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A Survey of Animal Myiasis Among Cases Attending The Veterinary Teaching Hospital of King Faisal University, Al-Ahsa , Saudi Arabia

(With Four Figures)

By
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مسح حالات الإصابة بالتدويد في الحيوانات التي احضرت إلى المستشفى البيطري التعليمي بجامعة الملك فيصل بالأحساء بالمملكة العربية السعودية

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الملخص العربى

سجل في هذا البحث عددالحيوانات المصابة بالتدويد ضمن الحالات التي احضرت للمستشفى البيطري التعليمي خلال الفترة من شهر يناير الى شهر ديسمبر للعام 2004 م . بلغ عدد الحالات 460 حالة ، في الضان 174 حالة(37,83%) يليها الماعز 169 حالة(36,74%) ويليها الابقار 64 حالة (13,91%) ولوحظت أقل الإصابات في الأبل حيث بلغت53 حالة (11,52%).

و لوحظ أيضاً أن الإصابات بالتدويد كانت تتواجد في أجزاء مختلفة في جسم الحيوان كالظهر والضرع والمهبل والرأس والذيل وأعضاء أخرى .

وقد تم تشخيص أنواع الذباب المسبب للتدويد وشملت :-

Lucilia sericata , Wohlfarhrtia nuba , Sarcophaga cruentata , Chrysomya bezziana **,** *Oestrus ovis* and *Cephalopina titilator***.**

ظهرت معظم حالات التدويد في الحيوانات أثناء فصل الأمطار بالإحساء خلال الفترة من سبتمبر إلى ابريل .

Abstract

A survey of myiasis among cases brought to the surgery clinic of The Veterinary Teaching Hospital at King Faisal University was made during the period January - December 2005 . It reveled that, sheep were the most species susceptible to myiasis (174 cases), this was followed by goats (169 cases), then cattle (64 cases) and the least incidence was among camels (53cases).Diagnosis of these cases showed that the flies were *Lucilia sericata , Wohlfarhrtia nuba , Sarcophaga cruentata , Chrysomya bezziana* **,** *Oestrus ovis* and *Cephalopina titilator* . Most of the myiasis cases in animals were reported in the most rainy months in Al-Hass during the study period .This started from September (80 cases) until April (32 cases).

Introduction

Myiasis is one of the most important diseases of man and animals caused by parasitic arthropods infestation. It results from invasion of living tissue of animals worldwide by larval stages of dipteran flies (Soulsby ,1986 , Urquhart et.at ; 1987 , Radostits et. al.,2000). Cutaneous myiasis is caused by fly species of the family Calliphoridae . These flies are facultative parasites and their maggots can develop off the host on cadavers and manure, however, the maggots of the species *Lucilia cuprina* are an exception and live almost exclusively as parasites (Staric et al.,2002).Their larvae are considered as the most important causative agent of myiasis in tropical and subtropical regions (Staric et al.,2002; Hira et al.,2004). Myiasis caused by the obligate parasitic flies of *Chrysomyia spp*. eg. *C. bezziana* is also possible to be found in AL- Ahasa since they were reported in Saudi Arabia (Eesa and El-Sibae ,1993; Banaja and Ghandour ,1994; Alahmad , 2002) . Maggots of these species are also called screw worms and are the cause of large losses of farm animals (Radostits et. al.,2000; Staric et al.,2002) . The objective of the present study is to throw some light on the incidence of myiasis in the animal cases attending The Veterinary Teaching Hospital in the College of Veterinary Medicine and Animal Resources which reflect myiasis infection in Al-Ahsa region .

Material and methods

1- Collection of larvae from infested animals:

The larvae were collected from infested animals which were brought to the surgery clinic of The Veterinary Teaching Hospital. The number of cases and the sites of infestations were considered .

2- Identification of the causative flies :

After colleting the larvae, they were put in special plastic containers and brought to the entomology laboratory . Then they were subjected to entomological identification by using stereo microscope to see the morphology of the whole larvae.

Parts of the larvae were dissected and put on microscopic slides and fixed in 70% alcohol in order to be identified . Identification was based on the morphology of the anterior and posterior spiracles . Other larvae were put in containers with 2 gm of sand and exposed to sunlight twice till pupation occurred. Most of the adult flies emerged in 10-14 days and were then subjected to identification . The identification was performed according to Soulsby (1986) , Urquhart et. al., (1987) and Walker (1994) .

Results

As shown in tables (1 &2) and Fig1 – 3 , incidence of myiasis among sheep was the highest, 37.83% (174 cases) followed by goats ,36.74% (169cases) and cattle, 13.91% (64 cases) while the least incidence was among camels, 11.52% (53cases). The sites of myiasis infestations among the different animal species are indicated in table 2 . These results show that the most infested sites of affected animals were udders with total number of 54 cases (sheep 18 , goats 14,camels 14 and cattle 8). Followed by vulva with a total number of 41 cases (goats 15 , sheep11 , cattle 8 and camels 7) . The third largest infested sites were the fore limbs ,38 cases (goats 16, sheep 12 , cattle 8 , and

camels 2) followed by nose (brought from the pathology department from PM) with 32 cases (sheep 15, goats 12 and camels 5) followed by shoulders ,29 cases (goats 11, sheep 9, cattle 7 and camels 2) . The lowest infested sites were the penis ,5 (goats 9, sheep 3, and cattle 1) and the back ,7 (goats 4, sheep 2 and cattle 1)

Most of the myiasis cases in animals were reported in the most rainy months in Al-Ahsa during the study period .This started from September (80 cases) until April (32 cases).

About 5-20 larvae were collected from every case . As shown in table 3 a total of 5800 larvae were examined . The results showed that these species were *Lucilia sericata* (2800 larvae) , *Wohlfarhrtia nuba* (1200 larvae) , *Sarcophaga cruentata* (1000) , *Chrysomya bezziana* (600 larvae) , *Oestrus ovis* (150 larvae) and *Cephalopina titilator* (50 larvae) .

Table 1: The monthly numbers of animals myiasis cases attended the surgery clinic during the period January – December (2005) .

Month	The Examined Animals				Total
	Goats	Sheep	Cattle	Camels	
January	24	20	5	6	55
February	18	13	5	5	41
March	16	15	6	6	43
April	10	12	5	5	32
May	5	8	4	2	19
June	3	5	3	0	11
July	1	3	2	0	6
August	2	3	2	0	7
September	25	30	15	10	80
October	23	24	10	8	65
November	22	21	5	6	54
December	20	20	2	5	47
Total	169	174	64	53	460
%	36.74	37.83	13.91	11.52	100

Table 2: The sites of myiasis in animals attended the surgery clinic during the period January – December (2005)

Infested Sites	The animal cases				Total
	Goats	Sheep	Cattle	Camels	
Head	6	13	2	3	24
Nose*	12	15	0	5	32
Eye	5	10	8	0	23
Ear	3	4	2	1	10
Horn	5	12	2	-	19
Mouth	6	7	2	1	16
Jaws	2	5	1	10	18
Neck	4	8	2	3	17
F.Limbs	16	12	8	2	38
H.Limbs	18	6	2	1	27
Shoulders	11	9	7	2	29
Umbilical	8	10	5	1	24
Udders	14	18	8	14	54
Vulva	15	11	8	7	41
Testis	11	9	1	0	21
Penis	5	3	1	0	9
Rectum	8	5	3	0	16
Tail	7	4	0	0	11
Abdomen	10	8	2	2	22
Back	4	2	1	0	7
Total	169	174	64	53	458
%	36.74	37.83	13.91	11.52	100

* Samples were collected from post mortem cases at the pathology department.

Table 3 : The number of larvae of the causative fly species

Fly species	Number of examined larva	%
Lucilia sericata	2800	48.3
Wohlfarhrtia nuba	1200	20.7
Sarcophaga cruentata	1000	17.2
Chrysomya bezziana	600	10.3
Oestrus ovis	150	2.6
Cephalopina titilator	50	0.9
Total	5800	100

Figure 1:
The monthly numbers of myiasis cases of animals attended the surgery clinic during the study period .

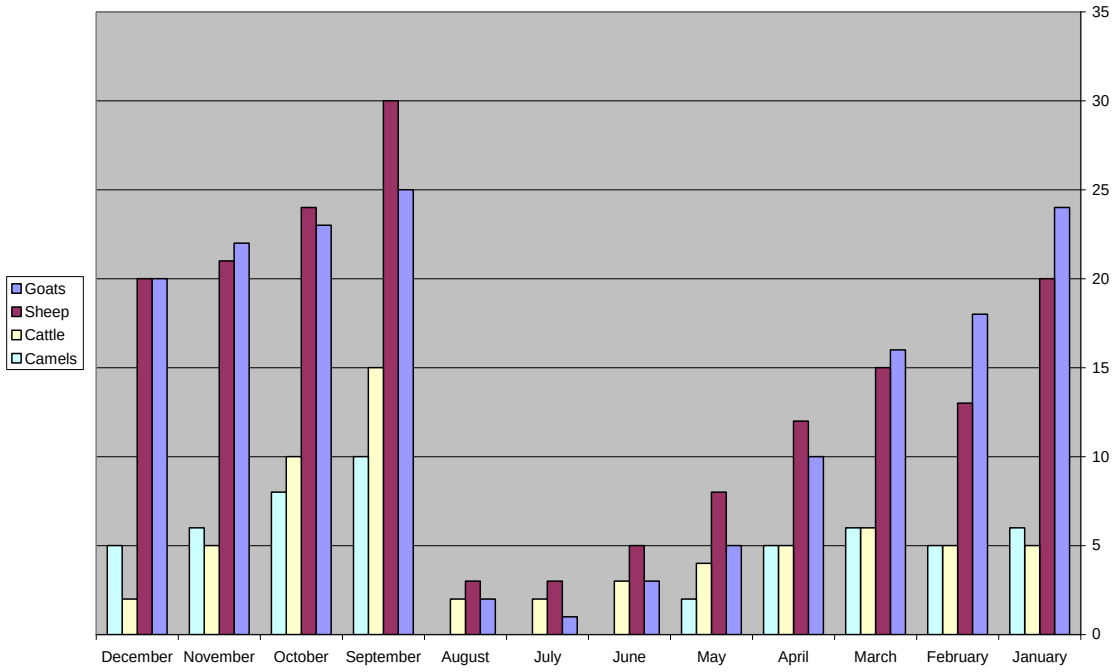


Figure 2: The sites of infestations of myiasis cases of animals attended the surgery clinic during the period Januaru – December (2005)

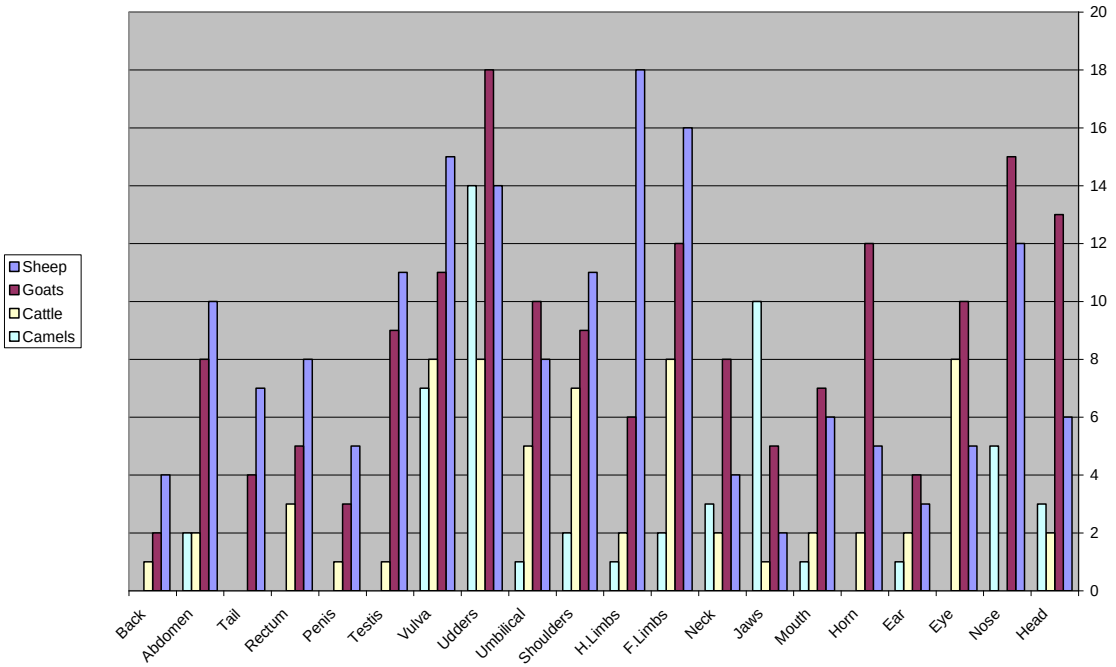


Figure 3 : Number of animal myiasis cases examined during the study period.

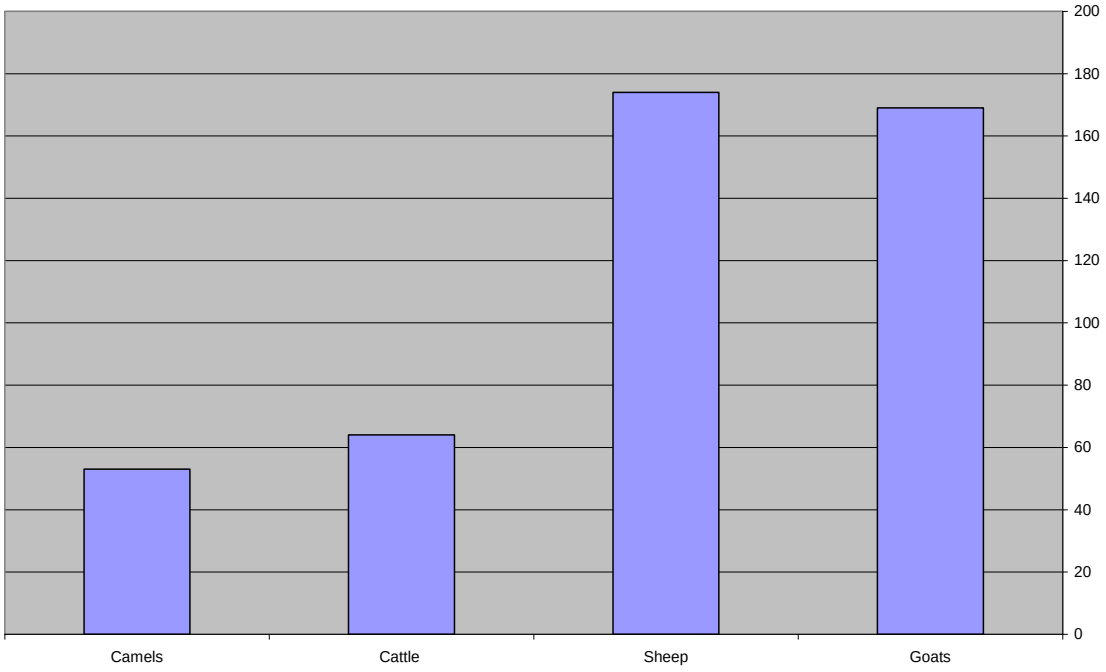
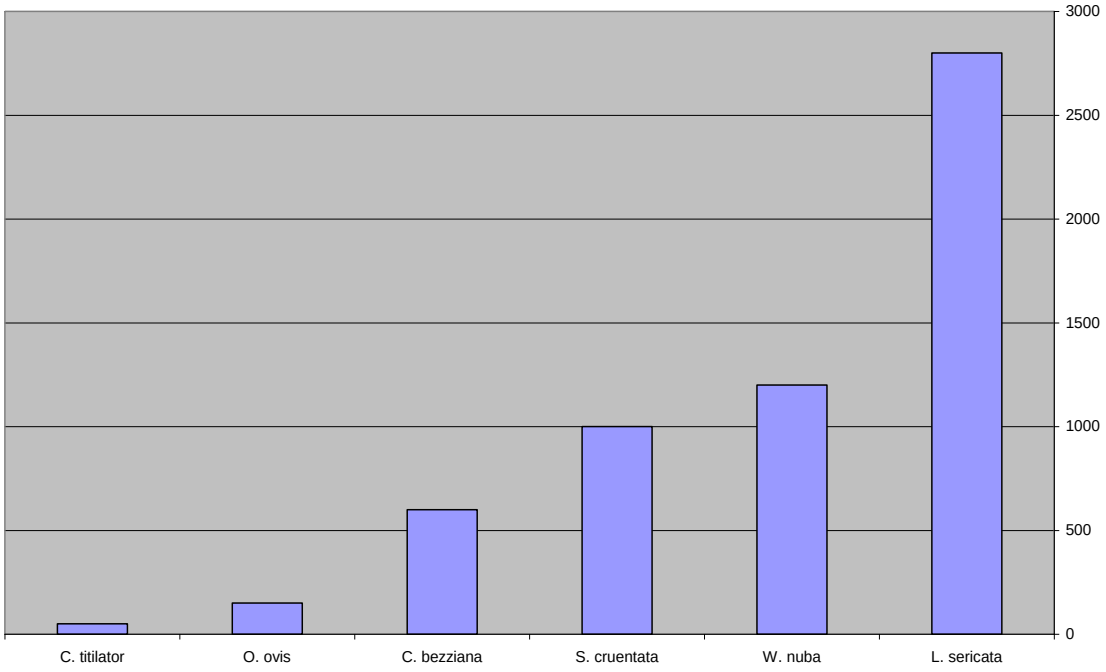


Figure 4 : The number of examined larvae of the causative fly species .



Discussion

The present study lustrated that myiasis incidence among the sheep was 37.83% (174 cases) . This was followed by goats 36.74% (169 cases) and the least cases recorded were among camels 11.52% (53 cases). This could be partially explained by the fact that sheep and goats constitute the largest animal population in the farm in the vicinity of the college . Poor hygienic measures also play a major role in the occurrence of myiasis. This is clear in case of cattle where most of them are reared in private dairy farms, at well controlled hygienic measures and veterinary services .This could explain the low incidence of myiasis among them 13.91% (64 cases) . The opposite of this is seen in camels . Despite most of them live at bad hygienic measures and veterinary services , they have the lowest incidence. This is due to three main factors . These are the owners, the camels themselves and their environment . In case of the owners most of them don't like to show their camels infested with Sarow (myiasis) or Jarab (mange) or any lesions of skin which may lead to spoil their names , the name of their tribe and the name of the region they come from . For these reasons most of camel mange and myiasis cases are either treated locally by invited private veterinarians or by local ways but most of the times the owners get rid of the animals before they are seen by other people . Generally camels like to live in the open ranges and travel for their food and water very long distances . This makes them less acceptable to be infested by cutaneous myiasis flies unless they are injured due to any bad managements like bad transportation or fencing them which may lead to traumatic injuries to them and predisposing them to cutaneous or traumatic myiasis infestations . Nasal myiasis of camels due to infestation with larvae (bots) of the oestrid fly *Cephalopina titillator* (Clark, 1797) is well known since this fly is a common obligate parasite of camels (Fatani and Hilali., 1994).

From our results it is clear that the larvae which developed to the adult stages come from most of the cases started to increase at the beginning of the rainy season . This started from September (80 cases) until April (32 cases) . In fact this is the rainy season in Saudi Arabia . The humidity during this rainy period is a favorable condition for cutaneous myiasis since persistent rain can create (wool rot) which makes the fleece attractive to the adult flies (Urquhart et al., 1987). These flies might come from either hibernated pupae during the very hot summer or from pupae that developed from larvae brought within the tissues of infested animals imported from some countries. The raining months in Al-Ahssa region together with warmer temperature is favorable for the emergence of the adult flies from pupae. These conditions could also influence the monthly infection of animals with nasal bot *Oestrus ovis* and *Cephalopina titilator* (Fatani and Hilali., 1994 ; Yilma and Genet, 2000).
Myiasis caused by the obligate parasitic fly maggots of *Chrysomyia spp*. eg *C. bezziana* is also possible to be found in AL-Ahsa since they were reported in Saudi Arabia (Eesa and El-Sibae ,1993; Banaja and Ghandour ,1994; Alahmad , 2002) .These maggots are called screw worms and are the cause of large losses of farm animals(Staric et al.,2002) . The economic losses caused by cutaneous myiasis in sheep breeding countries, such as South Africa , New Zealand ,Australia and some European countries were mentioned by Urquhart et al.(1987) , French et al.(1996), Bowen et al.(1999) and Staric et al.(2002). In addition it also affects wool production and animal growth and results in high expenses due to the cost of prevention and sanitation (Urquhart et al.,1987; Staric et al.,2002) .

In fact some of the myiasis cases received by the veterinary clinics have been treated with kerosene by the owners before they bought . Also in some clinics the animals may be treated with some insecticides applied on the lesion in order to kill the larvae (e.g.

Negasunt) without isolating the larvae from them . Larvae must be isolated alive and sent to the entomology laboratory in order to be identified. The treatment without full identification of the fly may raise the danger of screw-worm myiasis (Soulsby, 1986 ; Radostits et. al.,2000) **.**

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