First record of bovine parafilariosis in Bosnia and Herzegovina, Western Balkans

O. STEVANOVIC1*, R. BABIC1, D. NEDIC1, S. NIKOLIC1, R. DIMITRIC2, M.BORKOVIC3, S. PARAS4

SUMMARY

Bovine parafilariosis is a well-known seasonal parasitic disease that has been present for a long time in Asia, Africa and South America. In Europe, reports on bovine parafilariosis are comparatively scarce. The reports presented here describe the clinical findings in Parafilaria bovicola infected Simmental cows from two different locations in Bosnia and Herzegovina. Both history and clinical findings were suggestive for the disease, while the diagnosis was set by microscopic findings of filarid eggs in sero-haemorrhagic exudates and adults isolation. Treatment with ivermectin was successful, leading to a good clinical outcome. In addition, phone survey was conducted incorporating large number of veterinarians in the western region of Bosnia and Herzegovina. Only three (10.7%) out of 28 interviewed veterinarians had diagnosed parafilariosis previously. This case report on parafilariosis and the preliminary epidemiologic study give evidence to the presence of a disease in Bosnia and Herzegovina.

Keywords: parafilariosis, cattle, Bosnia and Herzegovina

Introduction

Bovine parafilariosis is a seasonal vector-borne parasitic disease caused by the cutaneous filaria Parafilaria bovicola (Tubangui, 1934). This is a nematode parasite of the subcutaneous and intermuscular connective tissue of the skin which causes local mechanical lesions manifested as the “bleeding spots”. The development cycle is indirect with flies as intermediate vectors. Muscid larvae from L3 larvae, female nematode lay eggs which can be found in exudates or blood. The usual symptoms are spot bleeding and nodules which drain haemorrhagic exudates on the skin of neck, thorax and legs [3]. The symptoms and features of epizootic diseases are closely related to the weather, season and the presence of the muscid vectors. The disease has long been described in Africa, Asia and South America and is considered to cause severe economic damage to cattle farming in these areas [1]. The disease was subsequently described in some European countries, such as France, Romania, Bulgaria [4,9,1] Sweden [7], Ireland [10], and, more recently cases have been reported in, Netherlands [2], Germany [6], Italy [5] and Belgium [8].

This paper describes the first reported clinical cases of bovine parafilariosis in Bosnia and Herzegovina.

Case report

In May 2013, local veterinarian was called by the farmer who observed recurrent bleedings from the skin of a 2-year old Simmental heifer in the village of Mljecanica, Kozarska Dubica, Bosnia and Herzegovina. The heifer has retained appetite and was in a good shape. The general condition of the cow was not disturbed. According to the owner there was no history of import of cattle on his farm. Episodes of bleeding had been observed previously in cattle of this region in the spring and summer by local veterinarian and the farmer. At the time of clinical examination fresh bleeding streaks were observed on the left shoulder, with blood dripping from tiny tack lesions. In addition to that, the skin on the chest and neck had visible dried scabs from earlier bleeding episodes. In short, the heifer had visible lesions of cutaneous filariasis. The episode of bleeding was confirmed by the owner who noted that the heifer had recurrent bleedings from skin wounds of infected cattle. The heifer was examined by a veterinarian and a diagnosis was set for parafilariosis. The heifer was treated with ivermectin and a good clinical outcome was observed. The heifer was treated with ivermectin and a good clinical outcome was observed. The heifer was subsequently examined by a veterinarian and the diagnosis was confirmed by microscopic findings of filarid eggs in sero-haemorrhagic exudates and adults isolation. Treatment with ivermectin was successful, leading to a good clinical outcome. In addition, phone survey was conducted incorporating a large number of veterinarians in the western region of Bosnia and Herzegovina. Only three (10.7%) out of 28 interviewed veterinarians had diagnosed parafilariosis previously. This case report on parafilariosis and the preliminary epidemiologic study give evidence to the presence of a disease in Bosnia and Herzegovina.

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Mots-clés : Parafilariose, bovin, Bosnie-Herzégovine

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Figure 1: “Bleeding spots” on the skin of the heifer

Figure 2: Dry scabs as consequences of earlier bleeding episodes

Figure 3: Skin lesions in Simmental cow from Mrkonjic Grad

Itching, alopecia or enlargement of the regional lymph nodes of the animal were not evident. There were no other cutaneous nodules with distinct sero-haemorrhagic exudate on the site of the lesion.

Second case was reported in April 2014 with a 5 year old Simental cow in Mrkonjic Grad, central part of Bosnia and Herzegovina. This part of Bosnia and Herzegovina is characteristic for the fact that cattle here were bred on mountain pastures. It was noted that this animal was kept in bad zoohygienic conditions. In this case, the clinical signs of bovine parafilariosis were more severe. Cutaneous lesions in form of fresh wounds with intensive bleeding episodes and large dry scabs on the skin of neck, thorax and croup were observed (Fig. 3). This time, itching, consequent alopecia and mechanical scratches were present close to the locations of fresh lesions. General condition of cattle was not disturbed similar to the previous case, but according to the owner occasional loss of appetite was noted as well as a milder degree of cachexia and drop in milkability with this animal.

In both cases differential diagnosis list was set: insect bites (by tabanids mainly), injuries (during transport) bacterial or fungal granulomas, hypodermosis and haemorrhagic diathesis. These were ruled out as in none of these examples bleeding or sero-haemorrhagic exudate occurs constantly and recurrently [5, 3]. On the contrary, skin bleeding and cutaneous nodules with exudates are pathognomonic for parafilariosis and are sufficient for presumptive diagnosis. However, the etiological diagnosis is crucial for performing good clinical practice, particularly in the area where the parasite has not previously been described. Microscopic examination of exudate was performed. The haemorrhagic exudate was observed with a light microscope, 400 times magnified. Diagnosis was set by finding of filariid embryonated eggs with a thin membrane from sero-haemorrhagic exudate. Microfilaria was clearly evident inside the nematode egg (Fig.4). The embryonated eggs from exudate referable for the skin filariids, i.e. Parafilaria bovicola, were present taking, the localization and time period of the appearance, into account.

Likewise, incisive biopsy of fresh skin lesions was performed, and only anterior parts of adult nematode were isolated (Fig.5), which had conical shape and were characterized by transverse striation of cuticle. In both cases female nematode was isolated, because vulva on the interior part was noted (Fig 5, arrow).
Microscopic finding of filariid eggs and adult isolation in the presented cases have confirmed the diagnosis of parafilariosis. After the diagnosis had been set, the animals were treated with an ivermectin at a dose of 0.2 mg / kg body weight. Prognosis in both cases was good and after 30 days skin lesions were not observed. Treatment with ivermectin has been successful, even after one application skin lesions have started to disappear.

Following this reports, phone survey incorporating 28 veterinarians from 15 locations (Fig. 6) was conducted similar to that of Caron et al. [3], in order to collect more information about bovine parafilariosis in this region of Bosnia and Herzegovina.

All veterinarians were active in large animal practice. The questionnaire focused on following points: Have they observed parafilariosis previously? How many outbreaks in last three years, and where? The type of animals? Were they treated? What kind of medicine was used? What was the efficacy of the medicine? Only three (10.7%) from 28 veterinarians, from the same locations of the described clinical cases, had diagnosed parafilariosis in the past. Interestingly, all observed cases were with cows that are exclusively fed on pastures in mountain area region where extensive cattle farming is dominant. None of the veterinarians treated animals, but clinical outcome (according information from the questionnaire) was good. According to veterinarians in this survey, parafilariosis cases which they diagnosed in the past were not severe or threatening for the life of the animals. However, information about animals, such as, whether they are imported or not, was unknown to veterinarians.

Discussion

Diagnosis of bovine parafilariosis from Europe is confirmed by observation of embryonated eggs in the exudate [3,7] or by isolation of Parafilaria bovicola adults [6,5]. According to our observation, adult isolation from living animals is sometimes hard to perform. In recent clinical cases of parafilariosis reported in indigenous cattle from Italy, the isolation of adult filariae from biopsy specimen was possible only in a small number of cases [5], and Hamel et al. [6], isolated an adult female nematode of P. bovicola from beef cattle in Germany. Caron et al. [3], conducted biopsy and histopathology of the lesions. The histological analysis was nonspecific and the findings showed signs of acute hemorrhagic inflammation accompanied with the reaction of the connective tissue. Therapy with ivermectin was successful in our cases, and also, in disease outbreaks described by other authors [3].
After the first description of the parasite in the Philippines, cases have been reported worldwide except in Australia. In Canada, the disease is imported from France with infected Charolais breed beef cattle, while the largest economic losses were made in Northern Europe [7]. In spite of the fact that the infected cattle were imported from France into other parts of Europe as reported in many articles, there are only anecdotal reports of suspected cases of bovine parafilariosis in this country [1]. Older reports from Bulgaria, Romania and France shows that parafilariosis is endemic in some regions of these countries [4, 9, 1]. On the other hand, recent reports from Ireland, Netherlands and Germany present the data of possible disease distribution with imported cattle from endemic areas [9, 2, 5].

To the authors knowledge (local and international journal data, ministry reports and personal communication) bovine parafilariosis was not reported in any of the Western Balkans countries (Serbia, Croatia and Montenegro).

In summary, although this small scale study cannot fully elucidate the epidemiology of parafilariosis in Bosnia and Herzegovina, the clinical cases as well as the reports by veterinarians hint that P. bovicola is endemic. We did not have the information if the cattle from this region were, or not imported in Bosnia and Herzegovina from other countries in recent times. However, it is necessary to formulate a strategy for a more detailed epidemiological field survey on bovine parafilariosis, because phone questionnaires are sufficient only to create a preliminary epidemiological status. As epidemiological conditions for the emergence of this parasitic disease are similar in the other Balkan countries, this clearly warrants, a more detailed studies in the neighbouring countries to assess the impact on cattle production of this parasitic disease in the Balkans.

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References