

## PREVALENCE OF OVINE OESTROSIS IN PLAIN AND KANDI AREAS OF JAMMU, NORTH INDIA

Taniya Saleem<sup>1</sup>, R. Katoch<sup>1</sup>, Anish Yadav, Irfan Ahmad Mir<sup>2\*</sup>, R. Godara  
and Irshad Ahamed<sup>1</sup>

<sup>1</sup>Division of Veterinary Parasitology, <sup>2</sup>Division of Veterinary Microbiology  
Sher-e-Kashmir University of Agricultural Sciences and Technology,  
R.S. Pura-181102, Jammu

E-mail: mirirfan441@gmail.com (\*Corresponding Author)

**Abstract:** *Oestrus ovis* is commonly known as sheep nasal bot fly, an obligate parasite which causes nasal-sinusal myiasis in small ruminants called as oestrosis. The parasite causes huge economic losses to the meat industry. The study was conducted to determine the prevalence of the parasite in sheep heads in so far less explored areas of Jammu region. The study found a high overall prevalence rate of 99.16% indicating the poor hygienic measures and unscientific rearing of animals. On analyzing the results, the prevalence of infestation of *Oestrus ovis* in sheep of plain and kandi areas was found to be 98.3% and 100% respectively. When the results were analysed sex-wise, it was found the prevalence was on higher side in males (100 percent) compared to female (98.2%) animals. Further, all age group animals were equally susceptible to infestations.

**Keywords:** *Oestrus ovis*, Sheep, kandi, plain, prevalence.

### Introduction

*Oestrus ovis* (*O. ovis*) is an obligatory parasite of nasal and sinus cavities of sheep and goats causing nasal myiasis worldwide [1,2]. The adult fly is larviparous which causes great annoyance when they attack the sheep to deposit larvae [3]. They occur from spring to autumn particularly in summer but they are active even in winter. The larvae cause a mechanical and traumatic damage to the nasal mucosa which results in inflammation and secondary infection. Nasal myiasis is characterized by purulent nasal discharge, sneezing, incoordination and dyspnoea. These larvae sometimes enter into the cerebral cavities, turbinate bones or branch of frontal sinuses leading to 'false gid' and animals show signs of incoordination and high stepping gait [4].

*O. ovis* is having medical and public health importance, causes ocular-myiasis in shepherds and farmers if the incidental host is man [5-7]. The infestation with larvae of *O. ovis* is responsible for weight and production losses leading to significant loss to meat industry. In

*Received Feb 8, 2017 \* Published Apr 2, 2017 \* www.ijset.net*

addition infestation due to *O. ovis* was reported to predispose animals to pleuropneumonia, lung abscess and interstitial pneumonia [8].

At present the Jammu district of Jammu and Kashmir state of India is having large population of sheep but till date there is meager information about the prevalence of sheep nasal fly in this area. Hence, the present study was undertaken to study the prevalence of nasal oestrosis in sheep of plain and kandi areas of Jammu, north India.

## **Material and methods**

### **Study period and sample collection**

The prevalence of *O. ovis* was recorded on monthly basis in sheep of plain and kandi areas of Jammu from Sep 2010- Aug 2011. The study involved examination of 10 sheep heads per month. Thus, a total of 120 head samples of sheep were investigated for the presence of *O. ovis* larvae. The head samples were collected from local abattoirs. During collection of samples, several parameters were noted viz. origin, sex and age of animal. The heads of the slaughtered animals were separated from rest of the carcass and carried immediately in plastic bags to the laboratory for detailed examination.

### **Collection and identification of larvae of *O. ovis***

In the laboratory heads were examined by removing the skin on the dorsal surface and cut into two symmetrical halves along longitudinal plane using a hand saw. The dissected head samples were carefully examined for the presence larvae of *O. ovis* in five major sites namely nasal cavities, septum, middle meatus, conchae and sinuses. The larvae were collected, washed in physiological saline and fixed in 70% ethanol. Then the larval stages were identified under stereomicroscope using key morphological features [9].

## **Results**

Out of 120 heads of sheep examined, 119 (99.16 %) were found positive for *O. ovis*. The samples were considered positive even if a single larva was detected (fig. 1 & 2). The larvae detected during the study belonged to all the larval instars i.e. L1, L2 and L3 with majority of L1 and L2 instars while L3 was least in number. The prevalence rate observed during the different months of a year did not varied much, except in the month of December, 2010.

Further, out of the total 120 head samples, 64 belonged to male and 56 were from female sheep. The study found that all the males were positive for infestation, whereas two female heads were negative for infestation in collected samples gives an overall 98.2 % infestation in females and data was statistically non-significant ( $p < 0.05$ ) in sex wise prevalence. The study

also determined the prevalence of *O. ovis* infestation in sheep of three different age groups (Table.1).



Fig. 1. A sheep head infested with *O. ovis* larvae.



Fig. 2. The Larva of *O. ovis*

**Table 1: Age-wise prevalence of *O. ovis* in sheep (September 2010 to August 2011).**

Age Month	0-1 year		1-3 years		<3 years	
	Number of animals Examined	Positive	Number of animals Examined	Positive	Number of animals Examined	Positive
Sep. 2010	0	0	9	9	1	1
Oct. 2010	1	1	9	9	0	0
Nov. 2010	1	1	9	9	0	0
Dec. 2010	2	1	6	6	2	2
Jan. 2011	4	4	3	3	3	3
Feb. 2011	0	0	8	8	2	2
Mar. 2011	2	2	7	7	1	1
Apr. 2011	1	1	7	7	2	2
May. 2011	3	3	6	6	1	1
Jun. 2011	2	2	8	8	0	0
Jul. 2011	3	3	7	7	0	0
Aug. 2011	2	2	6	6	2	2
<b>Total</b>	<b>21</b>	<b>20(95.20%)</b>	<b>85</b>	<b>85(100%)</b>	<b>14</b>	<b>14(100%)</b>

Among the three age groups examined, animals > 1 year of age showed 100% prevalence whereas; in below one year of age, 95.29% animals were positive for infestations. Also, when sheep heads were examined area-wise, it was found that out of 59 sheep heads from plain area and 61 sheep heads from kandi areas, an overall infestation was 98.3% and 100%, respectively.

## Discussion

The study conducted provided the base-line data about the oestrosis which has huge economic and public health significance. Despite the endemic nature of the infestation of *O. ovis* in the various parts of India and good amount of sheep population, very scanty literature is available in the form of few case reports from the state of Jammu & Kashmir region [10,11]. The present overall prevalence recorded in the study was higher than the previous reports which show an increase in fly burden and poor hygiene of animals. In one of the studies, Chhabra and Ruprah [4] have reported 80.90% prevalence of *O. ovis* larvae in sheep and goat in Hissar. Similarly, Gupta [12] reported 70.40% prevalence of *O. ovis* in sheep in Hissar region of India. Outside the India, Silva *et al.* [13] determined an overall prevalence of 50% in sheep of south-western part of Brazil. Hanan [14] determined an annual abundance of *O. ovis* in randomly selected male sheep heads in Jazan region of Saudi Arabia and found an overall infestation rate was 53.54%. However, lowest infestation rate was recorded in the month of November (70 %) may be due to the fact that relative humidity and photo period effect.

The prevalence recorded as per sex did not show any significant variation and was concluded that it is not an important risk factors of disease which correlates well with the other studies [15, 16]. However, comparative high prevalence in males may be due to body conformation (more surface area) and age of male animals. In the current study animals above 1 year of age showed higher infestation rate as compared to the young animals. This is in agreement with the several previous reports from different parts of the world [17, 18]. Lower infestation rate in young animals may probably be due to the fact that younger animals are active enough to avoid deposits of larvae by adult female fly and during the period of intense fly activity they may be observed hiding their noses in their dam's wool. On the contrary to the above reports, Alem *et al.* [19] in Central Oromia, Ethiopia recorded significantly higher prevalence in young than adult animals most probably due to the fact that higher numbers of young animals were examined than adults.

The sheep from kandi area showed slightly higher rate of infestation, however, no significant variation ( $P < 0.05$ ) was found between the areas on bearing of infestation. This slight higher infestation rate in animals may probably be due to favorable climatic conditions in these regions like loose sandy type of soil which is favorable for pupation and emergence of adult flies.

### Acknowledgements

The authors are highly thankful to the Dean, FVSc & AH, SKUAST-Jammu for providing the necessary facilities to conduct the research work.

### References

- [1] Hall M, Wall R. Myiasis of humans and domestic animals. *Advanced Parasitology*, 1995. **35**; 257- 334.
- [2] Madhu D N, Sudhakar NR, Maurya PS, Manjunathachar H V, Sahu S and Pawde AM. Nasal Oestrosis in a Jamunapari goat. *Journal of Parasitic Diseases*, 2014. 38(4), 396-398.
- [3] Soulsby E JL. Helminths, arthropods and protozoa of domesticated animals, 7th Edition, BaillereTindall, London. 1982.
- [4] Chhabra NG, Ruprah NS. Observations on the incidence and biology of *Oestrus ovis*. *Indian Vet J*, 1976. **53**: 180–18.
- [5] Pampiglione S, Giannetto S and Virga A. Persistence of human myiasis by *Oestrus ovis* L (Diptera: Oestridae) among shepherds of the Etnean area (Sicily) for over 150 years. *Parassitologia*, 1997. **39**: 415-418.
- [6] Lucientes J, Clavel A, Ferrer-dufol M, Valles H, Periabenz A, Gracia-Salinas MJ and Castillo-Hernandez JA. Short Report: One case of nasal human myiasis caused by third stage instar larvae of *Oestrus ovis*. *American Journal of Tropical Medicine and Hygiene*, 1997. **56**(6): 608-609.
- [7] Fathy FM, El-Barghathi A, El-Ahwal A, El-Bagar S. Study on human ophthalmomyiasis externa caused by *Oestrus ovis* larva, in Sirte-Libya: parasite features, clinical presentation and management. *Journal of Egyptian Society of Parasitology*, 2006. **36**: 265–82.
- [8] Dorchies P, Durantou C, Jacquiet P. Pathophysiology of *Oestrus ovis* infection in sheep and goats: a review. *Vet Rec*, 1998. **142**(18): 487–489.
- [9] Zumpt F. Myiasis in man and animals in the old world. A textbook for physicians, veterinarians and zoologists. 1965. Butterworth, London, p 255.
- [10] Allaie I M, Wani ZA, Malik AH, Shahardar RA and Zulhuma M (2015). *Oestrus ovis* larvae in nasal cavity of sheep: a case report. *Journal of Parasitic Diseases*. DOI 10.1007/s12639-015-0655-3.
- [11] Shahardar RA, Darzi MM and Pandit BA. Recovery of larvae of *Oestrus ovis* from trachea and bronchi of sheep. *J Vet Parasitol*, 2001. **15**(1): 85.

- [12] Gupta SK. Studies on some aspects of bionomics and treatment of *Oestrus ovis* Linnaeus 1758 in Sheep. Ph. D thesis submitted to Chaudhary Charan Singh Haryana Agricultural University, Hissar, 1982.
- [13] Silva BFD, Bassetto CC, doAmarante AFT. Epidemiology of *Oestrusovis* (Diptera: Oestridae) in sheep in Botucatu, State of São Paulo. *Rev. Bras. Parasitol. Vet. Jaboticabal*, 2012. **21** (4), 386-390.
- [14] Hanan BA. Seasonal prevalence of *Oestrusovis* L. (Diptera: Oestridae) larvae in infested sheep in Jazan Region, Saudi Arabia Bosly A. *Journal of Parasitology and Vector Biology*, 2013. 5(5), 66-71.
- [15] Belem AMG and Rouille D. *Oestrus ovis* infestation of Sheep and goats in Burkina faso. *Revue d'Elevageet de Medicine Veterinaire*, 1998. **139**: 701-704.
- [16] Murguia M, Rodriguez JC, Torres FJ and Segura JC. Detection of *Oestrus ovis* and associated risk factors in sheep from central region of Yucatan, Mexico. *Veterinary Parasitology*, 2000. **88**: 73-78.
- [17] Othman, R.A. Seasonal prevalence of *Oestrus ovis* in awassi sheep of North West bank (Palestine). *The Islamic University Journal*, 2009. **17** (1): 83-88.
- [18] Arslan MO, Kara M and Gicik Y. Epidemiology of *Oestrus ovis* infestations in sheep in Kars province of Northeastern Turkey. *Tropical Animal Health and Production* 2009.**41**: 299-305.
- [19] Alem F, Kumsa B and Degufu H. *Oestrus ovis* Larval Myiasis among Sheep and Goats in central Oromia, Ethiopia. *Tropical Animal Health and Production*, 2010. **42**: 697-703.