as well; and atherosclerotic lesions, below normal levels; surface of the organ, lacking elasticity, bluish located on the edge of the lungs (Fig. 1).

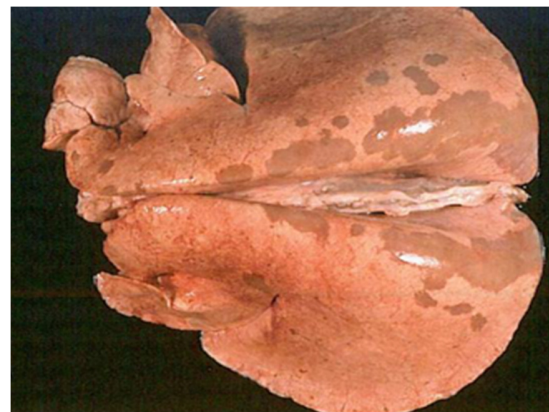


Figure 1. Verminous Bronchopneumonia - Ovine Dictiocaulosis

Larger bronchial and bronchiolar segments have been found to have increased amounts of whitish, sparkling mucus, sometimes mixed with pus or bloodstains in which adult parasites are isolated, or in the form of gherkins.

In the middle bronchi the parasites were numerous, in the form of bumps that obstructed the bronchial lumen (Fig. 2).

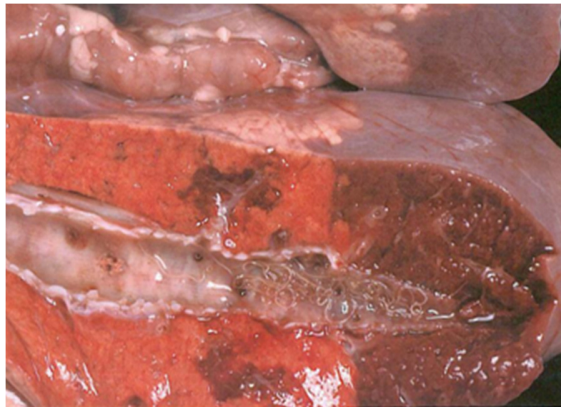


Figure 2. Verminous bronchopneumonia - sectional view
- Ovine Dictyoaulosis

Bronchitis and bronchial catarrh (catarrh and parasites in the lumen) were observed in the histopathological examination; desquamation of the bronchial epithelium; predominantly peribronchic atelectasis zones; interstitial pneumonia outbreaks in which parasites were present at various evolutionary stages: eggs, larvae, adults; fibromuscular hyperplasia of the alveoli; alveolar epithelization (pneumocyte of the plate becomes cuboid); peri-bronchial and perivascular lymphoid hyperplasias; pulmonary alveolar pulmonary emphysema; thickening of the alveolar septa or their traumatization caused by the larvae in migration; dystrophic calcification (Fig 3 and 4).

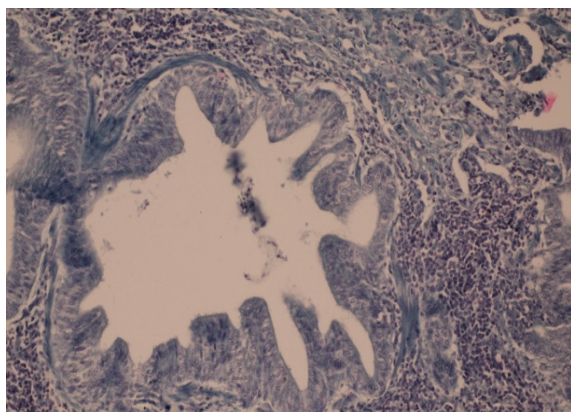


Figure 3. Verminous bronchopneumonia - microscopic appearance. peribronchial lymphohistochemical hyperplasia. Ovine Dictyoaulosis

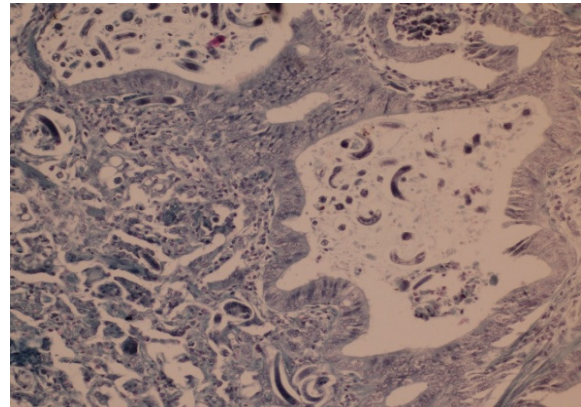


Figure 4. Verminous bronchopneumonia - microscopic appearance, the presence of larvae in the bronchi, the presence of larvae in the alveoli. Ovine Dictyoaulosis

In diseased animals, clinical signs disappeared after 3-4 days of treatment.

3. Conclusions

- Dictyoaulosis was diagnosed in all the ovine animals studied.
- Macroscopically, after large bronchial sections and bronchiole, there were increased amounts of whitish, sparkling mucus, in which adult parasites were present in the form of skewers. In the middle bronchi the parasites were very numerous, where they formed bumps that obstructed the lumen of their conduits.
- Microscopic bronchitis and bronchial catarrh (catarrh and parasites in the lumen) were observed.
- Following the administration of fenbendazole, clinical signs of disease disappeared after several days, demonstrating the efficacy of the drug.

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References

1. **Stancu A.** (2014). Special veterinary pathological anatomy, Ed. Agroprint, Timisoara, ISBN 978-606-8037-49-3.
2. **Stancu A.** (2013) Diagnostic necropsic veterinar, Editura Mirton, Timisoara 2013, 978-973-52-1395-4.
3. **Baba, A.I.** (1996) - Diagnostic necropsic veterinar, Ed. Ceres, București.
4. **Cătoi C.** (2003) - Diagnostic Necropsic Veterinar, Ed. Academicpres, Cluj-Napoca,.
5. **Coman M. Olariu-Jurca I. Stancu A.** (2005) - Compendiu de Morfopatologie Practică. Ed. Brumar, Timișoara.
6. **Dărăbuș G., Oprescu I., Morariu S., Mederle N.** (2006). Parazitologie și boli parazitare, Ed. Mirton, Timișoara.
7. **Johnson M; Mackintosh, C.G.; Labes, R.E.; Taylor, M.J.; Wharton, D.A.** (2003). Dictyocaulus species: cross infection between cattle and red deer. N.Z. Vet. J. **51**(2): 93–98
8. **Radostits, O.M, Arundel, J.H, Gay, C.C.** (2000) Veterinary Medicine: a textbook of the diseases of cattle, sheep, pigs, goats and horses, Elsevier Health Sciences.
9. **Netsanet B.** (1992). Study on the Prevalence and Control of Lung Worms (Dictycaulus and Meullerius) in local Ethiopian Highland sheep in and around Debre Birhan. DVM Thesis, Addis Ababa University, Debrezeit, Ethiopia.
10. **Tarazona, J.M.** (1984). Lungworm infections in goats and sheep in Spanish conditions. Les Maladies de la Chevre. pp. 353-355.
11. **Sissay A.** (1996). Preliminary Study on the Prevalence of Ovine Lungworm Infection in and Around Dar B. Thesis, Faculty of Veterinary Medicine, Addis Ababa University, Debre-Zeit, Ethiopia.
12. **Wilsmore T.** (2006). Disease of Small Ruminants in Ethiopia. The Veterinary Epidemiology and Economics Research Unit of Agricultures Policy and Development the University Of Read. UK. pp: 602.
13. **Voia O.S., Padeanu I., Gajojdian D., Sauer M., Sauer W.I., Dragomir C, Albulescu M.** (2016). Study on Quantity and Quality of Sheep Milk Sampled from Three Areas of Timis County, Animal Science and Biotechnologies, **49**(2): 190-194.