



Case report

Oropharyngeal Lesions and Poisoning by Closantel in Sheep After Antiparasitic Treatment

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Abstract

An outbreak of oropharyngeal lesions and poisoning by closantel in sheep after improper handling and anthelmintic drug overdose is described here. Eleven sheep were affected out of 42 that were dewormed. Eight sheep died. Clinically, the animals showed abdominal recumbency, absent pupillary and palpebral reflexes, bilateral blindness, depression, apathy, emaciation, and corneal opacity. Three sheep exhibited swelling on the right side of the mandible. At necropsy, one sheep exhibited a purulent lesion located on the right, next to the root of the tongue. Microscopically, the main finding was status spongiosus in the central nervous system and optic nerve. The retina showed rod and cone degeneration, ganglionic cell layer vacuolation, karyorrhexis, and vacuolation of the outer plexiform layer. The liver of one sheep exhibited diffused coagulative necrosis of hepatocytes in the centrilobular region associated with high infestation of *Haemonchus contortus*.

Key Words: Oropharyngeal lesions, drench guns, poisoning, closantel, sheep.

Introduction

In sheep, one of the most important forms of anthelmintic treatment involves the use of oral administration of antiparasitic drugs using drench guns. When this procedure is performed by untrained personnel, without proper knowledge and care, penetrating traumatic injuries can occur in the oral cavity and surrounding tissues (7) as well as drug overdosing and deaths due to poisoning can occur (2, 3); however, both problems occurring concomitantly have not been reported. The present report describes an outbreak of oropharyngeal lesions and poisoning by closantel in sheep owing to improper handling and overdosing of anthelmintic drug.

Case report

The outbreak occurred in a semi-extensive sheep farm located at the municipality of Muritiba, in the

region of Recôncavo da Bahia. Clinical history and epidemiological data were obtained from the owner and the handler. Seven sick sheep (identified as sheep 1, 2, 3, 4, 5, 6, and 7) were clinically examined. The sheep that died naturally or were euthanized were subjected to necropsy. At necropsy, fragments of several organs were collected, fixed in 10% neutral buffered formalin, processed and embedded in paraffin according to routine histological techniques. Sections 5- μ m thick were stained with hematoxylin and eosin (HE) and examined by light microscopy.

According to the owner, the animals had been recently acquired to start the production. The herd comprised a total of 98 animals including adults (male and female) and lambs of Dorper and Santa Inês breeds. Animals were grazing on Brachiaria grass (*Brachiaria* spp.), massai grass (*Panicum maximum*) and were

supplemented with wheat bran. The handler did not have knowledge on sheep rearing. According to the handler, 42 sheep were dewormed with the anthelmintic closantel at a dose of 1 ml/kg body weight. However, the animals were not weighed for the procedure. Fifty-six pregnant ewes were not dewormed.

Three days after the procedure, some animals started showing signs of depression, weakness, and blindness. During ten days, some animals exhibited mandibular swelling although were eating and drinking water normally. Three adult sheep and one lamb died. During this period, seven sheep were daily examined, two belonged to the Dorper breed and five were of mixed breed. All seven were females with ages varying between 1.5 and 2 years.

The main clinical signs exhibited were sternal-abdominal recumbency (7/7), absent pupillary and palpebral reflexes (6/7), bilateral blindness (4/7) (Figure 1), depression (3/7), mandibular swelling (3/7), weight loss (2/7), apathy (1/7), corneal opacity (1/7). The animals with bilateral blindness exhibited absent menace reflex and would hit obstacles while walking.



Figure 1. Marked pupil dilation (Sheep 2).

Three sheep exhibited swelling on the right side of the mandible. These animals were treated with antibiotics, exhibited improvement and were returned to the owner. Two sheep died naturally and two were euthanized in extremis. At necropsy of sheep 02, which exhibited mandibular swelling and bilateral blindness, a perforating lesion measuring 0.5 cm in diameter was observed, which had a communication with a cavitation filled with food content and purulent secretion at the right side of the root of the tongue (Figure 2). The other sheep did not exhibit macroscopic alterations.

The main histopathologic finding observed in all sheep was edema of the white matter (status spongiosus) in the parietal telencephalon, thalamus, hippocampus, cerebellar peduncles and cerebellum. The optic nerve exhibited moderate status spongiosus (Figure 3). The retina exhibited rod and cone degeneration, ganglionic cell layer vacuolation, karyorrhexis, and

vacuolation of the outer plexiform layer. The liver of sheep 6 exhibited marked coagulative necrosis of centrilobular hepatocytes.

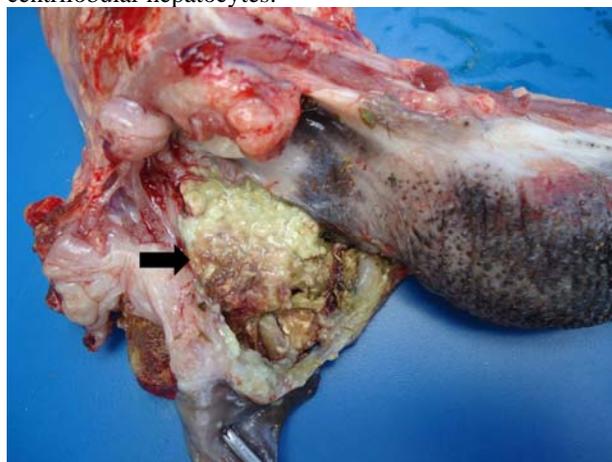


Figure 2. Abscess (arrow) located lateral to the root of the tongue and pharynx (Sheep 2).

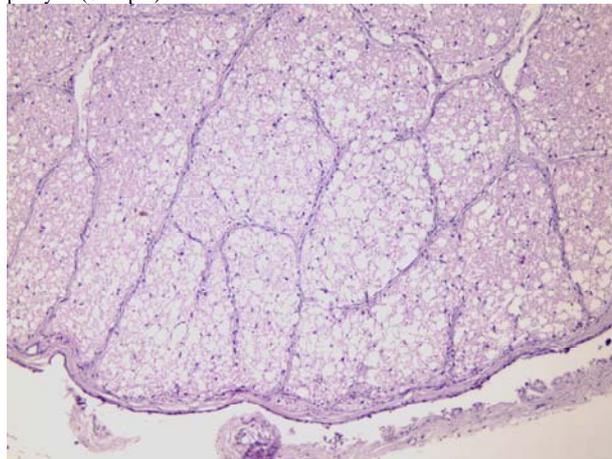


Figure 3. Optic nerve exhibiting moderate status spongiosus. (Sheep 1). HE. 20X.

Discussions

The diagnoses of oropharyngeal lesion and closantel poisoning were based on history and clinical-pathological findings. Oropharyngeal lesion outbreaks (7) and poisoning by closantel (2, 3) have been described in sheep, separately. In the case of oropharyngeal lesions, it is possible that improper restraining associated with the animals' stress at the moment of oral anthelmintic administration might have contributed to the traumatic lesions, which were likely caused by the drenching gun (7). In this report, three sheep exhibited swelling on the right side of the mandible. The same abscess location in all sheep indicates technical error. However, closantel poisoning in domestic animals occurs accidentally when the anthelmintic drug is given as an overdose (1, 2, 3, 8). In the present report, the handler's unpreparedness and lack of knowledge for this type of procedure was clear: the animals were not weighed for the procedure and the dose used was 1 ml/kg body weight, which is 10 times higher

than the recommended dose for this product (5). In the case presented here, the morbidity rate was 26.19% (11/42) and the mortality rate was 16.6% (7/42). The clinical picture presented by depression, absent pupillary and palpebral reflexes, and blindness was similar to the closantel poisoning cases described by other authors (2, 3, 8). However, mandibular swelling, usually in one side of the oral cavity with lesion and formation of abscess, is related to trauma resulting from inadequate use of the drenching gun (7). The microscopic lesions observed in the sheep, which were characterized by status spongiosus in several regions of the central nervous system and optic nerve, have been observed in sheep and goats poisoned by closantel (2, 3, 5, 8). The CNS and optic nerve status spongiosus caused by closantel poisoning occur due to distension of the myelin sheath, which forms intramyelinic vacuoles by separation of myelin lamellae (8). The histological changes observed in the eye, namely cone and rod degeneration, karyorrhexis, and vacuolation of the outer plexiform layer, were similar to those described by Furlan et al. (3). In this report, only one sheep exhibited liver lesions, which was diagnosed as coagulative necrosis. Lesions detected on the liver parenchyma, as observed in this case, are probably due to the high infestation with *Haemonchus contortus* and resulting anemia, however, lesions in the hepatic parenchyma are described in cases of closantel poisoning in goats and sheep (2, 4). To avoid oropharyngeal lesions during administration of anthelmintic drugs using a drenching gun, it is important to make sure there are no irregularities or sharp areas on the equipment, as well as to properly restrain the animals during oral drug administration (6, 7). To prevent closantel poisoning, the dose should be correctly calculated (5).

Acknowledgments

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