

Helminthes and Coccidia Infection of Wild Sheep (*Ovis Ammon Orientalis*) in Kabodan Island of National Park of Urmia Lake, Iran

Mosa Tavassoli^{1*}
Habib Khoshvaghti²

¹*Department of Pathobiology, Faculty of Veterinary Medicine,
Urmia University, Urmia, Iran*

²*Private Veterinary Practitioner, Arak, Iran*

Received 26 October 2009, Accepted 12 April 2010

Abstract

Forty-one wild sheep (*Ovis ammon orientalis*) from Kabodan Island of National Park of Urmia Lake (North-West of Iran), were examined during a period of six months from October 2002 to March 2003, for helminthes and coccidian infection. The numbers of oocyst and eggs per gram of faeces (OPG & EPG) were determined by the centrifuge flotation technique using saturated sugar solution. The rate of infection for Strongylid form, *Marshallagia*, *Trichuris* eggs, and lung worm larvae were 8 (19.5%), 12 (29.5%), 17 (41.5%) and 14 (34.1%), respectively. Thirty-three (80.48%) of the examined wild animals were infected to one or more *Eimeria* species including *E. parva*, *E. ahsata*, *E. ovinoidalis* and *E. faurei*. This study suggested that the rate of parasitic infection in wild sheep were very low but it would seem that in unsuitable condition such as drought and starvation, parasitic infection can be cause a serious problem in wild sheep population.

Key words: Wild sheep, *Eimeria*, Coccidia, Urmia Lack, Iran

***Corresponding author:**

Mosa Tavassoli, DVSc

Department of Pathobiology, Faculty of Veterinary Medicine, UrmiaUniversity, Urmia, Iran

E-mail address: mtavassoli2000@yahoo.com

Introduction

The wild sheep (*Ovis ammon orientalis*) can be found in almost every mountain range of different parts of Iran. Apart from their economic and commercial importance as a game animal and a source of protein (particularly in the past), there is a close contact between domestic and wild sheep. Despite numerous studies on the helminthes infection of wild ruminants in Iran,¹⁻⁵ there is a large paucity of data available in the literature regarding *Eimeria* infections of wild sheep in the country.

Coccidia are ubiquitous sporozoan parasites infecting many species of mammals and birds. Those of *Eimeria* species are very specific and their exclusive role as a serious health hazards in wild sheep is not clear, especially because of concurrent infection with enteric helminthes. However, coccidiosis is believed to be one of the most imperative diseases affecting sheep and goat which are kept in large numbers under intensive management⁶⁻⁸ whereas coccidial infections in wild animal is very low. The objective of current investigation was to study the occurrence of gastrointestinal parasites, including helminthes and coccidia in wild sheep in Kabodan Island of Urmia lack.

Materials and Methods

The Island of Kabodan, with an area of 3125 km², is located in Urmia Lake, North-West of Iran (37° N to 30' N and 45°E to 35' E). The climate of this Island is cold and semiarid, with mean annual rainfall of 257.2 mm. The maximum monthly mean temperature of 28.3 °C in August and the minimum monthly mean temperature of -5 °C in January are recorded.⁹ According to unpublished data of Environment Department of West Azarbaijan, Iran, Kabodan contained a population of approximately 800 wild sheep (*Ovis ammon orientalis*).

Fecal samples were collected directly from rectum of wild sheep after hunting during October 2002 to March 2003. In hunting schedule which is programmed for reduces wild sheep population in Island, usually mature wild sheep hunt. This state consequently compelled us to collect samples from only adult animals. All samples were immediately transferred to the laboratory, and analyzed by the flotation method using sugar solution at the parasitological diagnostic laboratory of Faculty of Veterinary Medicine, Urmia University. The fecal samples were examined by an optical microscope. Each observed egg or oocyst was identified by using their morphological characteristics described by Soulsby (1986)¹⁰ and Levine (1985).¹¹ Identification of *Eimeria* species was carried out on thirty-three of faecal samples, after sporulation in 2.5% potassium dichromate at room temperature. They were identified on the basis of the morphology of oocyst and sporocyst under oil immersion, according to Levine (1985).¹¹ Measurements were made using a calibrated ocular micrometer under × 40 magnification. Faecal samples of wild sheep were additionally examined for helminthes infections.

Results

All animals appeared healthy and in good condition. They never showed diarrhea. The rate of infection for Strongylid form, *Marshallagia*, *Trichuris* eggs, and lung worm larvae were 8 (19.5%), 12 (29.5%), 17 (41.5%) and 14 (34.1 %), respectively. Thirty-three (80.48%) of animals were infected to one or more *Eimeria* species. The following species were found: *E. parva*, *E. ahsata*, *E. ovinoidalis* and *E. faurei*. Of 31 wild sheep positive to *Eimeria* spp, *E. parva* had the highest prevalence of infection with the overall prevalence of 32.3% followed by *E. ovinoidalis* (9.7%), *E. ahsata* (6.5%) and *E. faurei* (6.5%). Mixed infection with more other *Eimeria* spp was also seen: *E.*

parva, *E. ahsata*, *E. ovinoidalis* and *E. faurei* (6.5%); *E. parva*, *E. ahsata* and *E. ovinoidalis* (6.5%); *E. parva* and *E. ovinoidalis* (9.7%); *E. parva* and *E. ahsata* (22.6%). The maximum and minimum egg and larval count of Strongylid form, *Marshallagia*, *Tricuris* spp and lung worm were 1-90, 1-15, 1-20 and 1-60, respectively.

Discussion

Wild and domestic animals are usually infected with many parasites; the knowledge of which is essential for management of the infections. In wild animals which are kept in captivity or live in limited spaces, because of overcrowding, the chances of parasitic infections are usually high. When these animals encounter with nutritional deficiency and stress, they can manifest some clinical signs of the infection. Collectively, coccidian are important parasites of domestic animals, but because each coccidian species has a preference for parasitizing a particular animal species and because of the self-limiting nature of most infections, coccidiosis in free ranging animals has not been of great concerns. However in a study, Gomez *et al.*, 1996, have reported transient diarrhea in highly infected mouflon in central Spain.¹²

The present investigation is mainly focused on the infection by *Eimeria* species in wild sheep. In this study, oocysts of four species of *Eimeria* were presented in the faeces of wild sheep. All of the identified species were previously reported from domestic sheep in Iran¹³ but recorded *Eimeria* spp was the first report from wild sheep. *E. ahsata* and *E. ovinoidalis* are pathogens of lambs of 1-6 months of ages. Other *Eimeria* of sheep are essentially nonpathogenic even when large numbers of oocysts are present in faeces.¹⁴ Diarrheal faeces containing 20000/g or more oocysts of a pathogenic species are characteristic of sheep coccidiosis.¹⁴ The maximum OPG which

is recorded in this study (867), cannot produce coccidiosis in wild sheep; whereas it can have a great importance in unsuitable condition and in young animals. Our finding also suggested that wild sheep harbor relatively small number of nematode eggs and larvae. These data are similar to those from wild sheep and domestic ruminants in Iran.^{1, 15-17}

This study suggests that the rate of infection with gastrointestinal parasites in wild sheep was in low rate in comparing with previous studies,^{4, 5} it may be due to reducing the wild sheep population in Kabodan Island from 2700 to 800. However, it would seem that in unsuitable condition such as drought and starvation, parasitic infection can be cause a serious problem in wild sheep population.

In conclusion, although the rate of parasitic infection in wild sheep was very low, further studies of epizootiology of gastrointestinal parasites, particularly those which relate to wild sheep productivity, are needed. This study reported *Eimeria* spp from wild sheep for the first time from Iran.

Acknowledgement

The authors would like to appreciate the kindly cooperation of Environment Department of West Azerbaijan, Iran.

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