

PREVALENCE OF *PSOROPTES OVIS* IN SHEEP AROUND MULTAN, PAKISTAN

Z. TASAWAR, B. RAUF, C. S. HAYAT AND M. H. LASHARI¹

Institute of Pure and Applied Biology, Bahauddin Zakariya University, Multan;
¹Faculty of Veterinary Sciences, Bahauddin Zakariya University, Multan, Pakistan

ABSTRACT

The present study was conducted to investigate the prevalence of *Psoroptes ovis* infection in sheep. Moreover, the effects of age and sex of the animal on the prevalence of the disease was also studied. For this purpose, 200 sheep (49 males and 151 females) kept in areas around Multan, Pakistan were examined. Depending upon the age, these animals were divided into four groups viz. 1-15 (n=71), 16-30 (n=24), 31-45 (n=46) and 46-60 (n=59) months. Out of 200 hosts examined, 28 were found infested with *Psoroptes ovis*, showing an overall prevalence of 14.00%. The prevalence of *Psoroptes ovis* in male hosts was 20.4% versus 11.92% in females, the difference was statistically non significant ($P>0.05$). The prevalence was highest (19.71%) in age group of 1–15 months and lowest (8.33%) in age group of 16–30 months. However, the difference in the prevalence between the two groups was statistically non significant ($P>0.05$). These results indicate that the sex or age of sheep had no effect on prevalence of *Psoroptes ovis*.

Key words: Sheep, *Psoroptes ovis*, age, sex, prevalence.

INTRODUCTION

Sheep scab, caused by the astigmatid mite *Psoroptes ovis*, is a world widely distributed skin infection of sheep. The disease is characterized by a variable incubation period of a few weeks to several months (O'Brien, 1999; Berriatua *et al.*, 1999). Severe scratching and rubbing, loss of wool and progressive skin lesions with dried crusts on the back and the sides of the body are also observed. Lethal infections can occur if the infected animals are left untreated (Kirkwood, 1980). The productivity of infested fattening lambs and the quality of leather and wool are adversely affected (Rehbein *et al.*, 2000a, b). This paper describes the overall prevalence of *Psoroptes ovis* in sheep in Multan, Pakistan. Its relation with sex and age of the animal has also been discussed.

MATERIALS AND METHODS

Collection and examination of samples

The prevalence of *Psoroptes ovis* in sheep kept in areas around Multan, Pakistan was investigated. For this purpose, a survey was carried out in January 2006 at Basti Jhanday Wali, Vehari Road Multan, Pakistan. A total of 200 sheep including 49 males and 151 females, were examined for the prevalence of *Psoroptes ovis*. Depending upon the age, these animals were divided into four groups viz. 1-15 (n=71), 16-30 (n=24), 31-45 (n=46) and 46-60 months (n=59). The collected mites were preserved in bottles containing 5% formalin. Skin scrapings from the suspected sites of infection were heated in 10% potassium hydroxide to dissolve the protein of the skin and hair. The sediment

in the tube was examined under the compound microscope.

Permanent mounts of the parasites were also made to study the structure of mites in detail for the diagnosis of various species of mites. For this purpose, the parasites were washed with distilled water to remove the fixative, and then kept in 10% potassium hydroxide to dissolve the host tissues. The parasites were then washed with distilled water and dehydrated in graded series of alcohol i.e. 30, 50, 70, 90 and 100% (Cable, 1985). The dehydrated specimens were cleared in xylene, mounted in Canada Balsam and identified under the microscope.

Statistical analysis

The prevalence of *Psoroptes ovis* in sheep of various groups was computed in percentage. In order to see the magnitude of variation in the prevalence of *Psoroptes ovis* among sheep of various groups, the data were analyzed statistically using Chi square test.

RESULTS AND DISCUSSION

Out of 200 sheep examined, 28 were found infested with *Psoroptes ovis*. The overall prevalence of *Psoroptes* spp. was 14.00%. Warnick *et al.* (2002) examined 1,597 animals and observed that 18% had udder cleft dermatitis, and 87.5% had lesions consistent with mange. The skin scrapings in 43 of 56 (77%) cows revealed *Sarcoptes* mites. In Norht Ethiopia, Woldemeskel and Ashenafi (2003) reported that out of 520 sheep examined, 33% had skin diseases of different causes. The identified causes were included: lice infestation due to *Damalina ovis* (16%), *Linognatus*

africanus (21%), sheep pox (8%), sarcoptic mange (*Sarcoptes scabiei* var *ovis*, 4%), dermatophilosis due to *Dermatophilus congolensis* (3%), and contagious ecthyma (3%). The prevalence of the disease as 9.00% has been reported from UK (Bisdorff *et al.*, 2006) and 85.5% in Switzerland (Jacober *et al.*, 2004). According to Mazyad *et al.*, (2001), in Egypt, two types of scab mites were recovered in sheep, including *S. scabiei* (4.05%) and *P. ovis* (16.93%). This difference in the prevalence of *P. ovis* reported from various studies may be due to the differences in resistance to infection, grazing habit and breeds of the host in different regions of the world.

The prevalence of *Psoroptes* spp. in male hosts was 20.4%, while in female hosts it was 11.92% (Table 1), the difference was statistically non significant ($P>0.05$). However, Gonzalez-Candela *et al.* (2004) recorded a higher infection rate in males (21.9%) compared to females (16.6%). The higher prevalence of *P. ovis* in male hosts may be due to less resistance of these hosts to *P. ovis* as compared to female hosts. These differences may be due to a stimulatory effect of estrogens on immune responses, while androgens may have an opposite effect (Bilbo and Nelson, 2001).

Table 1: The relationship between sex of animal and *Psoroptes ovis* in sheep around Multan

	Male Hosts	Femals Hosts	Total
No. of hosts examined	49	151	200
No. of hosts in infected	10	18	28
Prevalence (%)	20.4	11.92	14.00

The prevalence was highest (19.71%) in age group of 1-15 months and lowest (8.33%) in age group of 16-30 months (Table 2). Statistical analysis of the data revealed that the difference in the prevalence of infection among sheep of four age groups was statistically non significant ($P>0.05$) Bates (1999) reported that younger animals were more susceptible to *P. ovis* than adult animals. Perhaps younger animals have less resistance to parasitic infections compared to older hosts.

Table 2: The relationship between age of animal and prevalence of *Psoroptes ovis* in sheep

Age (months)	1 - 15	16 -30	31 - 45	46 - 60
No. of hosts examined	71	24	46	59
No. of hosts infected	14	2	4	8
Prevalence (%)	19.71	8.33	8.69	13.55

The difference in prevalence among groups was non significant.

The results of the present study indicate that the sex or age of animal had no effect on the prevalence of *Psoroptes ovis* in sheep. However, there was a wide range of variation (8.33 to 19.71%) in the prevalence of the disease among various age groups.

REFERENCES

- Bates, P. G., 1999. Inter- and intra-specific variation within the genus *Psoroptes* (Acari: Psoroptidae). *Vet. Parasitol.*, 83: 201-217.
- Berriatua, E., N. P. French, R. Wall, K. E. Smith and K. L. Morgan, 1999. Within-flock transmission of sheep scab in native sheep housed with single infested sheep. *Vet. Parasitol.*, 83: 277-289.
- Bilbo, S. D. and R. J. Nelson, 2001. Sex steroid hormones enhance immune function in male and female hamsters. *Amer. J. Physiol. Regul. Integr. Comp. Physiol.*, 280: 207-213.
- Bisdorff, B., A. Milnes and R. Wall, 2006. Prevalence and regional distribution of scab, lice and blowfly strike in Great Britain. *Vet. Rec.*, 158(2): 749-752.
- Cable, R. M., 1985. An Illustrated Laboratory Manual of Parasitology. 5th Ed., Surjeet Publications, Dehli, India.
- Gonzalez-Candela, M., L. Leon-Vizcaino and M. J. Cubero-Pablo, 2004. Population effects of sarcoptic mange in Barbary sheep (*Ammotragus lervia*) from Sierra Espuna Regional Park, Spain. *J. Wildl. Dis.*, 40(3): 456-465.
- Jacober, P., H. Ochs, J. Risi and P. Deplazes, 2004. Outbreak of sheep scab on two adjacent alpine pastures in the canton of Schwyz (Switzerland). *Schweiz. Arch. Tierheilkd.*, 146: 61-69.
- Kirkwood, A. C., 1980. Effect of *Psoroptes ovis* on the weight of sheep. *Vet. Rec.*, 107: 469-470.
- Kirkwood, A. C., 1986. History, biology and control of sheep scab. *Parasitol. Today*, 2: 302-307.
- Mazyad S. A., E. M. Sanad and T. A. Morsy, 2001. Two types of scab mites infesting man and sheep in North Sinai. *J. Egypt. Soc. Parasitol.*, 31(1): 213-222.
- O'Brien, D. J., 1999. Treatment of psoroptic mange with reference to epidemiology and history. *Vet. Parasitol.*, 83: 177-185.
- Rehbein, S., D. Barth, M. Visser, R. Winter, L. G. Cramer and W. K. Langholff, 2000a. Effects of *Psoroptes ovis* infection and its control with an ivermectin controlled-release capsule on growing sheep. 1. Evaluation of weight gain, feed consumption and carcass value. *Vet. Parasitol.*, 91: 107-118.
- Rehbein, S., H. Oertel, D. Barth, M. Visser, R. Winter, L. G. Cramer and W. K. Langholff, 2000b. Effects of *Psoroptes ovis* infection and its control with an ivermectin controlled-release capsule on growing sheep. 2. Evaluation of wool production and leather value. *Vet. Parasitol.*, 91: 119-128.
- Warnick, L. D., A. Maciel, C. L. Guard and S. E. Wade, 2002. Udder cleft dermatitis and sarcoptic mange in a dairy herd. *J. Amer. Vet. Med. Assoc.*, 221(2): 273-276.
- Woldemeskel, M. and H. Ashenafi, 2003. Study on skin diseases in sheep from Northern Ethiopia. *Dtsch. Tierarztl. Wochenschr.*, 110(1): 20-22.