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Occurrence of ovine Oestrosis in an organized farm of the temperate terrain region of Nilgiris, Tamil Nadu a southern state of India

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Abstract

The sheep nasal bot, *Oestrus ovis*, is commonly found in sheep and occasionally in goats that rarely migrate into the brain and cause false gid. In the present study, based on the clinical illness, pathology and parasitological findings, the natural incidence of oestrosis in an organized flock is described. A total of 268 sheep showed the clinical signs during 2013 and 2014 with the corresponding prevalence of 12.31 and 7.39%, respectively. Affected animals showed sneezing, rhinitis, seromucous nasal discharge, epistaxis, restlessness and rarely nervous incoordination. The bots were recovered from 13 animals from nasal cavity, cranial cavity and trachea during necropsy. Lung abscess and suppurative pneumonia was observed by histopathology. One animal died of false gid. The incidence was more common during rainy season particularly south west monsoon period (n=232) followed by summer (n=22) and lowest during the winter season (n=2). The clinical illness was more pronounced in adult animals compared to young ones. The affected animals were treated with Ivermectin @ 200 µg per kg body weight with uneventful recovery.

Keywords: Sheep-*Oestrus ovis*, nasal bot, oestrosis, false GID

Introduction

Oestrosis, also referred as nasal myiasis is caused by larvae of the botfly, *Oestrus ovis* (Linné 1761, Diptera: Oestridae). The disease is worldwide in distribution and the botfly is an obligatory parasite of the nasal and sinus cavities of sheep and occasionally goats [1, 2, 3, 4]. This may rarely infest other animals such as camel, deer, reindeer, elk, dog and man [5]. Since they are viviparous, the female flies deposit larvae in or around the nostrils of their host. These first stage instars attach to the mucous membranes of the nasal cavity, develop in to second instars and move to the sinuses, where they complete their development cycle to mature into third instars and expelled for pupation in the soil [6]. This period of life cycle is quite variable: ranging from a few weeks to several months, depending upon the season and climatic conditions [7].

Though the infestation caused by *O. ovis* is generally not life threatening, occasionally the secondary bacterial infections may result in encephalitis and death of the animal. Secondary infections often lead to seromucous or purulent nasal discharge, respiratory distress and sneezing fits in the infected animals [8], resulting in severe impairment of the health of infested animals. Nervous form of *Oestrosis* in sheep and goats is quite uncommon. Rarely, these larvae may penetrate into ethmoid bones and reach cranial cavity resulting in abnormal nervous signs such as high-stepping gait, incoordination and occasional death [9, 10]. Neurological signs generally mimic the infection caused by *Coenurus cerebralis*, hence the infestation is also known as 'False Gid'. The resultant pathological changes cause significant economic losses in small ruminant husbandry [11], such as reduced weight gain and decreased milk yield [2].

The ability to adapt in a different environmental condition allows the natural persistence of *O. ovis* and the difficulties for its control [12]. Recent surveys have confirmed the high prevalence of oestrosis in numerous areas all over the world [13, 2]. Yet, reports on ovine oestrosis in India are scanty with the prevalence ranging from 8.1% [14] to 48.3% [15].

In the present report, based on the clinical illness, pathology and parasitological findings, the natural incidence of oestrosis in an organized farm is described.

Materials and Methods

1. Study location

The occurrence of Oestrosis was recorded during the period of January 2013 to December 2014 in the organized sheep farm of Sheep Breeding Research Station, Sandynallah, the Nilgiris District of Tamil Nadu (Southern India). The place is located in undulating hill range at 2090 – 2235 m above MSL with 0-24 °C and 840 – 3000 mm average temperature and annual rainfall, respectively. Three breeds of sheep including Nilagiri, Sandyno and Dorset x Nilagiri cross breeds are maintained in the farm with the average flock strength of 1307 and 1390 in the years 2013 and 2014, respectively.

2. History and clinical appraisal

The animals in the farm were vaccinated against Johne's disease and enterotoxaemia and dewormed with Fenbendazole and praziquantel during the first three months of life and followed by deworming with morantel citrate in the hoggets and adult animals. The animals were allowed for about 8 hours grazing at a common pasture land and at sheds they were fed on concentrate with 18% of crude protein and had free access to water even in pasture. During winter and early summer (from January to May), the animals received additional fodder maize silage feed daily.

From March 2013 onwards few animals started showing clinical signs such as restlessness, depression, hyperaemia of nasal mucosa, seromucous to mucopurulent nasal discharge, sneezing and epistaxis in advanced cases with the peak incidence during June-August months. Some animals rarely showed neurological signs such as incoordination, staggering gait, convulsion, circling and pressing of head against objects. The animals also showed pale conjunctival mucus membrane and poor body condition. Vital signs including temperature, heart rate and respiratory rates were within normal range. Faecal examination revealed a very few ova of gastro-intestinal nematodes mainly *Haemonchus contortus* in adults and tapeworm segments of *Moniezia sp* in lambs.

Results and Discussion

Ovine oestrosis occurs due to deposition of eggs by adult bot fly in and around the nostrils of sheep. During their life cycle, the larvae migrate to the turbinates and frontal sinuses where they stay for few months before they migrate to nostrils and are sneezed out to pupate on the earth^[9]. The reports on *O. ovis* infestation in sheep are described by many authors. The prevalence rate of 71.1% in Spain, 55.8–91% in Italy, 33.2–65% in France, 67.4% in Algeria, 58% in Jordan, 22.6% in Libya, 21.0% in Ethiopia, 17.2% in Iraq, 10–100% in Morocco, 6–52% in Zimbabwe, 8.7% in Egypt, 8.1% in India and 5.5% in Saudi Arabia is reported^[16]. Most of these previous reports were based on slaughter house studies by examining the heads of sheep for larvae. However, reports on clinical confirmation about false GID are scanty.

In the present report ovine oestrosis was investigated in detail for the period of two years in the temperate terrain region of the Nilgiris and the study is based on the natural incidence in

the organized sheep farm. A total of 268 sheep (n=161 for the year of 2013 and n=107 for 2014) exhibited the clinical signs suggestive of oestrosis. The affected animals showed sneezing, rhinitis, seromucous nasal discharge (Figure 1), epistaxis, restlessness and rarely nervous incoordination (n=6; Figure 2). The corresponding prevalence for the years 2013 and 2014 respectively, was 12.31% and 7.39%. The reduced prevalence in the year 2014 could be due to symptomatic treatment with effective parasiticides.



Fig 1: Sheep with seromucous nasal discharge



Fig 2: Sheep showing nervous incoordination

Oestrus ovis can survive in different environmental conditions^[17, 18] and can lie dormant in a diapause condition as larval stages in the nasal-sinus passages of the animals^[19, 20]. In the current study, though the incidence of *O. ovis* was recorded during all the four seasons of the year, the highest prevalence was recorded during the rainy season particularly the south west monsoon period (n=232) that falls in June-September in the area followed by summer months of March-May (n=22). The north east monsoon at this place occurs during October-December during which 12 animals showed the symptoms of the infestation. The occurrence was lowest during the winter season of January-February (n=2). (Figure 3 and 4).

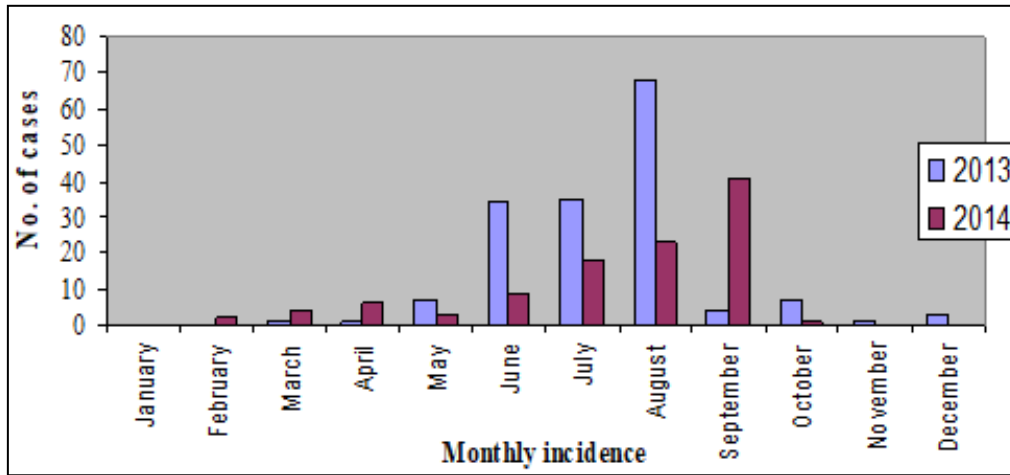


Fig 3: Monthly incidence of sheep Oestrosis

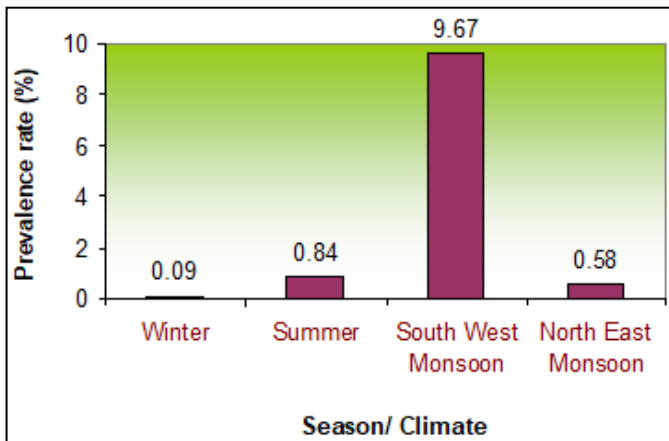


Fig 4: Season wise prevalence of *Oestrus ovis* for the entire study period

No difference noticed among the three sheep breeds maintained at the station. The clinical illness was more pronounced in adult animals compared to young ones below one year old, which is similar to the findings reported by Abo-Shehada *et al.* [21].

During necropsy the larvae were recovered from 13 animals from trachea (n=7), nasal passage and sinuses (n=2) and cranial cavity (n=5). The larva is about 1-3 cm in length; creamy, dark brown to black in colour and the recovered larvae is further confirmed as *O. ovis* based on typical dark pigmented respiratory spiracles. Histopathological examination revealed lung abscess and suppurative pneumonia in three cases. The false gid was the reason for mortality without any additional complications in only one case. Interestingly, one rarely sees more than one third instar in the head sinus and it seems to be because of feed-back mechanism that limits the occupation of a quite limited space in the sheep [22, 23]. A total of 14 larvae, 7 from cranial cavity (Figure 5), 5 from nasal cavity and paranasal sinuses (Figure 6) and 2 from trachea were recovered from the animal died of false gid. The larval migration into the trachea could be after the death of the animal. Thorough examination of cranial cavity showed congestion and haemorrhage in the cerebral hemisphere with mild liquefactive necrotic lesions. The resultant damage to the parenchyma of brain might be reason for exhibited nervous signs in the affected sheep.

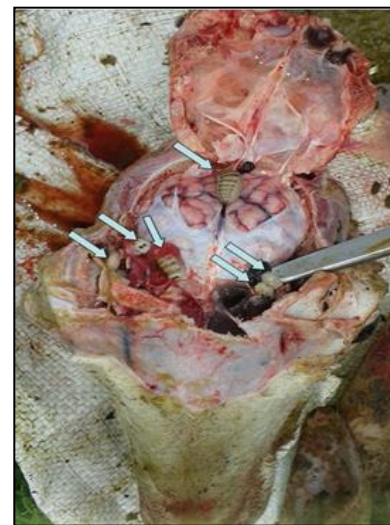


Fig 5: Larvae of *O. ovis* in cranial cavity



Fig 6: Larvae of *O. ovis* in nasal passage/ sinuses

The ability to adapt in different environmental conditions allows the natural persistence of *O. ovis* infestation and the difficulties for its control. Since it is of public health significance, the prevention and control of ovine oestrosis is much important in the endemic areas. In the current study, the affected animals were treated with Ivermectin at the dose rate of 200 µg per kg body weight. After treatment all the animals showed uneventful recovery. The animals that showed signs of secondary bacterial infections were additionally treated with antibiotics (Enrofloxacin @ 5 mg/kg body weight) and antihistaminics. However, the treatment was not much effective in the animal which showed the larval migrate in to

the aberrant locations like cranial cavity. Though, the animals with nervous signs did not respond, new cases of oestrosis infestation did not occur and the mortality due to this botfly infestation stopped.

Conclusion

The occurrence of ovine oestrosis in an organized farm was investigated based on the clinical signs, pathology and parasitological findings with the prevalence of 12.31 and 7.39 % during the years 2013 and 2014, respectively. The animals were treated with Ivermectin to control the *O. ovis* infestation.

References

1. Gunalan S, Kamaliah G, Wan S, Rozita AR, Rugayah M, Osman MA *et al.* Sheep oestrosis (*Oestrus Ovis*, Diptera: Oestridae) in Damara crossbred sheep. Malaysian Journal of Veterinary Research. 2011; 2:41–49.
2. da Silva BF, Bassetto CC, do Amarante AFT. Epidemiology of *Oestrus ovis* (Diptera: Oestridae) in sheep in Botucatu, State of São Paulo. Revista brasileira de parasitologia veterinaria, Jaboticabal. 2012; 21:386-390.
3. da Silva BF, Machado GP, Izidoro TB, do Amarante AFT. Prevalence of *Oestrus ovis* (Diptera: Oestridae) in sheep from the São Paulo Central region, Brazil. Revista brasileira de Parasitologia Veterinaria, Jaboticabal. 2013; 22:18-21.
4. Hanan BA. Seasonal prevalence of *Oestrus ovis* L. (Diptera: Oestridae) larvae in infested sheep in Jazan Region, Saudi Arabia. Journal of Parasitology. Vector Biol. 2013; 5:66-71.
5. Das SS, Bhatia BB. A note on *Oestrus ovis* infestation in goats in Pantnagar tarai of Uttar Pradesh. Journal of Parasitology. 1994; 8:93-94.
6. Zumpt P. Myiasis in man and animals in the Old World. London: Butterworths; 1965. PMID: 14272962.
7. Hall M, Wall R. Myiasis of Humans and Domestic Animals. Advances in Parasitology. 1995; 35:257-334.
8. Urquhart GM, Armour J, Duncan JL, Dunn AM, Jennings FW. Veterinary Parasitology. Blackwell Science LTD, UK, 2003, 163–165.
9. Radostits OM, Gay CC, Hinchkliff KW, Constable PD. Veterinary Medicine. 10th Edn. W.B. Saunders Co. Philadelphia, USA, 2007, 1586-1587.
10. Shivasharanappa N, Manjunatha RGB, Sharma N, Gupta VK. Parasitic encephalitis caused by larvae of *Oestrus ovis* in Sirohi goat. Indian Journal of Veterinary Pathology. 2011; 35:204–205.
11. Alcaide M, Reina D, Sánchez J, Frontera E, Navarrete I. Seasonal variations in the larval burden distribution of *Oestrus ovis* in sheep in the southwest of Spain. Veterinary Parasitology. 2003; 118(3-4):235-241.
12. Gracia MJ, Lucientes J, Peribáñez MA, Castillo JA, Calvete C, Ferrer LM. Epidemiology of *Oestrus ovis* infection of sheep in Northeast Spain (Mid-Ebro Valley). Tropical Animal Health and Production. 2010; 42(5):811-813.
13. Shoorijeh JS, Tamadon A, Negahban Sh, Behzadi MA. Prevalence of *Oestrus ovis* in goat of Shiraz, Southern Iran. Veterinarski Arhiv. 2011; 81(1):43-49.
14. Pathak KML. Incidence of *Oestrus ovis* in sheep and goats in Rajasthan state of India. Indian Journal of Animal Science. 1992; 62:50-53.
15. Jagannath MS, Cozab N, Rahman SA, Honnappa TG. Factors influencing *Oestrus ovis* infestation in sheep and goats. Current Research. 1989; 18:118-119.
16. Mozaffari AA, Shojaeepour S, Cheshmeh SGG. High Mortality Rate due to False Gid in a Sheep Herd. ISRN Veterinary Science. 2013, 1-3.
17. Horak IG. Parasites of domestic and wild animals in South Africa. I. *Oestrus ovis* in sheep. Onderstepoort Journal of Veterinary Research. 1977; 44:55-64.
18. Pandey VS, H Ouhelli. Epidemiology of *Oestrus ovis* infection of sheep in Morocco. Tropical Animal Health Production. 1984; 16:246-252.
19. Cobbett NG, Mitchell WC. Further observations on the life cycle and incidence of the sheep bot, *Oestrus ovis*, in New Mexico and Texas. American Journal of Veterinary Research. 1941; 2:358-366.
20. Horak IG. The similarity between arrested development in parasitic nematodes and diapause in insects. Journal of South African Veterinary Association. 1981; 52:299-303.
21. Abo-Shehadeh MN, Arab B, Mekbel R, Williams D, Torgerson PR. Age and seasonal variations in the prevalence of *Oestrus ovis* larvae among sheep in northern Jordan. Preventive Veterinary Medicine. 2000; 47(3):205-212.
22. Marquardt WC, Demaree RS, Grieve RB. Parasitology. Vector Biol. 2nd edi., Academic Press, New York, 2000, 632-633.
23. Sharma N, Nayakwadi S, Pawaiya RS, Kumar S, Tailie WA, Paul S *et al.* Parasitic encephalomyelitis in goats due to aberrant infestation with botfly *Oestrus ovis* larvae. Advances in Animal and Veterinary Sciences. 2014; 2(3):8-11.