

ETIOLOGICAL AND PATHOLOGICAL STUDY OF EPIDIDYMITIS IN GOATS IN BAGHDAD CITY

Amir S.R. Al-Obaidi¹, Mohammed J. Alwan² and Bushrah
I. Al-Khaisi²

¹ Dep. of Microbiology and ² Dep. of Pathology, Col. of Vet.
Med., Univ. of Baghdad, Baghdad, Al-Ameria.

SUMMARY

Testes from 700 male goats aged 1 - 3 years, slaughtered at Baghdad abattoir, were examined during 6 months period. Histological and bacteriological examinations were done when gross lesions were observed. The results revealed that epididymitis was observed in 21 (3%) of the examined animals; 16 (2.3%) cases were unilaterally affected and 5 (0.7%) cases were bilaterally affected.

Bacteriological isolations from infected organs included:

Corynebacterium ovis (6 isolates) and *Actinomyces pyogenes* (3 isolates) both constituted the majority of isolates; as well as *E. coli* (4 isolates), and *Pseudomonas aeruginosa*, *Staphylococcus epidermidis*, *Cory. bovis.*, *Staph. aureus*, *Cory.*, *ulcerans* & *Yersinia pseudotuberculosis* (2 isolates of each) and *Campylobacter fetus* (1 isolate).

Histopathological examination showed 6 pathological patterns of epididymitis including acute epididymitis (14.2% of infected cases), subacute non-suppurative epididymitis (9.5% of cases), chronic suppurative epididymitis (28.5% of cases), chronic non-suppurative epididymitis (19% of cases) and spermatic granuloma (14.2% of cases).

INTRODUCTION

Epididymis is a dynamic organ of various functions as spermatozoa pass through the epididymis, they undergo maturation process which renders them capable of fertilization (1). Testicular infection may be presented either as primary orchitis or as epididymitis. It is of great importance as it may lead to reduction in semen quality and fertility (2,3). Therefore, it is considered as one of the most common reasons for culling of breeding stocks (4).

Various microbial agents causing epididymitis and orchitis in domestic animals have been described previously such as *Cory. ovis*, *E. coli* *Actinomy. pyogenes* (5, 6, 7).

Goats play an important role in nation economy in Iraq and there are few reports available concerning the disease status of goats particularly diseases of the genital tract (8), therefore, this study was established to describe one of the important diseases of such animals.

MATERIALS AND METHODS

A total of 700 apparently normal male goats, 1-3 years old, were slaughtered at Baghdad abattoir and they were checked for lesions in their testes.

The gross abnormalities regarding size, colour, consistency and sites were recorded. Pieces (1 cm) of infected epididymal tissues were fixed in 10% formal saline. Sections of micrometer thickness were cut and stained with H. & E. In addition, samples of infected testes were also sent to the microbiology department for bacteriological examination.

Bacteriological examination :

Each infacted testicle was cut and samples were taken from it using sterile equipment and the cultured onto 5% sheep blood agar (SBA) ; MacConkey agar (MCA), Mannitol salt agar (MSA) , Shirrow's medium (SM) and plates were incubated at 35-37°C for 18-24 hrs , except for SM plates which were incubated in an anaerobic jar (BBL) , with a "Campy" pack (Oxoid) at 37°C for 48 hrs .

Colonies on each agar were identified by Gram's stain , motility , and other biochemical tests according to the methods described by Cowan (9) and Lioe et al. (10) .

RESULTS

The mean prevalence of goats with gress abnormalities in testicular tissue out of 700 animals slaughtered , recomed to 3% (21 cases) with 2.2 % unilaterally affected (16 cases) and 0.74% (5cases) bilaterally affected .

Bacteriological findings :

The isolated bacterial strains their colonial characteristics and biochemical recording to which the were identified (Table 1) . For example , Staph.aureus isolates were B-hemolytic and yellowish - orange on SAB and showed bright yellow colonies on MSA and gave positive coagulase reactions . Cory.ulcerans fermented glucose and hydrolysed starch , and showed very tiny , non-hemolytic , grayish-white dull colonies on SBA. C.fetus showed small , glistening greyish colonies on SM. They were actively motile with a darting or tumbling type of motility and did not ferment lactose or glucose or maltose .

Histopathological findings

Six pathological patterns of epididymitis were recorded. They included : Acute epididymitis , subacute suppurative epididymitis , subacute non-suppurative epididymitis , chronic suppurative epididymitis , chronic non-suppurative epididymitis and sperm granuloma .

Acute epididymitis (AE)

It was observed in 14.2% (3 cases) of total abnormalities . The tail of the epididymis was slightly enlarged and 2 animals unilaterally affected and the other bilaterally affected .

Microscopical section revealed oedema , neutrophils scattered throughout interstitial tissue and perivascular . E. coli & C. ulcerans were isolated from these lesions .

Subacute suppurative epididymitis(SSE)

This form constituted 14.2% (3 cases) of total abnormalities . 2 animals were affected bilaterally & the other unilaterally . The main macroscopic changes were similar to the chronic suppurative form but with less severrity .

Histopathological examination showed variable degree of hyperplasia with squamous metaplasia of tubular epithelial lining which was full of neutrophils and cellular debris (Fig.1)

Interstitial tissue was distended by oedema and mononuclear cells which consisted of lymphocytes , plasma cells , macrophages and few neutrophils . Cory. ovis , Actin. pyogenes and Campy. fetus were the bacteria isolated from such lesions .

Subacute non-suppurative epididymitis (SNSE)

was observed in 9.5% (2 cases) of the affected cases which were affected inilaterally . Grossly , oedema and enlargement of epididymiti were seen . Histologically , tubule showed cvarious degrees of degeneration as desquamation and cellular infiltration involving lymphocytes , histiocytes and plasma cells in the interstitial and perivascular tissues. Bacterial isolates involved *Yersinia pseudotuberculosis* and *Staph. aureus*. Chronic suppurative epididymitis : was observed in 28.5% (6 cases) of affected animals ; 2 cases were affected bilaterally and 4 cases unilateraly . Grossly , the lesions were mainly restricted to the tail of the epididymis which was very much swollen . The cut-section revealed grayishcreamy thick or watery exudate which has no small .

Histopathological examination revealed cystic dilatation of the epididymis duct which was filled with protenacious material , neutrophils , degenerative spermatozoa and giant cells , as well as calcium deposition in some cases . Intraepithelial cysts were observed full of neutrophils (Fig. 2) .

Segmental contraction of epididymis duct with enfolding of their epithelial lining inside the lumen has been noticed. Connective tissue proliferation was also seen. Bacterial isolates included : *C.ovis*, *A. pyogenes*, *E.coli C.bovis* & *Ps. aeruginosa*.

Chronic non-suppurative epididymitis : composed of 19% (4 cases) of total abnormalities; 3 cases unilateral and 1 bilateral.

Microscopic finding showed enlargement of the epididymis , particularly the taill which was firm in consistency . The cut section was hard due to fiberous connective tissue caseous materials was seen in some cases .

Micropic sections showed aggregation of sperms in degenwratve stages , desquamation , sloughing of the epithelial linnng of epididydimao tubules and calcification . Fibroplasia was the main feature of interstiial reaction . Multifoacl accumulation of mononuclaer cells around the blood vesicles was reported also (Fig. 3) . Bacterial isolates included : Staph. aureus , Staph.epidermidis & E.coli .

Speratic granuloma : was noticed in 14% (3 cases) of affected animals. The animals were unilatwrrally affected . The tail of the epididymis was greatly enlarged and cut section revealed yellowish to gray caseated or thick creamy exudate .

Microscopic section revealed tubulointerstitial spermatogranulo- matous reacting multifocal extravasation and degenerative spermatozoa were observed arranged in a rosette fashion and they were surrounded by neutrophils , plasma cells , epithelial cells , lymphocytes , giant cells and encapsulated fibrous connective tissue (Figs.4&5) Bacteria isolated included Cory. ovis and Act.pyogenes.

DISCUSSION

Epidiymitis is an important disease in rams in which is said to be as one of the most important casuses of culling breeding stock (4) . The present study revealed that the prevalence of epididymitis in goats was 3% and such results were similar to these reported by Burgess (9) and Mageed (22) , who reported epididymitis of 3.8% among 361 merine rams in Australia and 2% among 500 rams in England , respectively . However , few cases of epididsymitis have been reported in goats in the literature . Santos (10) was ujable to find an evidence about testicular infections in testes of 100 goats examined in the slaughterhouse . Whiting et al. (11) found no

signs of epididymitis in two flocks of goats examined following an outbreak of brucellosis.

Epididymitis may occur in natur in male goats at any age and may or may not be associated with infection of other parts malee genitakia Jackson & White (12) reported billatwral epididymitis accompanying seminal vesiculitis in goats .

Epididymitis is an infectious disease that lead to lower fertility and often sterility in rams (13) . Watt (14) was the first who reported this disease in Australia and found that the incidence reached 5 - 25% among the cases examined in Australia .

The pathological changes recorded in this study showed a number of similarities to those described by Lalkyna (5) , Burgess (9) and Jubb & Kennely (15) , and Mageed (22) . The inflammatory reactions lead to obstruction of the epididymal ducts and caused sepsis of their contants and breaking down of the epididymal ducts with extravasation of perms , spermatogranuloma would have been developed (17) . There was also extensive chronic inflammatory response to the spermatozoal antigen . Spermatic granuloma which might persist for years , and is associated with infertility and so such lesion may be established , a protracrile auto-immune allergic reaction responsible for breeding failure and thus represent an important link between infection and autoimmune disease (18).

Table -1- shows that bacteria belonging to the genus *Corynebacterium* involved the majority of isolates , especially *C. ovis* and *Act.pyogenes* , which were well documented as causes of pyogenic epididymitis in rams (5, 6, 19).

Other species isolated included *E.coli* , *Staph. aureus* and *Staph. epidermidis* . These species were mentioned earlier in ram epididymitis (6, 20, 21).

Campylobacter fetus, *Ps. aeruginosa* and *Yersinia pseudotuberculosis* were also reported by (22), who studied the pathology and microbiology of epididymitis in rams and succeeded in isolating a variety of bacterial species including *C. ovis* (9.1%) ; *E. coli* (10.9%) , *C. bovis* (6.85%) , *Act. pyogenes* (5.48%) , *C. pseudotuberculosis* (5.48%) , *St. epidermidis* (2.7%) , *Staph. aureus* and *Ps. aeruginosa* (1.37% each) .

In case of bilateral epididymitis , prognosis is always unfavourable if treatment was not undertaken early .

Table 1: The types of bacterial species recovered from cases of ram epididymitis .

Case No.	Bacterial species recoverea
1	Cerynebacterium ulcerans
2	C. ovis
3	Staphylococcus aureus
4	= =
5	C. ovis
6	Escherichia coli
7	Actinomyces pyogenes
8	= = + Gampylobacter fetus
9	A. pyogenes + E. coli
10	Yersinia pseudotuberculosis
11	C. ovis
12	A. pyogenes
13	C. ovis
14	= =
15	= =
16	No growth
17	= =
18	Pseudomonas aruginosa + E. coli
19	Staph. epidermidis + E. coli
20	Staph. epidermidis + A. pyogenes
21	C. ovis

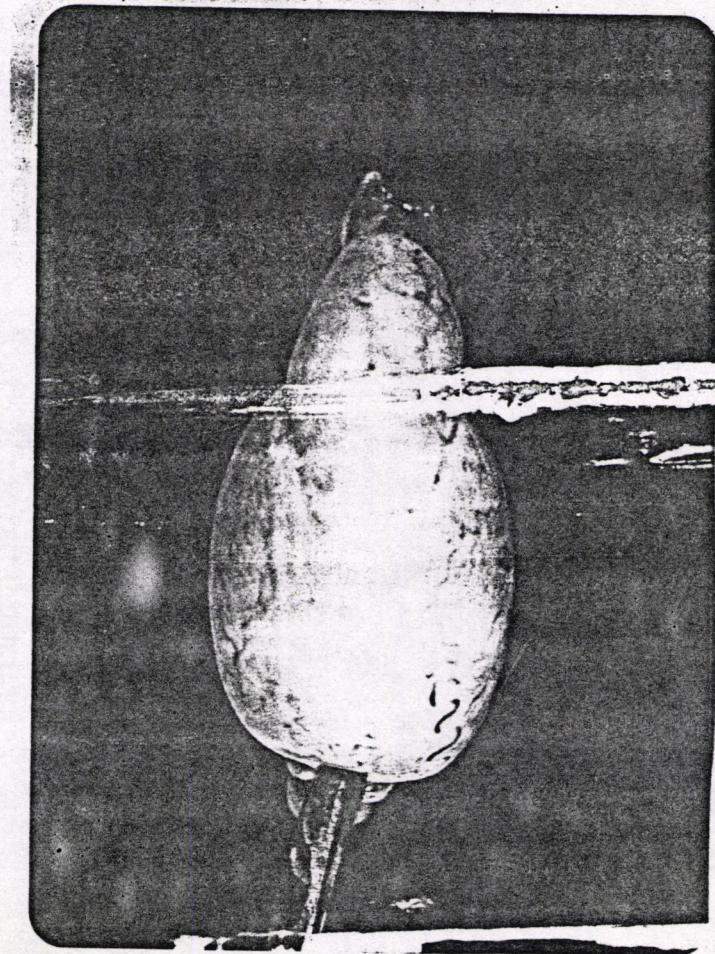


Fig. 1 : The epididymal tail was enlarged with multiple well organized abscesses.

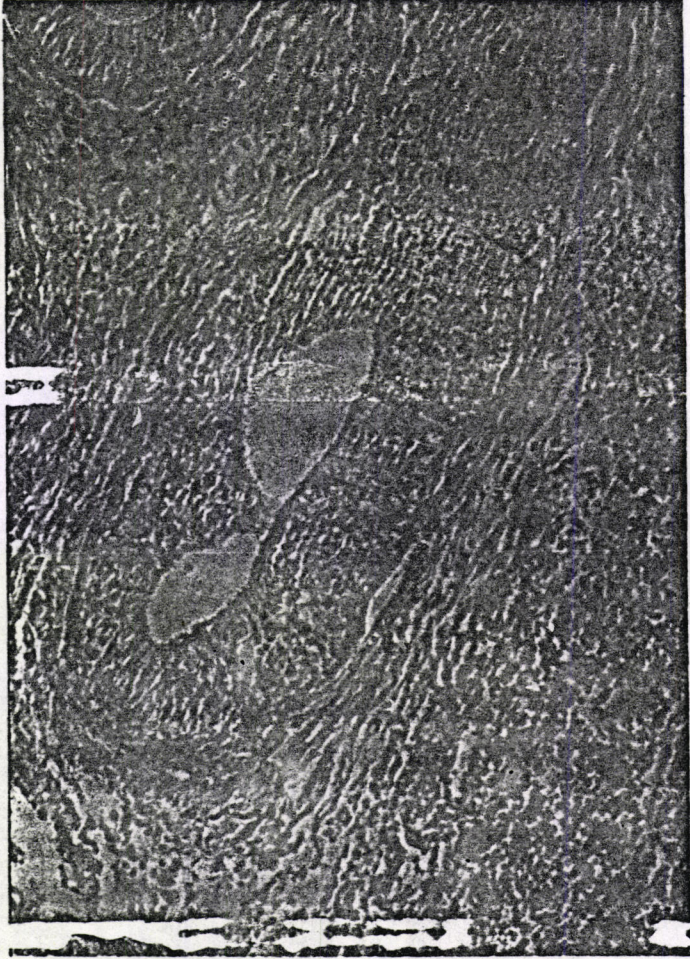


Fig. 2 : Section of the epididymis showing hyperplasia of tubular epithelial lining with cellular reaction in the interstitial tissue (10X).

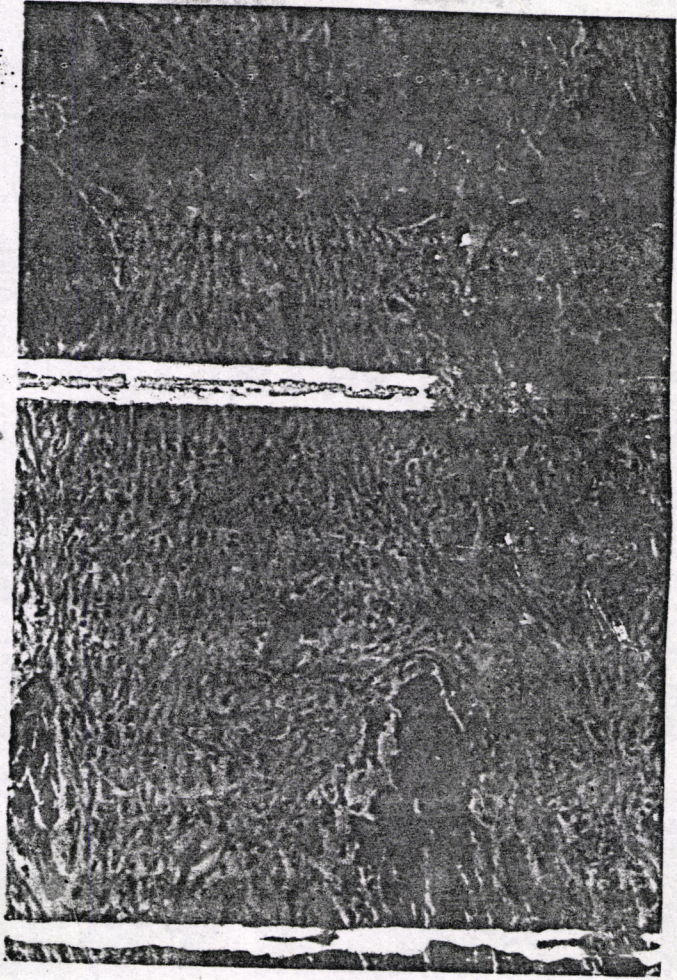


Fig. 3 : Section of the epididymis showing degenerative spermatozoa, giant cells with calcium deposition. (10X).



Fig. 4 : Section of the epididymis showing degenerative spermatozoa, fibrosis with cellular reaction in the interstitial tissue (10X).

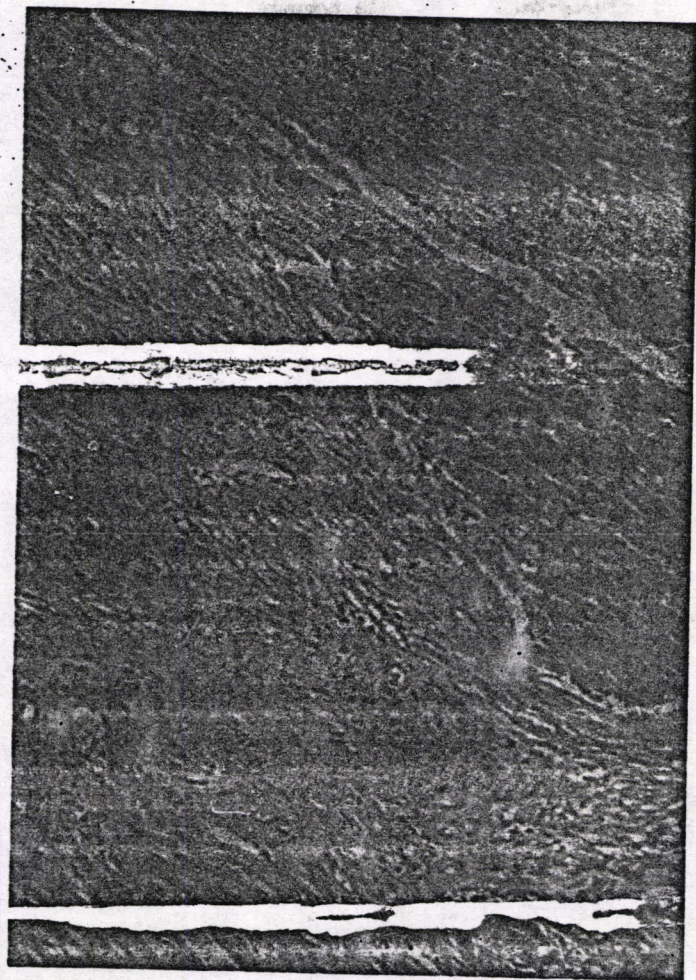


Fig. 5 : Section of the epididymis showing granulomatous reaction (10X).

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دراسة مرضية وجرثومية لإصابات البربخ في الماعز في مدينة بغداد

عامر سليم العبيدي محمد جويد علوان بشرى إبراهيم القيسي

(1 ، 3) فرع الأمراض والطب العدلي (2) فرع الأحياء المجهرية

الخلاصة

تمت دراسة نسبة إصابات البربخ والتغيرات المرضية إضافة إلى العزولات الجرثومية في (21) حالة إصابة البربخ من فحص (700) ماعز ذبحت في مجزرة الشعلة للفترة من 11/1 - 1994/5/1 م.

أظهرت نتائج الدراسة وجود الإصابة بنسبة 3% منها 2.2% أحادية الجانب و 0.7% ثنائية الجانب.

بينت نتائج الفحص النسيجي وجود الأنماط الآتية من الإصابة : التهاب البربخ الحاد (14.2%) و التهاب البربخ تحت الحاد القيحي (4.2%) وغير القيحي (9.5%) و التهاب البربخ المزمن القيحي (28.5%) وغير القيحي (19%) إضافة إلى الورم الحبيبي النطفي (14.2%).

أوضحت الدراسة العزولات الجرثومية التالية : وتدييات الضأن (6) عزولات (جرثومة الوتدييات القححية (5 عزولات) الاسيشريشيا القولونية (4 عزولات) جرثومة يوسينيا النسل الكاذب والمكورات العنقودية الذهبية والمكورات العنقودية الجلدية والزوائف الأرجنوزية (عزلة واحدة) وجرثومة وتدييات البقر (2 عزول لكل منها) إضافة إلى جرثومة الكومباليو (عزلة واحدة).