

Diagnostic Study of the Mange Mites Infestation in Sheep in Al-Najaf Al-Ashraf province

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Abstract:

This study was conducted to isolate and diagnose species of mites that cause mange in sheep and investigate percentages of infestation in different regions of AL- Najaf Province and also the effects of age, sex of animals on the prevalence of the disease were studied .

The results of the microscopical examination of the skin scraping were revealed that 54 of the sheep were infested with mites with an overall percentage of infestation 7.17%.

In this study one genus of mange mites were recorded that parasitized sheep *Psoroptes communis var ovis* which found on back, shoulder, fat tail regions of animal body.

The prevalence of the infestation was highest in sheep older than two years (9.02%) and the lowest in sheep with age younger than two years (1.9%). The prevalence of mange mites in male sheep was 0.8% versus 8.2% in females. Statistically there were significant differences ($P>0.05$) according to the age and sex of animals and the differences in percentages of infestation were significant ($p<0.05$) according to different regions of study.

The gross pathological changes of the mange mites on the infested skin were the laceration of epidermis with a scar formation and the skin's loss of flexibility, toughness with sclerosis, fissuring and dryness, and the highest regions of animal body infestation by *Psoroptes* were the back , shoulder and fat tail .

Key words: *Psoroptes ovis* , mange , sheep , prevalence.

دراسة تشخيصية لإصابات حلم الجرب في الأغنام في محافظة النجف الأشرف

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الخلاصة:

أجريت هذه الدراسة لعزل وتشخيص الحلم التي تسبب الجرب في الاغنام والتحري عن نسب اصابتها في بعض مناطق محافظة النجف، ودراسة تأثير العمر والجنس على انتشار المرض.

أوضحت نتائج الفحص المختبري للقسطات الجلدية التي جمعت من الأغنام ان 54 رأساً من الأغنام كانت مصابة بحلم الجرب وبنسبة اصابة كلية بلغت 7.17%.

أوضحت هذه الدراسة أن حلم الجرب من جنس *Psoroptes communis var ovis* تتطفل على الأغنام في مناطق الظهر و الكتف و اللية من جسم الحيوان.

كانت أعلى نسبة لانتشار الحلم في النعاج بعمر أكثر من سنتين 9.02 % وأوطأها في النعاج بعمر أقل من سنتين 1.9 % . ان انتشار حلم الجرب في النعاج كان أعلى ونسبة 8.2 % مقابل الأكباش 0.8 % ، وكانت الاختلافات معنوية عند مستوى احتمال ($p < 0.05$) بالنسبة لعمر و جنس الحيوان. و كانت معنوية ($p < 0.05$) أيضا حسب اختلاف مناطق الدراسة.

إن أهم التغيرات المرضية العيانية التي تحدثها حلم الجرب في الجلود المصابة هي تمزق البشرة مع تكوين الندب ويفقد الجلد مرونته ومثاقفه مع تصلبه وتشققه وجفافه وزيادة سمكه و الآفات المرضية التي تسببها حلم *Psoroptes ovis* تركزت في مناطق الظهر والكتف واللية.

Introduction:

Ectoparasites are ubiquitous, often highly damaging and in most cases cannot be permanently eradicated; hence, they must usually be managed locally with insecticides, some ectoparasites also act as vectors of protozoa, bacteria, viruses, cestodes and nematodes. The behaviour of ectoparasites also may cause harm indirectly, causing disturbance, increasing levels of behaviour such as rubbing, and leading to reduced time spent grazing or ruminating and in some cases to self wounding (1,2). Mange is a contagious skin disease characterised by crusty, pruritic dermatitis and hair/feather loss, and caused by a variety of mange mites which are mostly weakly sclerotised, slow-moving, very small (100–900 μm), and live permanently on their hosts burrowing in or living on the skin. The French term for mange is 'la gale', and in English, it has been called 'itch', 'scab', or 'scabies'. Numerous species of mites cause mange specifically on domestic hosts (livestock, poultry). About 50 mite species in 16 families and 26 genera may cause mange where all the major mange mite species are within the orders Astigmata and Prostigmata. The Astigmata include the medical or veterinary important families Sarcoptidae and Psoroptidae which include *Sarcoptes* mite that causes sarcoptic mange (scabies) in humans and other mammals as a zoonotic disease (3).

The main objectives of this study were to isolate and diagnose species of mites that cause mange in sheep and determine the prevalence of the disease in the different regions of AL-Najaf Province and study the effect of the age and sex on the

prevalence of disease in addition to Study the clinical signs and the gross changes caused by the parasite on the skin.

Materials and methods:

Field study: The study was carried out in two regions of AL-Najaf province including (AL-Zurfat and AL-Hewatem). A total number of examined sheep were 753 in different ages, sexes which examined clinically.

Depending on (4) the animals were divided into two groups of age : **1st** group less than two years old (210 sheep) and **2nd** group more than two years old (543 sheep) , including (112 rams) and (641 Ewes).

65 samples (skin scraping) were collected from the sheep suspected with mange mites infestation. The clinical signs such as severe itching, wool loss, crusts and pustules were noticed.

Collecting of Samples

Samples were collected from the animals which showed clinical signs of the mange infestation such as hair loss, severe itch and crusty or scaly skin lesions. The wool was clipped out with scissors and then a drops of glycerine were added on the edge of skin lesions to moisten the area then a scraping was taken from them by using Scalpel and blade deeply until the blood begins to ooze, scraping is placed in a Petri dishes and the information are recorded for each animal . then samples transported directly to the parasitic laboratory of veterinary medicine in university of kufa for proceeding diagnosis (5).

The laboratory Tests

Depending on method of (6,7) in microscopic examination for diagnosis, a part of the scraping was taken and placed in a test tube containing 5 or 10 ml of KOH 10% . The tubes are placed in a water bath with 60-80°C for 15 minutes then centrifuged in a speed of 1500-2000 rounds per minute for 5 minutes , discarded the supernatant by an automatic pipette and the sediment is mixed well in a test tube. Then some drops are drawn from the sediment with a pipette , placed on a glass slide and covered with a cover slide. Examined under microscope with x10, x40, x100 powers to confirm the presence of parasite and diagnose the species.

Depend on formalism features of mites as described by (7 , 8) in diagnosis of the samples of the study .

Results:

The important clinical signs of the sheep infested with mite : itch where the animal attempts to rub the infested region of it's body with the legs, walls, fences, columns or biting with teeth, loss of wool. The wool becomes curly and like matted with the presence of calcified serous exudation leading to pigmentation with yellow color and easy to detach or remove and infested region seems wetness as a result of biting the animal to infested region repeatedly .

Results of the laboratory tests revealed that 54 samples from a total of 65 samples collected from sheep were positive to mange mites while 11 samples were negative. The overall percentage of infestation with mange mites 7.17% from 753 sheep examined.

This study showed that the sheep were infested with *Psoroptes communis* var *ovis*, A larvated egg of *Psoroptes ovis* also noticed figure (5).



Figure (1) sheep infested with mange mite.



Figure (2) ovigerous female of *Psoroptes communis* var *ovis* x10.

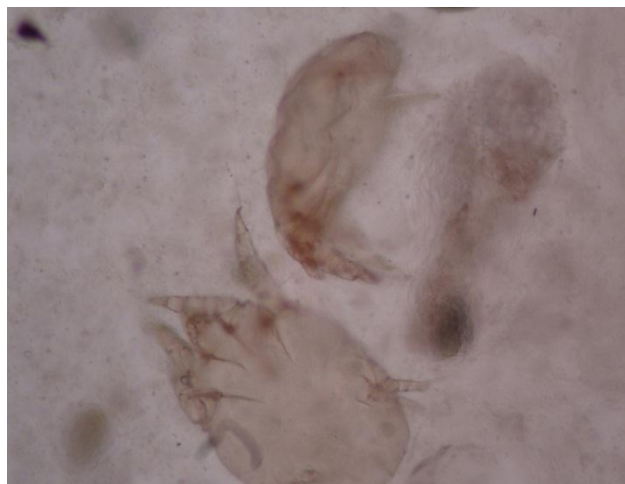


Figure (3) reveals adult and larva of *Psoroptes communis* var *ovis* x10.



Figure (4) empty egg of *Psoroptes communis* var *ovis* after hatching x10.



a



b

Figure (5) **a.** egg of *Psoroptes communis* var *ovis*
b. Reveals larva of *Psoroptes communis* var *ovis* still inside the eggs (larvated egg) x10 .

Effect of Age and Sex on Infestation with Mange Mites

Results of this study revealed that the percentages of infestation were high in sheep older than two years 9.02 % and low in age younger than two years 1.9%. On the other hand the high rates of mange mite

infestation in male sheep (Rams) were 0.8% compared with the females (Ewes) 8.2%, table (1).

Statistically there were significant differences on ($P < 0.05$) according to the age and sex of animals.

Table (1): Relation of age and sex of animals with percentages of mite infestation in sheep :

Age of animal		Number of examined sheep	Number of infested sheep	% in comparison with examined No.
Younger than 2 years		210	4	1.9 a
Older than 2 years		543	49	9.02 b
The sex	Male	112	1	0.8 c
	Female	641	53	8.2 d

There were significant differences on ($p < 0.05$).

Geographic distribution of Mange Mites infestation

Results of the present study revealed that the highest infestation rates with mange mites in Al- Zurfat region 12.8%

and the lowest infestation rates were in Al-Hewatem 4.3%, table (2). Statistically the differences in percentages of infestation were significant ($p < 0.05$) according to regions of study.

Table (2): Demonstrates the infestation percentages of mange mites in the regions of the study :

Region of Study	Number of examined sheep	Number of infested sheep	% in comparison with examined No.
Al-Hewatem	503	22	4.3 a
Al-Zurfat	250	32	12.8 b

* The different letters indicates that the differences were significant ($p < 0.05$).

The Gross pathological changes

The lesions caused by the *Psoroptes ovis* mostly appeared in the back, shoulder and fat tail region. The gross pathological changes of Mange Mites on the infested skin were laceration of the epidermis with a scar formation , the loss of skin

flexibility, toughness with sclerosis, fissuring , drying and an increase in it's thickness with the presence of centers of necrosis and secondary bacterial infection.

Discussion:

The important clinical signs of the sheep infested with mite : itch and loss of wool and this agree with each of (9) clarified that causes of intense irritation and itching by toxins secreted from parasite lead to sensitization of animals and (10) referred that this parasite especially *Sarcoptes* mite burrows in the deeper parts of the stratum corneum, or the superficial layers of the stratum malpighii of the skin, and rarely goes deeper, it's complete entire life cycle at this level, therefore; causes severe itching and loss of hair or wool.

The overall percentage of infestation with mange mites in sheep was 7.17% . Our finding nearished from the percentages readed by (1) in Iraq the whole percentage 3.74% and in Al-Diwaniyah province was 0.31% with *Sarcoptes* in sheep , (11) was 4.5 % in sheep , (12) 1.2% in grazing sheep and 7.4% non-grazing with rate 4.3% with *Chorioptes* mite , (13) 2.6% with *Sarcoptes* mite in sheep in Urmia suburb (Iran) and (14) 6% with *Sarcoptes* mite .

While this percentage was less than the percentages that get by each of (15) in Sudan were 50% with *Psoroptes communis var ovis* in sheep , (16) in India was 8% in sheep (17) 18.3% with *Psoroptes* and *sarcoptes* in sheep , (18) 34.9% ,(19) 21.0 % in sheep with *Sarcoptes scabiei* in Highland Balochistan , (20) 28.1% with *Psoroptes* and *sarcoptes* in sheep , (21) was 52% in sheep with *Psoroptes* , *Sarcoptes* , *Chorioptes* and 75% with *Psoroptes* , (22) 48.8% and most with *Sarcoptes* mite in small ruminants , (23) 22.96% with *Sarcoptes* and *Psoroptes* in sheep in Baghdad province , (24) in Spain with *Sarcoptes* in sheep were 12.6% ,(25) 14% with *Psoroptes* mite , (26) was 15% of sheep scab in Scotland and (27) was 44.7% with *Psoroptes* in sheep.

The causes for this variance may return to the variations of the environmental conditions and geographic areas(nature of earth and pastures) and mode of breeding

and management of the animals and the variations of the numbers, breeds (nature of wool and it's length) and the species of the animals included in the study in addition to the increment of cultural awareness of owners in using modern ways for the prevention and control of the disease by using the broad spectrum Ivermectin for regularly period in year and dipping the animals using the effective organophosphorous compound which leads to the destruction of all external parasites, the owners consider the mange as a serious and infectious disease, therefore; they tend to treatment or selling.

Results of the present study recorded that the sheep were infested with one genera of the mange mites is *Psoroptes ovis* . Our finding with those (1) , (16) ,(19) , (22) and (27) who recorded that Iraqi sheep infested with *Sarcoptes* and *Psoroptes* Mites only .

Results of the present study revealed that the differences in numbers and percentages of infestation between age and sex of animals was significant ($p < 0.05$) and this indicate that age and sex of animals effect on infestation with mites. Our finding incompatible with each of (23, 25 , 28 , 29 , 30 and 31) who confirmed that age and sex of animals don't effect on percentage of infestation with mites.

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