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CLINICAL AND THERAPEUTICAL STUDIES ON DERMATOPHILOSIS ON SOME FARM ANIMALS (With One Table and 12 Figures)

By

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**دراسات إكلينيكية وعلاجية على مرض الدرماتوفيلوسيس
على بعض حيوانات المزرعة**

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يعد مرض الدرماتوفيلوسيس واحداً من الأمراض المعدية التي تصيب معظم أنواع الحيوانات إلى جانب الإنسان مسببة إصابات جلدية تتراوح ما بين نقصف وتشابك الشعر أو الصوف إلى تساقطه كلية وظهور قشور في أماكن مختلفة من الجلد. في هذه الدراسة والتي أجريت على قطيع من الأغنام والماعز وآخر من الأبقار والجاموس (٨٦ ، ٢٢ ، ٦٢ ، ٣٤) على الترتيب تباين توزيع تلك الإصابات على جلد الحيوان تبعاً لنوعه حيث وجدت في الأغنام والماعز في مناطق الرأس والأرجل والصدر والبطن بينما اقتصر في الأبقار على مناطق الصدر والبطن أما في الجاموس فكانت الإصابات محدودة ولم تتعد النهايات السفلى للأرجل. وقد تم علاج ثلاث مجموعات من الأغنام حيث تعرضت لثلاث نظم علاجية الأول باستخدام أوكس تتراسيكلين طويل المفعول بالحقن العضلي والثاني باستخدام زيت الثوم موضعياً والثالث باستخدام كليهما معاً. وقد أثبتت النتائج أن استخدام زيت الثوم موضعياً أدى إلى معدلات شفاء كاملة وسريعة ودون ارتداد للأعراض مرة أخرى.

SUMMARY

Dermatophilosis is a bacterial disease affecting wide range of animal species in addition to humans. The clinical picture of the disease was studied in a flock of sheep and goats (86 and 22 respectively) and herd of cattle and buffaloes (62 and 34 respectively). The clinical picture was in the form of skin lesions which varied in its severity and distribution owing to species affected. In sheep, the lesions were in the form of irregular area of alopecia with crust formation in the face, ears and legs from the coronet to the knees. Matted, broken or easily detached wool is recorded. The lesions were similar in goats while in cattle the lesions were distributed on the skin of chest and abdomen. In buffaloes it was

confined on the distal portion of the legs. Out of the diseased sheep, 18 were classified into 3 groups each of six animals. The first group were treated parentally using long acting oxytetracycline. Those of the second group were treated topically using garlic oil. The 3rd group was treated both parentally and topically. It was noticed that garlic oil is highly efficient in treatment of dermatophilosis.

Key words: *Animal dermatophilosis, Diagnosis of dermatophilosis, Treatment of dermatophilosis*

INTRODUCTION

Dermatophilosis is an enzootic bacterial disease affecting most animal species in addition to humans, particularly those working with livestock (Dean *et al.*, 1961 and yeruham *et al.*, 1991). It may be acute or chronic, partial or progressive exudative dermatitis with subsequent formation of scabs under which the hair or fleece tends to break or be matted together (Hagan and Burner, 1992; Zaria, 1993; Higgins and Write, 1998).

The disease leads to considerable swelling and pain in the affected areas. It may resolve spontaneously or fatal under certain conditions (Sutherland *et al.*, 1991). There is a number of predisposing factors facilitating the infection; Nutritional stress, mechanical trauma to the skin, moisture or rainfall and ectoparasites being at the fore front of these factors (Elisah, 2004) Treatment of dermatophilosis remains a matter of great concern regarding the recurrence of signs as well as the difficulties to cure it using antibiotic by parentral route. On the other side many topical treatment had been tried with variable curative effects Ethanol extracts of leaves of *Senna alata*, *Lantana camera* and *Mitracarpus scaber* were used as topical ointment once daily for 6-15 days resulting in complete healing within 3-4 weeks without recurrence for 3 years (Ali – Emmanuel *et al.*, 2003). Some essential oils (lavander, thymos and garlic were investigated *invitro* in comparison with povidone iodine. It was demonstrated that garlic oil is the most effective one (Elisah, 2004).

This study aimed to declare the clinical features of dermatophilosis in different animal species and evaluation of garlic oil as a topical treatment in some diseased animals.

MATERIALS and METHODS

Animals:

The animals that investigated in this study at Gharbia Governorate belonged to sheep flock consisted of 86 sheep and 22 goats of different ages and dairy herd consisting of 62 cattle and 34 buffaloes, Some of which were suffering from skin lesions in the form of matted hair or wool, formatrom of scabs and crusts, erythema and exudative dermatitis. It was suspected to be dermatophilosis. The diseased animals were subjected to clinical examination according to Kelly (1984).

Bactreiology:

Swabbing of the under crust lesions was made and used for both direct microscopy as well as culture on blood agar media aerobically for 48- 72 hs. according to Quin *et al.* (1994).

Treatment:

Out of the diseased sheep, 18 were allocated into 3 groups each of six animals. The first group were treated parentally with long acting oxytetracycline the widely used antibiotic in treatment of dermatophilosis (Ilemobad *et al.*, 1979; Abedl – Halim *et al.*, 2000 and Ammar, 2003) with a dose rate of 20 mg/kg. intramuscularly. Animals of the 2nd group were treated topically with garlic oil which was used for the first time in this purpose depending on its high invitro efficiency (Elisah 2004). It was applied daily for 8 successive days. Those of the 3rd group were subjected to both parental treatment with long acting oxytetracycline and topical application of garlic oil. The treated animals were kept under clinical observation weekly and bacteriological examination every 2 weeks for 6 weeks.

RESULTS

The clinical examination revealed that the clinical picture varied in its severity and distribution of the lesions owing to the species affected. The lesions in sheep appeared on the head region as irregular area of alopecia covered with crusts specially on the edges of ears and the face. It may involve the skin all over the body in the form of moisten lesions under which the wool is broken or matted and easily detached leaving raw surface which is erythematous in nature. The legs also were effected specially the carpal region. Goats showed similar lesions while in cows, the lesions were restricted on the skin of chest and abdomen. In buffaloes the lesions were confined on the distal portion of the legs (Fig 1-12).

Table 1: Efficacy of garlic oil in comparison with long acting oxytetracycline in treatment of dermatophilosis in sheep.

Group	No. of treated animals	Therapeutical agent and mode of application	Weeks after											
			1 st		2 nd		3 rd		4 th		5 th		6 th	
			NRA.	%	NRA.	%	NRA.	%	NRA.	%	NRA.	%	NRA.	%
1	6	Long acting oxytetracycline parenterally, 20 mg/kg one does	-	0	3	50	5	83.3	6	100	5	83.3	5	83.3
2	6	Garlic oil, topically once daily for 8 days.	1	16.7	4	66.6	6	100	6	100	6	100	6	100
3	6	Long acting oxytetracycline parenterally and garlic oil topically.	1	16.7	5	83.3	6	100	6	100	6	100	6	100

NRA. : Number of recovered animals.

Regarding the treatment trials, all treated animals showed complete clinical and bacteriological cure at the end of the 4th week. In the 1st group the recovery was started at the end of 2nd week with recovery rate of 50% which elevated to be 83.3 % at the end of 3rd week and 100% at the end of the 4th week. recurrence of the disease had been recorded at the end of the 5th week. In the other 2 groups, the recovery commenced at the end of 1st week with a rate of 16.7 % reaching 100 % at the end of 3rd week. Without any evidence of recurrence Table (1).

The application of garlic oil on the lesion of the diseased sheep softened the crusty lesion. The crusts started falling off from the lesions after the 4th day after treatment. The falling off was rapid and progressive. It fall off completely within 8-10 days. The growth of the wool was observed at 12th day post application and the treated animals appeared normal within 4-5 weeks.

Fig. 1: A lamb suffering from dermatophilosis showing skin lesions in the form of area of alopecia

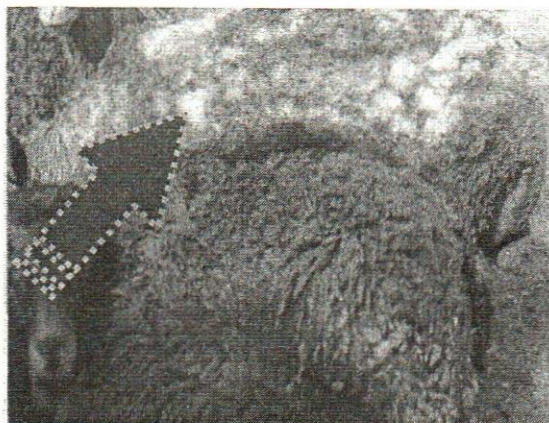


Fig. 2: Close up on the lesion revealing wrinkled skin, broken and matted wool .

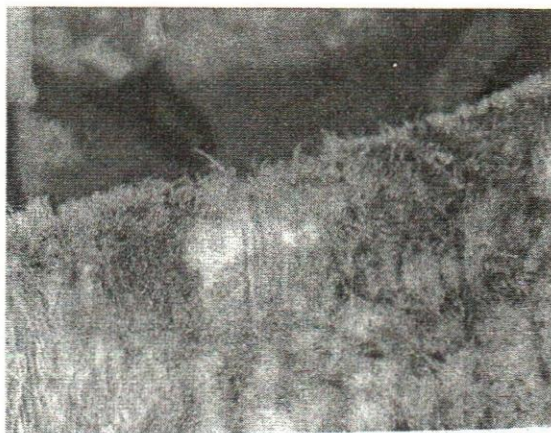


Fig. 3: The lesion of dermatophilosis in the face and ears of ewe.



Fig. 4: The lesions of dermatophilosis not confined on the head region but involve the legs of a lamb.



Fig. 5: A goat showing lesions of dermatophilosis in the skin of chest and abdomen.

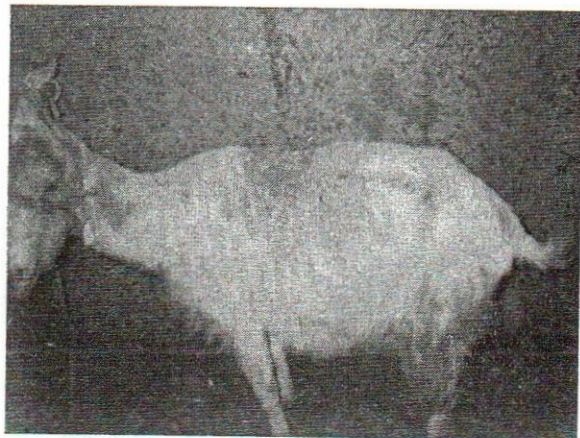


Fig. 6: The lesion of dermatophilosis in buffaloes is confined on the distal of portion of the legs.



Fig. 7: Crusty lesions of dermatophilosis on the back region of a cow.

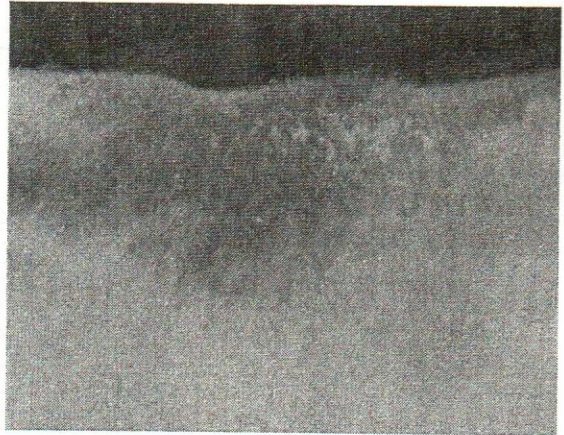


Fig. 8: Extensive lesions of dermatophilosis on the back of a cow.

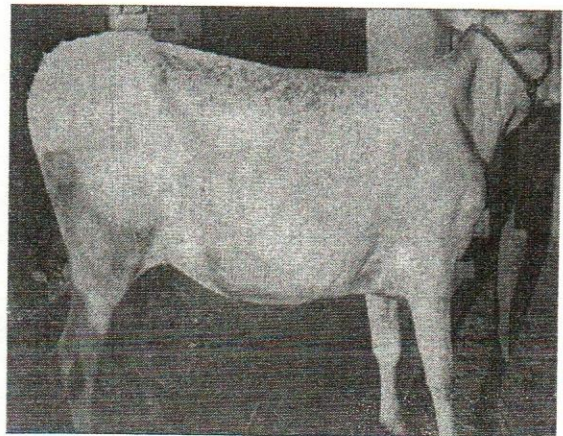


Fig. 9: Exudative severe dermatitis on the skin of the chest and abdomen caused by *D. congolensis*.

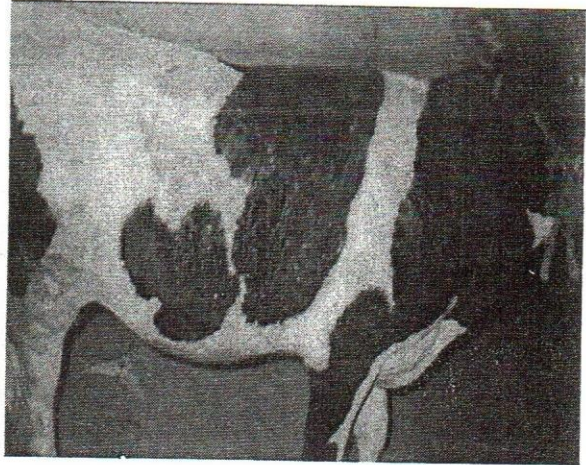


Fig. 10: Close up on the lesion revealing the alopecia, crusts and matted hair.

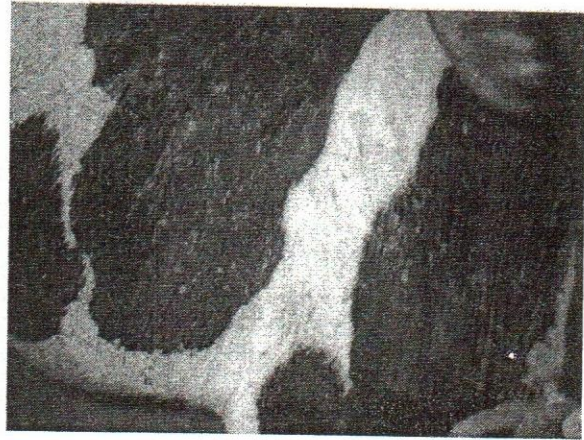
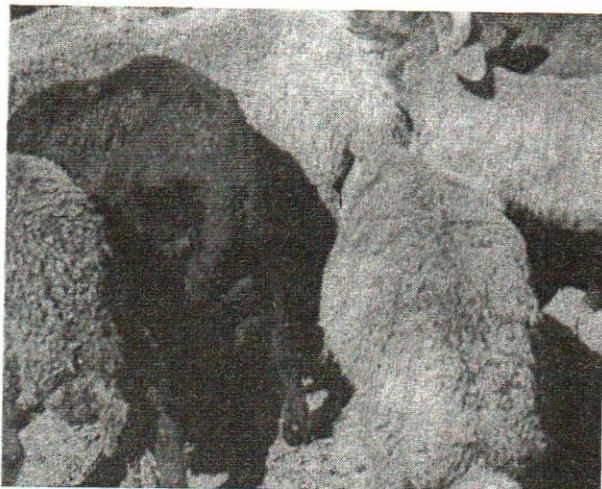


Fig. 11: The lesions of dermatophilosis appeared on the back and tail region.



Fig. 12: The lesion begin to improve after treatment.



DISCUSSION

Dermatophilosis is a skin disease caused by *Dermatophilus congolensis*. It has a world wide distribution and a wide-host range including man. Concerning the clinical picture, it was found that in spite of the similarity of the developing lesions, it was varied in its distribution in different animal species. In sheep and goats the lesions were prominent on the head region (face and ears) as wells the legs from the coronets to the knees, and also on the back and tail region. In cattle, the lesion were confined on the chest and abdomen while in buffaloes the lesions were restricted on the distal portions of the legs. The variation of distribution of the lesions may attributed to the effect of the predisposing factors; legs and face regions of sheep were mostly exposed to fleas infestation with subsequent exposure to dermatophilosis. The lesions on the back, chest and abdominal regions may related to moisture which accumulate and retained by the long hair or fleece specially during the rainy season. In buffaloes, the restriction of lesions on the distal portion of the legs may related to the wet soil and muddy environment that preferred by buffaloes. Within the same species, the lesions varied in its severity and nature in relation to the site of infection; It was crusty in the face and edges of the ears while, in areas with long hair or wool, it appeared as exudative dermatitis with broken and matted hair or fleece. These results and assumptions agree with those of Hagan and Burner (1992); Zaria (1993), Higgins and write (1998), Dwight and Yuan (1999), Abdel-Halim *et al.* (2000) and Ammar (2003).

Regarding the treatment of dermatophilosis, it was found that the topical treatment with garlic oil is more efficient than the parenteral one using long acting oxytetracycline. This may be explained as the direct and continuous contact of the topically applied garlic oil leads to softening of the crusts inducing falling off them with inhibition of development of *Dermatophilus congolensis*. On the other side, with parenteral treatment some crusts could remain and the rough borders of the damaged skin did not completely disappear. Then, *dermatophilus congolensis* which can persist in such areas, start to develop again resulting in recurrence of signs after clinical cure of some cases. These results and explanation agree with those of Lloyd and Noble, (1982), Wilson and Amakiri (1989) Lloyd *et al.*, 1990 and Ali – Emmanuel *et al.*, (2003). The high efficacy of garlic oil is in accordance with the *in vitro* trails of Elisah (2004).

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