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VETERINARY SCIENCES**DICTYOCAULOSES FOREST BISON: FEATURES OF DIAGNOSIS AND TREATMENT****Shuleshko O.***Dnipropetrovsk State Agrarian and Economic University, D.V.M.,
Candidate of Veterinary Sciences, Associate Professor
Dnipro, Ukraine***Zhorina L.***Dnipropetrovsk State Agrarian and Economic University,
Senior Lecturer Dnipro, Ukraine***ABSTRACT**

The article explores the ways of infestation of the American buffalo dictyocauloses, living in conditions of free maintenance within the boundaries of forestry. Various methods of treatment of this parasitic disease are described, as well as methods of administration of anthelmintic preparations for ungulates

Keywords: dictyocauloses, buffalos, methods of injection, ivermectin, brovalzen, albendazole.

Problem statement: Dictyocauloses is one of the most spread parasite diseases among hoofed animals in Ukraine. This disease causes damages in form of productivity loss and death the youngest or, rarely, mature animals [12]. Recently the species variety of hoofed animals at the zoos of Ukraine has risen. Lamas, roe deers, bison, predatory animals have been kept at both state and private zoos. The accumulation of a large number of animals complicates the epizootic situation and requires compliance with established sanitary norms [1, 10, 11,13].

Thus, the problems of development of diagnostic methods, research of course, pathologic anatomical changes and dictyocauloses treatment in hoofed animals, including the buffalos living in natural environment, as well as their health improvement are very actual [5-8].

Dictyocauloses is a helminthic disease that mainly among cattle youngsters caused by *Dictyocaulus viviparus* nematodes from Dictyocaulidae Skrjabini family that parasitize in bronchus of middle and back parts of lungs and result in bronchitis and bronchial pneumonia [1,3,4].

Dictyocaulus are thread-like helminthes of white-and-yellow color 3-6 cm long [2]. The diseases are widely spread and dangerous mostly for youngsters. Dictyocauloses causes sharp stop in growth and development of animals, their productivity falls, resistance to other diseases drops, animals often die. Force killing of a big amount of infected animals can take place [1,3,4].

Common means of hoofed animals worming are the following: feeding with tetramizol, fenbendazole, brovadozol, albendazole or injecting ivomek [2,13]. But their effectiveness during the treatment of buffalos living at the territory of forest estate land has not been studied enough.

Scope: design and implement preventive-and-treatment measures for curing buffalos living in natural environment and determine the most efficient method

of injecting antihelminthic medications (ivermectine, albendazole and brovalzen) to infected animals.

Aim of research: to research possible ways of infecting and determine key features of dictyocauloses course in buffalos; to research pathologic anatomical changes in animals in case of death due to dictyocauloses; to develop and implement the dictyocauloses treatment and prevention scheme in buffalos living in natural environment.

Materials and methods. Twelve forest buffalos from a private zoo of different age and gender with dictyocauloses were the material of our research.

To confirm the diagnosis the conditions of keeping and feed of buffalos were found, clinical features of the disease were studied, common katology methods [3] were conducted to check the availability of dictyocauloses larvae, a dead animal autopsy was made and various methods of treatment were developed and tested.

Results. Four buffalos of 1-3 years died within one week at the territory of forest estate land. Autopsy showed that animals died due to asphyxia caused with respiratory organs blockage by sexually active helminthes *Dictyocaulus*.

Corpses were exhausted, visible mucosa was anemic. Transudate was found in chest and abdominal cavities.

Lungs were enlarged, of pale-grey color, sometimes tumulus and "marbled", with areas of different hepatization stages; atelectasis and vesicular emphysema were found. Bronchial and middle-wall lymph glands were enlarged significantly.

Trachea and bronchus mucosa was hyperemic, sometimes with blood strokes. Small and medium bronchus were blocked with mucopurulent plugs. Lungs of dead animals contained local catarrh, pyo-necrotic bronchus pneumonia.

Trachea and bronchus were filled with foamy substance, where parasites were found. Cardiac muscle was quaggy, endocardium had local blood strokes.

Pathologic diagnosis for dictyocauloses was based on the availability of helminthesin bronchus and trachea holes.

After medical history and the reason of death were determined, it was stated that buffalos had been constantly kept at the pinewood enclosure with the total

area of 2,5 ha. The herd of buffalo quantity of 13 heads was too big for such small territory. This influenced the differences of the biological community. For instance, the variety of herbals before this area settlement by hoofed animals was the following: grasses – 37,3%, beans – 6,3%, herbs – 56,4% (Fig.1).



Fig.1. Looked like this forest before settling buffalo.

The situation has drastically changed within five years. From all grasses only *Datura stramonium* was present, which was abandoned by buffaloes (Fig.2).



Fig.2. Datura stramonium

This area of forest was significantly fouled with animals' defecations. Huge amount of defecations has

led to extinction of 20% of tree sat the area (Fig. 3, 4, 5, 6).



Fig.3. The same forest in 10 years (dead trees, change the Botanical composition of grass)



Fig. 4. Traces of a bison scratching on a tree



Fig. 5. Buffalo damaged by the pine bark
Fungus Pilobolus, which leads to expansion of *dictyocaulus* larvae at the plants, were found in bulk on dried feces. Ambient temperature reached 25-30 degrees that resulted in fast larvae development up to invasion stage (Fig. 7.).



Fig. 6. Damaged and dead trees, *Datura stramonium*

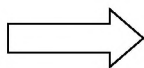


Fig.7. Fungus *Pilobolus* of feces.

Several broad, but not deep puddles were noticed at the territory, where the animals could drink. Buffalos were fed with hay, grass, feeding beets and concentrated food items directly from the ground. Animals drank from one common metal drinking bowl, placed low and thus it was constantly foaled with animals' feces. Buffalos were kept all together: both adult animal and youngsters (Fig. 8).



Fig.8. Common existence of calves and adult the drinking trough animals

All the animals were coughing sickly, that was accompanied with slime flowing from their noses. They had bad appetite, their nutritional status was lower than the middle rate (ribs and heads of the femurs, especially in youngsters, embossed). Their fur was diminished and hunched; some buffaloes had diarrhea and hard breathing. Moist ordryalesin chest cavity in some animals were heard even from 2-3 meter distance. Calves were thin and exhausted, and experienced difficulties with uprising from the ground.

Taking into account the animals' aggressive nature, feces for scatology were sampled directly from fresh bulk sat the ground having defined which buffalo they belonged to.

Skatology was conducted according to Berman-Orlov method. It showed numerous *Strongylata* larvae. Larvae were differentiated with methylene-blue solution. It was found that most of them were *Dictyocaulus viviparus* larvae of 0,31 - 0,36 mm long, they had obsolete esophagus and intestinal tracts, filled with round seeds of grey tone. Their head and tail ends were light. Tail end was arrow-headed.

The research defined that all the animals were infected with dictyocauloses, e.g. extensiveness of helminthic invasion constituted 100% and its intensiveness amounted at 9-12 *Dictyocaulus viviparus* larvae in vision of a microscope.

It was suggested and tested several schemes for animals treatment in combination with various antihelminthic medications:

1. Group feeding with brovalzen mixed with concentrated food items;
2. Individual distant injection of Ivermectine;
3. Individual feeding with brovalzen in form of feed attractions;
4. Group rearing with albendazole solution.

Primary applied method of group feeding with brovalzen appeared to be not very effective, since alpha males and females were eating these attractions with cure themselves and did not let weaker animals to them.

This method did not guarantee helminthes intake by all the buffalos. Thus individual distant injection of 1% Ivermectine solution by means of “flying” injectors was applied. This method enables to inject medication to a particular animal, but it takes a vet much time, patience and particular skills.

Feeding of attractions in form of beet with a correspondent amount of brovalzen powder appeared to be more effective. Such attractions are easy to use for feeding and their application enables to feed antihelminthic medications to particular animals (Fig.9.).

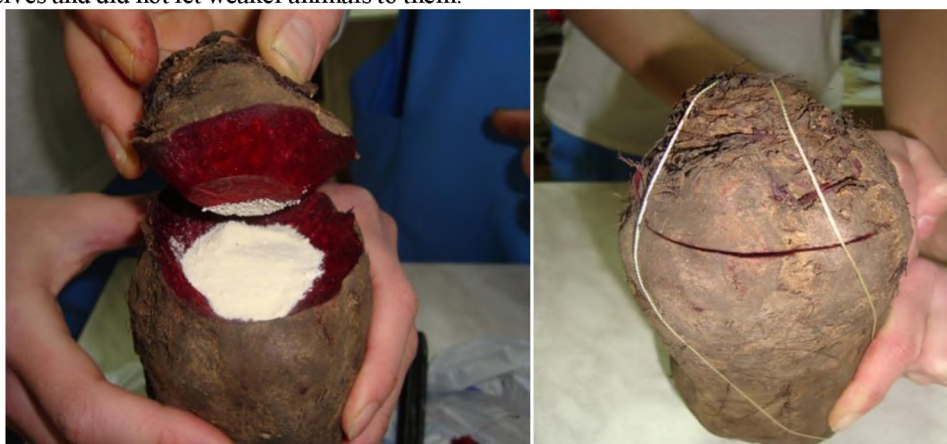


Fig.9. Making of feed lure.

However, the best results were achieved under application of 10 % water-and-albendazole solution, which was diluted in an appropriate quantity in compliance with the instructions in the drinking bowl, contained daily water portion for all the buffalos (Fig. 9). Within 24 hours animals were receiving the necessary amount of medication that provided the treatment effect required. Within one year the medication was applied in four cycles. Each cycle consisted of two albendazole

solution rearing with a week pause. Calves were taken apart from adults, new drinking and feeding bowls were established one meter over the ground, feeding area was cleaned and disinfected once in two weeks to ensure more efficient dictyocauloses control.

Skatology was conducted after the end of the treatment course, and Dictyocaulus viviparus larvae were not detected. II and EI constituted 100% (Table 1.)

Table 1.

Albendazole efficiency for dictyocauloses treatment in buffalos (n=12)

Germs detected	Before helminthic intake	After helminthic intake	EE %	IE %
	Larvae in vision of microscope	Larvae in vision of microscope		
Dictyocaulus viviparus larvae	9-12	0	100	100

At the same time it is necessary to remember that larvae absence is not enough to come to the conclusion on the absence of dictyocaulus and complete cure of the herd. Thus, after the research conducted we have come to the following conclusions:

Conclusions:

1. The forest are overloading with the enormous number of big chew able animals has led to changes in the grass stand botanical content and soft wood partial extinction.
2. Pathologic anatomical changes in the lungs of died from dictyocauloses buffalos are characterized with focal liquid contained thread-like helminthes.
3. Clinical dictyocauloses features in buffalos are characterized with sickly coughing, slime flowing

from the nose, moist or dry rales, bad appetite, diarrhea and hard breathing.

4. Buffalos were infected by alimentary way due to fouling of a feeding area with defecations and constant common keeping of differently aged groups of animals.

5. The most efficient method of dictyocauloses treatment in buffalos is the method of group rearing with 10% albendazole solution.

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