قسم : الباثولوجيا والطفيليات ـ كلية الطب البيطرى ـ جامعة القاهرة .
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دراسات تكميلية لحلمات الجاموس
الجزء الثانى ـ الاصابات المكتسبة

على حجازى ، يسرى خميس ، لطفية فهمى* ، محمد عمر*

أثبت الفحص الماكروسكوبى والراديولوجى والهستوباثولوجى لعدد ٣٥٣٤ حلمة (جمعت من مجزر القاهرة) وجود اصابات مكتسبة فى ٥٣٧ منها (١٥٫٢٪) .

وقد كانت أهم هذه الاصابات :
ـ التهاب جدار الحلمة فى ٤٠٪ من العينات المصابة .
ـ التهاب الغشاء المخاطى للحلمات فى ٤٨٪ .
وقد لوحظ بها تغيرات باثولوجية مختلفة كان أهمها الالتهابات المتكاثرة فى نسيج الغشاء المخاطى .

ويعتقد أن السبب الاساسى فى هذه الاصابات المكتسبة للحلمات يرجع الى مؤثرات خارجية تعطى الفرصة للبكتريا المتواجدة بالحلمة لاجتياح الغشاء للمخاطى .

قسم : الجراحة والولادة ـ كلية الطب البيطرى ـ الجيزة .
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FURTHER STUDIES ON THE BUFFALOE TEAT
PART II- ACQUIRED AFFECTIONS*
(WITH ONE TABLE & 10 FIGURES)

BY
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SUMMARY

The macroscopical, radiological and histopathological exmaination of 3534 teats, collected from the slaughterhouse, revealed the presence of acquired affections in 15.2% of them. The main acquired troubles metwith in this study were thelitis (40%) and cisternitis (48%), in which the proliferative inflammation with epithelial metaplasia of the teat mucosa was main pathological finding.

INTRODUCTION

Different acquired teat affections of buffaloe were discussed by SALEH and KAMIS (1971),FAHMY (1972) and OMAR (1973). These pathological truoubles were mainly teat stenosis, followed by teat wounds and fistula, teat ulcers and gangrene. Various types of teat stenosis were recorded in buffaloe as local and diffuse cisternitis, chronic thelitis as well as streak canal obstruction. Different studies on the acquired pathological affections of the cow's teat showed that teat stenosis was one of the main troubles (TSEILISHCHEV and NAUMOV,1961;SCHIPPER and PETERSEN, 1962; REITBROCK, 1963 and HEIDRICH and RENK, 1967).

As the clinical diagnosis in such cases is more or less a symptomatic one, relying to an extent on a subjective evaluation; a pathological study on slaughterhouse material seems to be necessary, in order to have more objective picture about the nature of the tissue changes; i.e. to have a more accurate diagnosis.

MATERIAL AND METHODS

The present investigation was carried out on 3534 buffaloe teats, collected from Cairo slaughterhouse. These teats were subjected to macroscopical, histopathological as well as radiological examination. The examination was performed by external inspection in order to localize any abnormalities, examination of the milk passage by manual palpation and teat siphon, longitudinal incision was also made in the teat wall to deteet any pathological condition. Staining of the sections of the affected tissues by haematoxylin and eosin and Von Kossa stain were performed. The radiological examination was applied in some cases using air or barium as contrast.

RESULTS

Acquired pathological lesions were metwith in 537 out of 3534 examined buffaloe teats, i.e. 15.2%. These affection are illustrated in Table 1.

Table (1): Different acquired affections among the examined 3534 buffaloe teats.

Acquired affection	Number of cases	Percentage
Thelitis	215	40.0 %
Cisternitis	260	48.4 %
Teat haematoma	15	2.8 %
Teat ulcers	18	3.4 %
Papilloma of the teat	28	5.2 %
Teat gangrene	1	0.2 %
	537	100

* : Part I- Congenital Anomalies, was read in the 15th Arab Vet. Med. Congress, March 1981, Cairo.
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DISCUSSION

1) Inflmmatory Lesions:

1- Thelitis in a diffuse form was noticed in 215 teats. The teat siphon was introduced with difficulty. Teat sectioning revealed a thick fibrous teat wall (Fig. 1) with rough mucosa. Radiological examination showed thickening of the teat wall and narrowing of the lumen.

Microscopically all layers of the teat wall (skin,vascul-muscular layer, tunica propria and mucosal) were thickened as a result of cellular infiltration and connective tissue formation leading to stenosis of the lumen by polypoid like growth (Fig. 2). This may be occasionally detached and come to lie free in the teat cistern.

In four cases, accessory glands appeared dilated with complete desquamation of the epithelial lining containing caseated material and inflammatory cells.

These pathological findings explain the stenosis which follows thelitis cases, due to narrowing of the teat lumen resulted from the thickening of the teat wall and the loss of its elastic character. The decrease of elasticity of the teat tissue could be explained by the increase in connective tissue and the corresponding atrophy of the musculature (HEIDRICH and RENK, 1967).

2) Cisternitis:

260 teats showed chronic cisternits with inflammatory lesions on their mucosal layer. These lessions were either in diffuse form (40%) or in localised form (3.4%).

A) Diffuse Chronic Cisternitis:

a- Rough surface mucosa: Palpation of teat mucosa revealed velvety, rough and pinheaded projections (Fig. 3) with raspy like character on 175 teats (32.6%). The distribution of these projections varied, in 30 teats on the whole mucosal surface while the rest of cases were partially affected.

Microscopically, the rough areas consisted of granulation tissue projecting into the lumen of the test as a polypoid like thickening covered by stratified squamous epithelial cells.

b- Mucosal nodules: In 24 teats (4.6%), small nodules of 2-5 mm. in dimater were scattered on the whole mucosal surface.

Microscopical examination revealed conversion of the epithelial lining of the teat cistern into stratified squamous keratinized epithelium (Fig. 4). The tuncia propria was formed of fibrous connective tissue and the muscular layer was reduced in size.

c- Submucosal nodules: Nodules similar to the previously described muscosal ones were felt to be scattered in the submucosal layer of 15 teats (2.7%).

Microscopically, there were connective tissue proliferation (Fig. 5) in vasculomuscoular layer of the teat wall containing multiple cystic dilatation which might arise from the dilated accessory glands.

B) Local Chronic Cisternitis:

a- Mucosal elevations: In 26 teats (4.8%), fibrous rings or ridges or bands were noticed to incircle the teat mucosa (Fig. 6) either completely or incompletely. Two parallel ridges (Fig. 7) were found on the mucosa of four cases.

Microscopical examination of these elevations showed an abrupt change from the two-layered epithelial cells of the teat mucosa to stratified squamous epithelium, covering the underlying connective tissue.

b- Mucosal nodule: Complete obstruction of 20 teats (3.7%) was due to a hard fibrous nodular structure, which varied in size and location. Three cases showed in addition star-shaped fibrous scar contractions of the mucosa.

Microscopically, the nodule and star-shaped formations were formed of fibrous tissue proliferations associated with deposition of calcium (Fig. 8). Fibrinoid degeneration of the collagen fibres was also observed.

The main histopathological finding in all cisternitis forms was the proliferative inflammation with metaplasia of the two-layered teat cistern mucosal epithelium to thestratified squamous type. This is in agreement with the results obtained by FOUST (1941), ARNOLD (1950) and HEIDRICH and RENK (1967).

II) Traumatic Lesions:

Teat haematoma: Subcutaneous swelling was observed in 15 teats (2.8ù), sectioning revealed a cavity full with clotted blood and granulation tissue. Pus was observed in two cases.

Microscopically, necrosis of the whole layer of large arteriole which was observed in a part of the wall (Fig. 9), appeared structureless, acidophilic and highly infiltrated by degenerated neutrophils and red blood corpuscles. The surrounding tissue showed haemorrhage,characterized by aggregation of large number of red blood corpuscles.

Similar cases of teat haematoma were metntioned by OMAR (1973) in buffaloe and FRANK (1959)and HEIDRICH and RENK (1967) in the cow.

III) Infectious Lesions:

1- Teat ulcers: As shown in Table I, ulcers were observed on 18 teats (3.4%), from which seven teats had in addition the picture of chronic thelitis.

Microscopically, all layers of the skin epidermis were highly degenerated and infiltrated by neutrophils. The underlying papillary dermis appeared oedematous and infiltrated by leucocytes, mainly neutrophils.

It seems, according to the previous findings of FAHMY (1972), KHAMIS ET AL. (1972) and OMAR (1973) in buffaloes, that these specific ulcers may be due to filarial infestation.

2- Teat papilloma: 28 cases (5.2%) showed teat papilloma of different shapes and forms; brush like,cauliflower-like growths, compact and horny types.

Microscopically, the papillomatous growth were formed from epithelial cells covering a connective tissue core. The epithelial layer was characterized by hyperkeratosis and acanthosis; parakeratosis was also observed. Basophilic granules were noticed to fill the superficial cells of the stratum spinosum (Fig. 10). Similar picture was described by OMAR (1973) in buffaloes and by GRUNDER (1967) in cows during the course of viral bovine papillomatosis.

IV) Teat Gangrene:

Gangrenous changes were observed on only teat,in a form of voluminous swelling and leathery hard skin thickening with partial sloughing from the udder.

Microscopical examination revealed necrosis and haemorrhage; the necrosed area was infiltrated by degenerated neutrophils. Fibroplastic proliferation with aggregation of macrophages at the border line between the healthy and necrosed tissue was observed.

Similar cases of teat gangrene were described in buffaloe by SALEH and KHAMIS (1971) and OMAR (1973) and in cow by HEIDRICH and RENK (1967).

In conclusion,it can be said that the histopathological picture of the examined teats confirm the clinical experience obtained by SALEH and KHAMIS (1971) and OMAR (1973), by which teat stenosis constitutes the main problem among the teat affections of the Egyptian buffaloe.

The teat stenosis is usually an affection of the mucosa taking a chronic inflammatory nature, which is mainly due to traumatic causes. In this respect, the manual method of milking, as well as its role as a cause of subclinical mastitis (SAID and ABDEL MALEK, 1968) should be taken in consideration.

The mucosal changes take either; a proliferative nature in the form of polypoid like growths, ending usually in metaplasia of the double-layered epithelium of the teat mucosa into stratified squamous type, with or without keratinization; or of degenerative nature in the form of dilated accessory glands and epithelial desquamation, which is replaced by fibrous tissue formation and even calcium deposition.

These pathological changes in the mucosal epithelium explains the variable prognosis as well as the questionable cure of such affections.

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Fig. (1): Incised teat showing thickening of the teat wall.

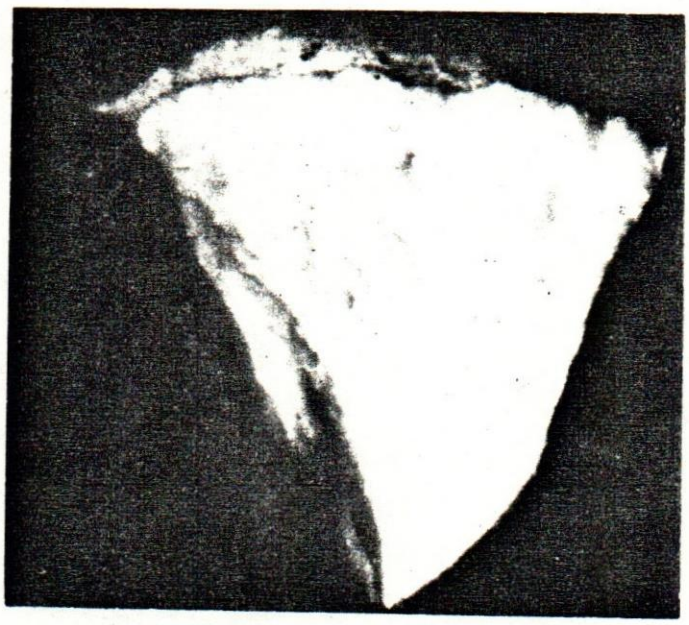

Fig. (2): Rough mucosal surface (diffuse form).

Fig. (3): Fibrous ring at the teat cistern.

Fig. (4): Double circular fibrous ridge, (radiograph).

Fig. (5): Connective tissue formation and polypoid projections in the lumen of the teat. (X 20, H & E)

Fig. (6): Keratinized squamous epithelium and vascular granulation tissue in chronic cisternitis.
(X 200, H & E)

Fig. (7): Connective tissue proliferation in the wall of the teat cistern with cystic dilatation of accessory glands.
(X 200, H & E)

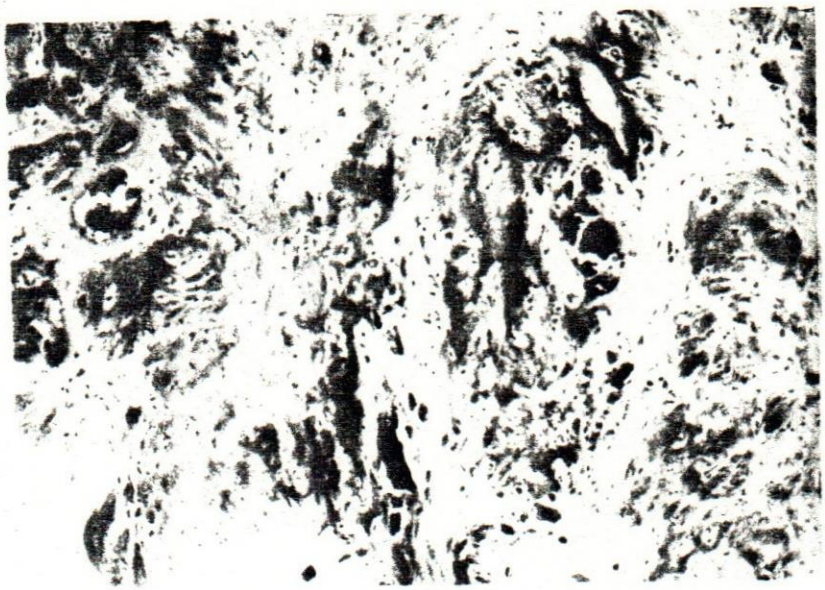

Fig. (8): Submucosal deposition of calcium on elastic fibers. (X 100, Von Kossa stain)

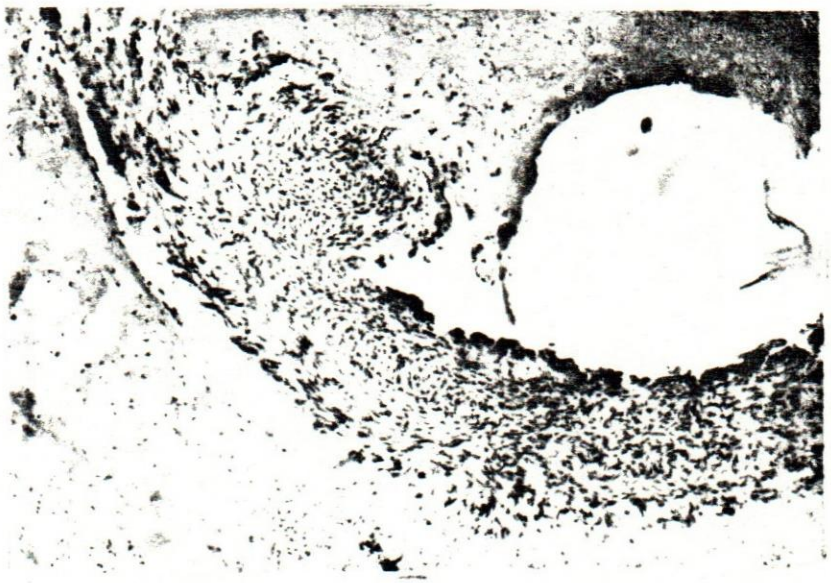

Fig. (9): Arterial necrosis in the vasculo-muscular layer of the teat cistern. (X100, H & E)

Fig. (10): Papillomatous growths in the teat skin. (X 200, H & E)