APPLIED VETERINARY RESEARCH

RESEARCH ARTICLE
Published Online: November 20, 2022
https://doi.org/10.31893/avr.2023001

Epidemiological study for myiasis in sheep in Basrah Governorate

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Abstract The ectoparasites are of veterinary importance because it is a pathogenic vector agent to animals. It causes economic loss to the farmer through stock loss or expensive control and preventative measures such as dipping or showering. The present study was conducted from January 2018 to August 2021 to identify and determine the prevalence of ectoparasites screw-worm in Basrah on data collection of screw-worm from the Basrah Veterinary Hospital and dispensaries of Basrah. The diagnosis of cases was confirmed by the clinical and laboratory examination in the veterinary hospital and the veterinary dispensaries in the different areas of Basrah. The positive collected data of Screw Worm Fly were 59; the higher infestation rate according to months of years was in April, May, and March compared to other months. According to the gender of infected animals, the females were more infested by screw-worm than males. According to the site of infestation, animals' tails were the most infested. According to geographical location, the Center of Basra province had the highest infection rate.

Keywords: myiasis, screw-worm, sheep

1. Introduction

The importance of ectoparasites in veterinary is because of the pathogenic sequelae on the animals, which causes economic loss to the farmer, either through stock loss or the expensive preventative measures such as dipping by the insecticides the worker hands and equipments (Hasson 2006). The ectoparasites disease symptoms include blood loss/anemia, dermatitis, and open sores in the skin and can vary in duration and severity, from unnoticed to morbidity and, in severe cases, to mortality. Various groups of ectoparasites, such as Diptera flies, ticks, mites, and lice, cause significant infestations in many domestic animals, including livestock. Dipteran flies group caused myiasis in hot blood animals and humans and caused tissue damage or death in animals in heavy infestation (OIE 1996). The treatments can be complicated by anti-ectoparasitic resistance, which can happen after years of use. This means that veterinarians and farmers have to find alternative-some times more expensive- solutions for control (Tenquist 1977). 'Myiasis' can be caused by certain family larvae such as Calliphoridae and Sarcophagidae (flesh flies). Different fly larvae and gastro-intestinal, urogenital, ocular, nasopharyngeal, auricular, or cutaneous myiasis attack different body regions. The old world screw-worm fly *Chrysomya bezziana* is an obligatory parasite permanent; it first recorded Chrysomya bezziana in Iraq in animals in 1996 (Abdul-Rassoul et al 1996). The old world screw worm fly, *Chrysomya bezziana*, cause myiasis in living animals; its larvae cause cutaneous two myiases (strikes) on hosts with resulting loss of condition, maiming, infertility, and death of the host (Kgwardhauch and Ahmad 2001). This study aimed at detecting the epidemiological of myiasis in Basrah.

2. Materials and Methods

This study was conducted to detect and investigate Screw Worm Fly through the visit to Basrah Teaching Veterinary Hospital; data was collected from January 2018 to August 2021. The present study focused on Basrah province, Southern Iraq, and was based on data collection. The study focused on the collection of complete information about the screw-worm infestation and the distribution of the infestation. The study divided Basrah into five essential regions: south, north, east, west, and center, according to Veterinary Dispensaries in Basrah and Basrah Veterinary Teaching Hospital. The data collected was divided as: 1- Months of the years. 2- Geographical location. 3- Site of infestation of the body. 4- Gender and age of animals.

3. Results

The diagnosis of these cases was confirmed by the clinical and laboratory examination in the Veterinary Hospital and the Veterinary Dispensaries in the different areas of Basrah.

 Received: August 6, 2022 | Accepted: October 10, 2022

In the present study, the collected data of Screw Worm Fly were 59, and the highest infestation rate was in April, May, and March compared with other months, as in Figure 1. According to the gender of infected animals, the females were the highest infestation of screw-worm compared with males given in Table 1. According to the site of infestation, the animals' tails were the most infected site shown in Table 2. According to geographical location, the center of Basra province had the highest infection rate, given in Table 3.

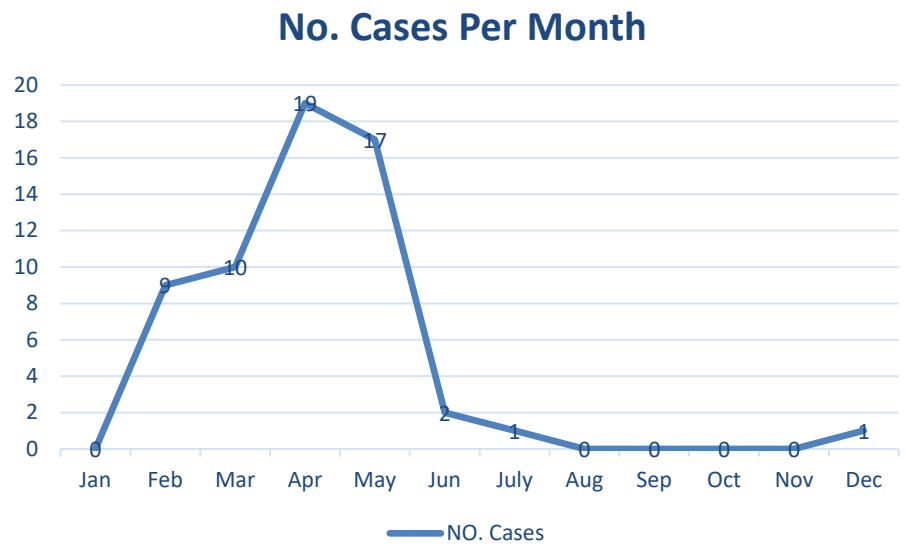

Figure 1 Monthwise infestation of Screw Worm Fly in sheep from January 2018 to August 2021 in Basrah.

4. Discussion

The Old World and New World screw-worm flies, *Chrysomya bezziana* and *Cochliomyia hominivorax*, respectively, are the most economically critical myiasis-causing flies in the world (Spradbery and Khan 1992).

The larvae of *C. bezziana* feed on living tissues, causing traumatic myiasis in a wide spectrum of warm-blooded host species (Spradbery and Vanniasingham 1980). *C. bezziana* myiasis may cause a variety of clinical signs, depending on the affected site, and can cause death, especially in neonatal and weak animals. Re-infestation is common, and calves and lambs which recover from infestation may suffer from septic arthritis (Alahmed 2002).

Table 1 Gender-wise Screw-Worm Fly infestation in sheep from January 2018 to August 2021.

Gender	NO.	%
Female	31	52.55
Male	28	47.45
Total	59	100%

Table 2 Infested with Screw-Worm Fly infestation in sheep from January 2018 to August 2021.

Site of infestation	NO.	%
Tail	26	44.16
Mouth	1	1.69
Mouth & Tail	1	1.69
Thigh	7	11.9
Vagina	8	13.56
Abdomen	4	6.8
Leg	3	5
Ear	2	3.4
Head & Ear	3	5
Head	4	6.8
Total	59	100%

The old world screw flies wide distribution in Iraq province, especially in medial and south government areas since 1990. In addition to old-world screw fly infestation, many conditions, such as infection (Saleh et al 2019) and/or nutritional deficiency

(Saleh 2019; Alabada and Saleh 2020), impact sheep production in Basrah province. In the current study in Basrah, 59 sheep were infected; the monthly infection shows the highest infestation rate was in April, May, and March compared with other months, as in Figure 1. At the same time, the decreased rate in other months was 0% significant. The present study show adult flies was constrained by hot, dry summer condition. Pupal development was fastest during the autumn month, in autumn, rapid multiplication, in additional low temperatures, the humidity affected screw-worm my result agrees with the result mentioned. There was an increase in the number of cases that occurred during May – July, coinciding with the main rainy season in the region. Other countries have reported similar results (Amarante and Barbosa 1992).

In Bangladesh, higher infestation rates were reported during summer, followed by Spring, Autumn, and Winter. The prevalence and intensity of pathogenic infestations often depend on the season and may be linked to the changes in the host or seasonal changes in the prevalence of the pathogen or vector (Shikha et al 2015).

The OWS larvae are detected in many body areas depending on the wound and other abrasions on an animal's skin. According to the site of infestation, animals' tails were the most infected site, as in Table 4. This is in agreement with Siddig et al (2005).

The infestation of *Cherysomaya bedziana* in sheep of Basrah is commonly found in the tail (53%), and then the infection at less percentage occurs in the head and abdomen (30, 11) % respectively. The common cause is wetting due to diarrhea, continuous urination, and vaginal discharge.

While the low rate in the back region was 5% only, we thought that the legs are more exposed to injury and scratches from the other parts of the body; in addition to that, the posterior region of the legs is usually wet because of the uterine discharge after birth and repeated diarrhea which attracts the OWS (full form) insect to lay eggs in this wetted region. (Abdul-Rassoul et al 2018).

Table 3 Occurrence of Screw Worm Fly infestation in sheep of Basrah region from January 2018 to August 2021.

Area	NO.	%
Basrah center	19	32.2
Shat Al Arab	4	6.78
Abu Al khaseeb	9	15.25
Harthah	7	11.87
Mudenah	6	10.17
Al Zuber	10	16.95
Qurnah	4	6.78
Total	59	100

According to location, the Center of Basrah province had the higher infection rate because the veterinarian submitted most infections of myiasis to the Veterinary Hospital in the center of Basrah. Most cases refer to that hospital, and this place shows high numbers. The infection in females was higher than in males, which agrees with the studies of Amin et al (1997). Others assure that many causes of injury during lambing and dystocia in Egypt Imtiaz et al (2014). The results of the present study were accurate by Siddig et al (2005), with an incidence of 55% in Bangladesh as well as a hot and humid location and 6-17% as mentioned by Shoorijeh et al (2011) with a climate more similar to Iraq. In the present study, from February to May, show the lowest rates in the summer and winter months as a dry climate in Iraq from January 2018 to August 2021. Amin et al (1997) reported that flies proliferate during rainy months, whereas in Bangladesh. Imtiaz et al (2014) reported an incidence of ~56% in autumn and 12% in winter. The results of the present study simulate those of Siddig et al (2005), that the incidence peaked during late autumn to early winter and declined sharply in spring, reaching a low during the long, hot, and dry summer months. Iran, with a similar climate. Shoorijeh et al (2011) reported that myiasis in goats ranged from 6.6% in spring to 17.9% in winter. We found no relationship between gender and myiasis in our sheep (Table 2) Amin et al (1997). They reported similar findings in Egypt, which found that females were more prone to be infested than males (Imtiaz et al 2014).

Concerning body parts of the animals affected with myiasis, most infestations appeared around the tail than other parts of the body, and no significant difference existed between them. Others report that in sheep, most myiasis occurs around the perineum, then the head and tail (Barhoom et al 1998). In contrast, Hall et al (2009) found that of 181 cases of myiasis in sheep and goats, most occurred at the base of the tail (40.3%) in the female genitalia (14%). Shoorijeh et al (2011) found that myiasis occurred more often in older animals, being more frequent in 4 to 5-year-olds. We found a statistically significant ($P < 0.01$) relationship between age and incidence of myiasis in sheep, with the highest incidence (22.8%) in ages 3-4 years and the least in older than four years (6.8%). The results disagree with the results mentioned by Abass and Abdull (2006) in AL-Qadisya This is due to high temperature and humidity variations in Basrah compared with Babylon and AL-Qadisya.

5. Conclusions

The present study showed a clear relationship between the screw-worm and season, sex, and age. There are predisposing factors to infection of the body regions, and there is an annual extension for the myiasis in Basrah.

We recommend that other studies of myiasis be carried out in other animals, as macroscopic and microscopic changes occur during infestation with myiasis; further research assessing the morphology and molecular study of myiasis is welcome.

Ethical Considerations

Animal care and handling procedures followed the guidelines of the Ethics Committee on the Use of Animals in Experiments, according to the College of Veterinary Medicine, University of Basrah, 2018.

Conflict of Interest

There was no conflict of interest

Funding

The founding source of this research was a contributor between the veterinary medicine college and researchers.

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