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SOME PATHLOGICAL AND MYCOLOGICAL STUDIES ON RINGWORM IN CAMELS ALOCALITY IN SHARKIA GOVERNORATE

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A B S T R A C T

The present study was carried out on 10 camels aged 3 -4 years old in Belies slaughtered house, 5 camels were apparently healthy (control group) and 5 camels sowing gross lesions characterized to ringworm (diseased group) were used for isolation of etiological agent of ringworm as well as study the hemato-biochemical and pathological changes induced by ringworm in camels in Sharkia governorate. Mycological examination of skin scrapings revealed that affected camels were positive for Trichophyton verrucosum. Ringworm in camels induced significant decrease in total erythrocytic count, haemoglobin content and packed cell volume% associated significant increase leukocytic count, neutrophils and lymphocyte , AST, ALT, ALP, creatinine and urea In addition insignificant decrease in monocytes, eosinophils, basophiles, total protein, albumin and insignificant increase globulin. Camels suffering from ringworm revealed grossly white to brown area of scaly skin and circumscribed hairless areas. These lesions were noticed on the skin of the neck, muzzle, around the eyes, base of the eyes and limbs. Microscopically cystic dilatation of the hair follicles and sweat glands lined by atrophied lining epithelium, hyperkeratosis and acanthosis of epidermis, intra-epidermal pustules and acanthosis, aggregations of neutrophils and lymphocytes in the dermis were observed. Moreover basophilic granular material replaced the derma collagen and muscular fibers were also detected. It could be concluded that the ringworm in camels induce some adverse effect on haemato-biochemical parameters and pathological picture.

KEY WORDS: camels, Ringworm, Sharkia Governorate

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1. I N T R O D U C T I O N

Camels form integral part of the culture and agriculture in many countries and have done so for thousands of years [1]. There are about 20 million of camels in the world [2]. Camels are hard animals which tolerate easily the rugged climate [3]. Ringworm infection is medically known as dermatophytosis caused by dermatophytes fungi [4]. Dermatophtes are group of morphological and physiological related molds that colonized keratinized tissue (skin, hair and nails) of man and animals. The colonization process is associated by the release of different photolytic and other enzymes by which makes inflammatory responses in the host resulting in dermatophytosis [5, 6].It is a common superficial fungal infection [7]. It's an infectious disease of animals that causes great economic losses [8]. Dermatophytes are keratinophilic fungi that are able to invade the stratum corneum of the skin and other keratinized structures [9]. Lesions observed on affected animals were alopecia and/or circumscribed grayish-white, crusty, raised lesions in head, neck and chest area [10]. Dermatophyte infection may range from mild to severe [11]. The aim of the present investigation was identification of etiological agent of ringworm in camels as

well as studying on the biochemical and pathological changes induced by ringworm in camels in Sharkia governorate.

2. MATERIAL AND METHODS

Animals

Ten camels (3-4 year old) in Belbies slaughterhouse, Sharkia governorate, were examined and divided into 2 groups. Camels appeared healthy (group1) and the other gross lesion ringworm (group 2). Skin and complete clinical examination of all camels were carried out. Parasitological examination of fecal matter was carried out [12] to ensure that the camels were free from the internal parasites.

Mycological examination

Skin lesions were cleaned with a cotton swab and soaked with ethyl alcohol, samples were collected by scraping the lesion using sterile scalpel blade and put into sterile Petri dishes. Collected samples were divided into two portions. 1st portion was subjected to microscopical examination with 20 % KOH preparation [13]. While the 2nd portion was used for culture on Sabouroud dextrose agar media with chloramphenicol and cyclohexidine [14] as well as Bromocrusol purple milk Dextrose agar [15]. The plates were incubated at 27°C for several weeks and colonies were identified [16].

Blood samples

Two blood samples were taken from all camels before slaughtering, 1st sample was taken in tubes containing EDTA for estimation blood picture [17], 2nd sample was taken to obtain clear serum for determination of AST and ALT [18], ALP [19], total protein [20], albumin [21], globulin , urea [22] and creatinine [23].

Histopathological studies:

Specimens from infected skin were taken and fixed in 10%formaline solution then dehydrated, cleared and embedded in paraffin wax, sectioned at 4 µm thickness and stained by Harris haematoxylin and eosin for microscopical examination [24].

Statistical analysis:

Data of the blood parameters were statistically analyzed [25].

3. RESULTS

Mycological examination of skin scrapings revealed that all camels in the second group showed gross lesions characteristic to ring worm were positive for Trichophyton verrucosum. Isolates showed slow growth heaped center and deeply folded surface without arrial mycelia. Microscopic examination of colonies revealed chins of chlamydospore and no macrocolinidia or microconidia detected. On Bromocresol purple milk solid glucose agar hallow zone of clearing around the colonies was observed, and at the same time the color of the medium changed to purple.

Results presented in table 1 and 2 showed that ringworm in camels induced significant decrease in erythrocytic count, haemoglobin content and packed cell volume% associated with significant increase in leukocytic count, neutrophils and lymphocyte, liver enzymes (AST, ALT and ALP). Moreover, insignificant decrease in monocytes, eosinophils, basophiles, total protein, albumin an A/G ratio associated with insignificant increase of globulin were also detected.

Grossly ring worm represented by white to brown areas of scaly skin or circumscribed hairless area. These lesions were noticed on the skin of the neck, muzzle, around the eyes, base of the eyes and limbs. The tricophyton hyphae were seen in the skin scraping.

Table 1 Blood picture of healthy and diseased camels (n=5)

Parameter		Control	Diseased
Erythrogram			
	RBCs (10^6/ mm^3)	10.04±0.35	7.25±0.61*
	HB (gm %)	13.69±0.53	9.93±0.78*
	PCV (%)	34.08±1.51	27.69±1.95*
	TLC	11.37±0.44	13.16±0.58*
	Lymph	3.12±0.50	4.32±0.45*
Differential leukocytic count (10^3/mm^3)			
	Neutrophils	4.96±0.16	5.8±0.18*
	Monocytes	2.04±0.35	1.93±0.28
	Eosinophil	0.71±0.12	0.59±0.11
	Basophils	0.54±0.10	0.48±0.11

*Significant at P < 0.05

Table 2 Liver enzymes, protein profile and kidney function of healthy and diseased Camels (n=5)

Parameter		Control	Diseased
Liver enzymes			
	AST(U/L)	32.05±1.23	35.18±0.89*
	ALT(U/L)	16.40±0.59	20.38±0.83*
	ALP(U/L)	42.04±0.61	44.30±1.02*
Protein profile			
	T.P.(gm/dl)	8.66±0.27	8.49±0.73
	Albumin (gm/dl)	4.73±0.19	4.41±0.27
	Globulin (gm/dl)	3.93±0.19	4.08±0.25
	A/G (ratio)	1.20±0.26	1.08±0.18
Kidney function			
	Urea (gm/dl)	25.83±0.81	29.07±0.78*
	Creatinine (gm/dl)	1.41±0.3	2.39±0.21*

* Significant at P < 0.05

Microscopically, the hair follicles and sweat glands exhibited cystic dilatation Fig (1&2) and were lined by atrophied epithelium. The epidermis of some cases undergoes hyperkeratosis and acanthosis Fig (3&4). Occasionally, perivascular dermatitis, and intra-epidermal pustules characterized by focal aggregation of neutrophils mixed with eosinophil and karyrrhectic debris were detected Fig (5). The branched fungal hyphae, positive for PAS-reaction Fig (6) zenkers degeneration and necrosis of some muscle fibers accompanied by inflammatory cellular infiltrations were seen in dermis (Fig 7). Necrotic debris and aggregations of neutrophils and lymphocytes were noticed in the affected dermis of some cases Fig (8&9). The muscle fibers and collagen were replaced by basophilic granular material as shown in Fig (10).

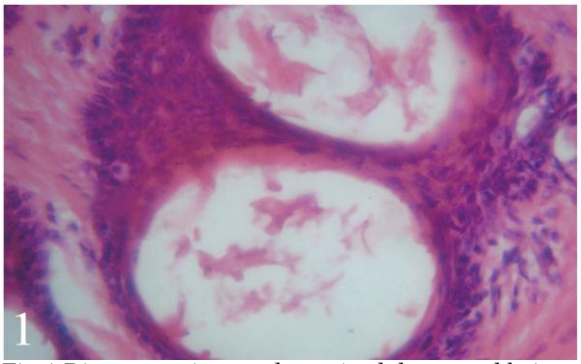

Fig 1 Ring worm in camels, noticed destructed hair shaft, perifollculitis and cystic dilatation of the hair follicles (H&E X650).

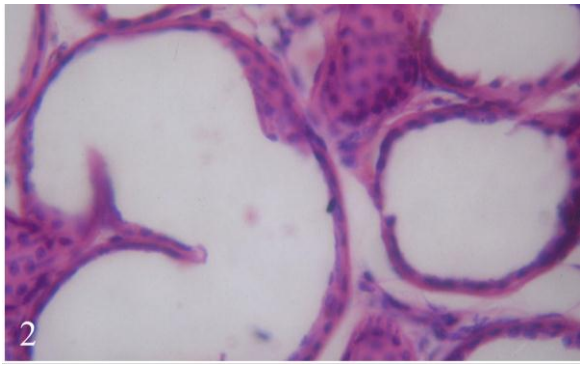

Fig 2 Ring worm in camels, noticed atrophied lining epithelium and cystic dilatation of sweat glands (H&E X400)

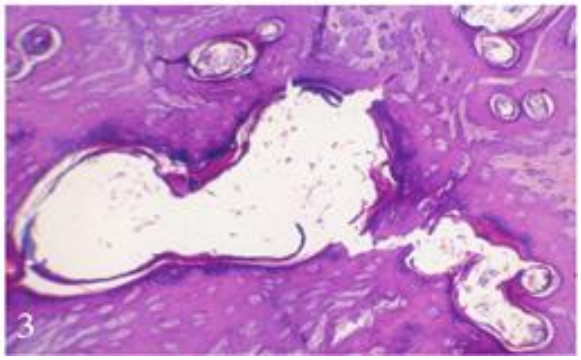

Fig 3 Ring worm in camels, noticed hyperkeratosis and acanthosis of epidermis (H&E X200).

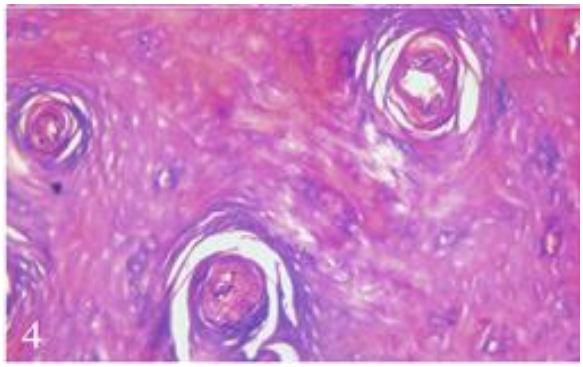

Fig 4 Hyperkeratosis of epidermis (H& E X200).

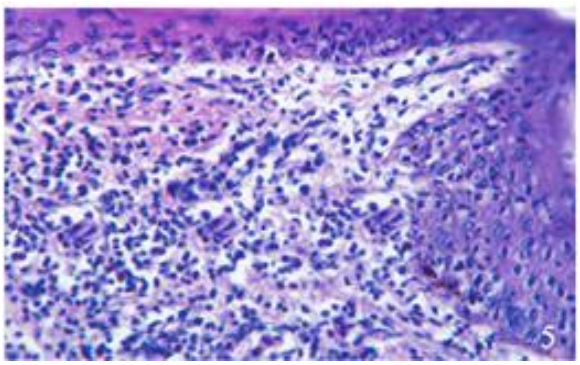

Fig 5 Ring worm in camels, noticed intra epidermal pustules and acanthosis (H&E X400).

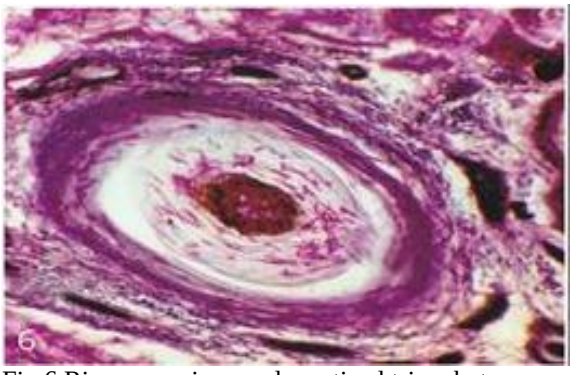

Fig 6 Ring worm in camels, noticed tricophyton hyphae positive for PAS-reaction (H&E X400).

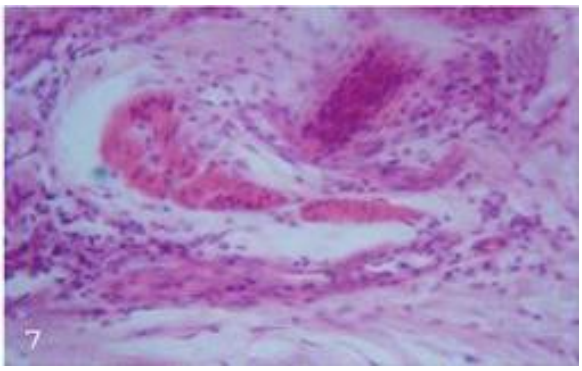

Fig 7 Ring worm in camels, noticed zenkers degeneration of muscle fiber and necrosis (H&E X1200).

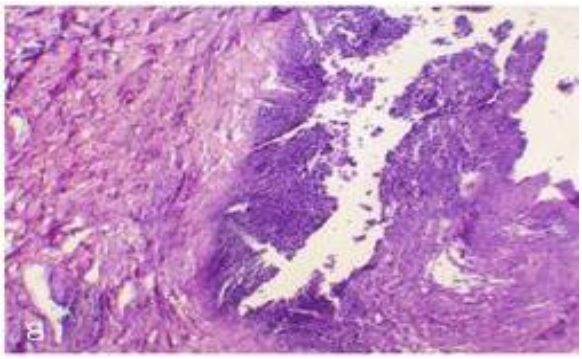

Fig 8 Ring worm in camels, noticed leukocytic aggregations and necrotic debris (H&E X200).

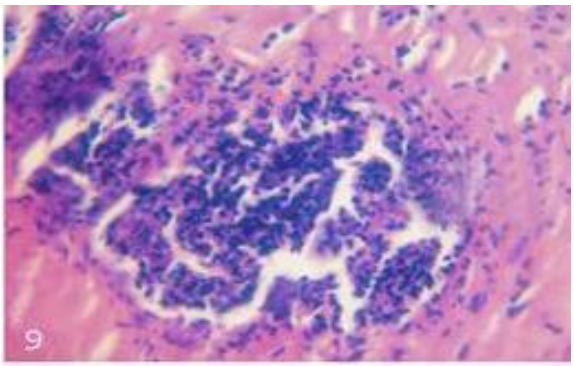

Fig 9 Ring worm in camels, noticed aggregations of neutrophils and lymphocytes in the dermis of some cases (H&E X400).

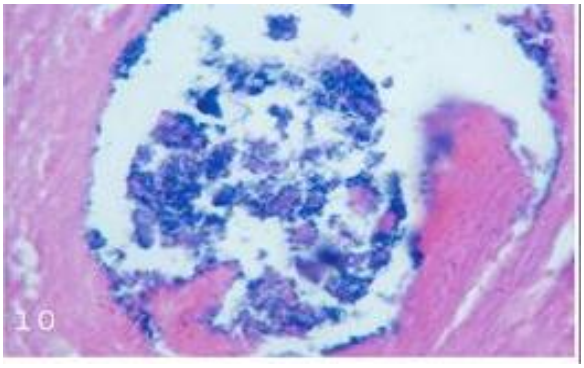

Fig 10 Ring worm in camels, noticed basophilic granular material replaced the dermal collagen and muscular fibers (H&E X400).

4. DISCUSSION

The main clinical signs appeared in infested camels with ringworm were various degrees of alopecia, scaling and crusting, multifoccal lesions varied in size, these lesions occasionally coalesced forming large lesions. Skin lesions were distributed all over the body especially on the head around the eye and ear, neck and legs. These findings are in agreement previous studies [26, 27, 28 and 29] in camels. Clinical ringworm in camels was also reported [30]. Mycological examination revealed that the main aetiological agents of ringworm in examined skin scraping were Trichophyton verrucosum [31-33].

A significant reduction of erythrocytic count, haemoglobin content and packed cell volume% beside leukocytosis, neutrophilia, lymphocytosis and insignificant decrease in monocytes, eosinophils and basophiles were present in camels infected with ringworm. This observation may be due to mal nutrition and anorexia caused by ringworm [33]. Similar observations were previously recorded [9, 35-37] in cattle.

In current work, it has been found that, ringworm in camels induced significant increase in AST, ALT, ALP, urea, creatinine and insignificant reduction in serum total protein, albumin beside insignificant increase in globulin. Similar observation was previously recorded by [35] in camels. Rise in liver enzymes, urea and creatinine may be parallel to the result recorded [9 and 39]. In other domestic animals, moreover, others [40 and 41] mentioned that ringworm induced insignificant reduction in serum total protein, albumin and insignificant increase in globulin.

Ringworm in camels induce pathological lesions represented by cystic dilatation of the hair follicles lined by atrophied lining epithelium, hyperkeratosis and acanthosis of epidermis, intra-epidermal pustules and aggregations of neutrophils and lymphocytes in the dermis, moreover, basophilic granular material replaced the derma collagen and muscular fibers were also seen. These aforementioned lesions were previously recorded [9, 42] in camel.

It could be concluded that ringworm in camels induce some adverse effect on haemato-biochemical parameters and pathological picture.

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بعض الدراسات البيوكيميائيه والباثولوجيه والفطريه على مرض القراع فى الابل فى متطثه محافظه الشرقيه

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[3] قسم الفطريات– كليه الطب البيطرى– جامعه الزقازيق

الملخص العربى

يعتبر مرض القراع من اهم الأمراض الفطرية الجلدية المعدية واسعة الانتشار في الابل و يؤدي هذا المرض إلي خسائر اقتصادية كبيرة. لذلك قمنا بهذة الدراسة لمعرفة أهم المسببات الفطرية لمرض القراع فى الابل وكذلك تاثير المرض على بعض الوظائفالدمويه والبيوكيميائيه وبعض التغيرات الباثولوجيه التى يحدثها المرض. اشتملت هذه الدراسة علي عدد عشر جمال تتراوح اعمارها ما بين 3– 4 سنه والتى تم جمعها من مجزر بلبيس بمحافظه الشرقيه (5جمال بصحه جيده ولا يظهر عليها اى اعراض لامراض جلديه و5 جمال يظهر عليها اصابات جلديه عباره عن مناطق محددة و مستديرة خالية من الشعر وعليها بعض القشور و لوحظ أن الإصابات تركزت في مناطق الرأس والأذن والرقبة.وقد أظهر الفحص المعملي الفطري لكحتات الجلد من الأماكن المصابة في الجمال المريضة وجود فطر ترايكوفيتون فيروكوسام كمسبب لهذا المرض. تم تجميع عينات دم وسيرم من كل الجمال في المجموعتين. يعد ذبح الابل بالمجزر يتم اخذ عينات من الجلد فى الاماكن المصابه وذلك لدراسه تاثير القراع على الجلد باثولوجيا. أظهرت نتائج هذه الدراسة أن مرض القراع في الابل قد أدي إلي نقص معنوي في كرات الدم الحمراء والهيموجلوبين وحجم خلايا الدم المرصوصه بالإضافة إلي زيادة معنوية في العدد الكلي لكرات الدم البيضاء والخلايا المتعادله والخلايا الليمفاوية بجانب وجود نقص غير معنوي في خلايا الملتهمه الكبيره ,الخلايا الحامضيه و الخلايا القاعديه ,اليروتين الكلى ,الزلال كذلك أظهر التحليل البيوكيميائي للسيرم وجود زيادة معنوية في إنزيمات أسبارتات أمينوترانسفيراز و ألانين أمينوترانسفيراز والفوسفاتيز القاعدى ,اليوريا والكراتينين. كما أدي المرض إلي وجود زياده غير معنويه فى الجلوبيولين. بالفحص الباثولوجى لخمس حالات جمال مصابه ظاهريا وجد شكلين للتغيرات النسيجيه المرضيه احدهما عباره عن مناطق بيضاء الى بنيه اللون مرتفعه على سطح الجلد فى صور قشور.والشكل الاخر عباره عن باحه مستديرة خاليه من الشعر ظهرت هذة الافات المرضيه فى مناطق الرقبه والمخطم وحول العينين وقوائم الارجل.كذلك ظهرت العصيات الفطريه للنرايكوفايتون بالقشور.وبالفحص المجهرى ظهر اتساع فى الغدد العرقيه وبصيلات الشعر.بالنسبه لبصيلات الشعر ظهر بهما ضمور بالخلايا الطلائيه .كما ظهر بالخلايا الطلائي لبصيلات الشعر فرط تقرن وفرط تحبب وزياده فى سمك الطبقه الشوكيه .كما ظهر بعض الحالات الاخرى التهاب حول الاوعيه الدمويه بالجلد والتهاب بصيلات الشعر كما ظهر بثرات داخل طبقه القشرة بالجلد .كما ظهر تشعبات فطريه موجبه لصبغه psa كما لوحظ ايضا فى حالات اخرى بالاضافه الى زياده سمك الطبقه المتقرنه وزياده سمك الطبقه الشوكيه وظهر ايضاء تنكس مائى والتهاب حول بصيلات الشعر .لوحظ وجود خلايا متخثره بطبقه الادمه وكذلك ارتشاح به وخلايا النهابيه مثل خلايا العدله والخلايا الليمفاويه .كذلك لوحظ احلال لبعض الخلايا العضليه المتنكسه بطبقه الادمه بحبيبات زرقاء.

(مجلة بنها للعلوم الطبية البيطرية: عدد 23 (1)، يونيو 2012: 26–33)