ETIOLOGICAL AND PATHOLOGICAL STUDY OF EPIDEDIMYTIS IN GOATS IN BAGHDAD CITY

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SUMMARY

Testes from 700 male goats aged 1 - 3 years, slaughtered at Baghdad abatteir, 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

Epididymitis 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 departement 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, recemde to 3% (21 cases) with 2.2% unilaterally affected (16 cases) and 0.74% (5 cases) 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 coagglutase 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 severity.

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 unilaterally. Grossly, oedema and enlargement of epididymiti were seen. Histologically, tubule showed various 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 unilaterally. Grossly, the lesions were mainly restricted to the tail of the epididymis which was very much swollen. The cut-section revealed grayish creamy thick or watery exudate which has no small.

Histopathological examination revealed cystic dilatation of the epididymis duct which was filled with proteanacious 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 tail which was firm in consistency. The cut section was hard due to fibrous connective tissue caseous materials was seen in some cases.
Micropic sections showed aggregation of sperms in degenerative stages, desquamation, sloughing of the epithelial lining of epipidymal tubules and calcification. Fibroplasia was the main feature of interstitial reaction. Multifocal accumulation of mononuclear 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 unilaterally 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 spermato granulomatous 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

Epididymitis is an important disease in rams in which is said to be as one of the most important causes of culling breeding stock (4). The present study revealed that the prevalence of epididymitis in goats was 3% and such results were similar to those 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 epididymitis have been reported in goats in the literature. Santos (10) was unable 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 nature in male goats at any age and may or may not be associated with infection of other parts. Male genitalia Jackson & White (12) reported bilateral 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 contents 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 protracted autoimmune 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.

<table>
<thead>
<tr>
<th>Case No.</th>
<th>Bacterial species recovered</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cerynebacterium ulcerans</td>
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<tr>
<td>2</td>
<td>C. ovis</td>
</tr>
<tr>
<td>3</td>
<td>Staphylococcus aureus</td>
</tr>
<tr>
<td>4</td>
<td>=</td>
</tr>
<tr>
<td>5</td>
<td>C. ovis</td>
</tr>
<tr>
<td>6</td>
<td>Escherichia coli</td>
</tr>
<tr>
<td>7</td>
<td>Actinomyces pyogenes</td>
</tr>
<tr>
<td>8</td>
<td>=</td>
</tr>
<tr>
<td>9</td>
<td>+ Campylobacter fetus</td>
</tr>
<tr>
<td>10</td>
<td>A. pyogenes + E. coli</td>
</tr>
<tr>
<td>11</td>
<td>Yersinia pseudotuberculosis</td>
</tr>
<tr>
<td>12</td>
<td>C. ovis</td>
</tr>
<tr>
<td>13</td>
<td>A. pyogenes</td>
</tr>
<tr>
<td>14</td>
<td>=</td>
</tr>
<tr>
<td>15</td>
<td>=</td>
</tr>
<tr>
<td>16</td>
<td>No growth</td>
</tr>
<tr>
<td>17</td>
<td>=</td>
</tr>
<tr>
<td>18</td>
<td>Pseudomonas aruginosa + E. coli</td>
</tr>
<tr>
<td>19</td>
<td>Staph. epidermidis + E. coli</td>
</tr>
<tr>
<td>20</td>
<td>Staph. epidermidis + A. pyogenes</td>
</tr>
<tr>
<td>21</td>
<td>C. ovis</td>
</tr>
</tbody>
</table>
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).
REFERENCES


دراسة مرضية وجرثومية لإصابات البربخ في الماعز في مدينة بغداد

عمر سليم العبدي - محمد جواد طوان - بشرى إبراهيم القيسي

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

الخلاصة

تمت دراسة نسبة إصابات البربخ والتغيرات المرضية إضافة إلى العزلات الجرثومية في (21) حالة إصابة البربخ من فحص (700) ماعز.


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

بينت نتائج الفحص النسيجي وجود الأنساط الآثية من الإصابة: التهاب البربخ الحاد (14.2%) والتهاب البربخ تحت الحاد القيحي (4.2%) و غير القيحي (9.5%) والتهاب البربخ المزمن القيحي (28.5%) و غير القيحي (19.5%) إضافة إلى الورم الحبيبي النظري (14.2%).

أوضحت الدراسة العزلات الجرثومية التالية: وديات الضمان (6 عزلات) جرثومة الورديات القيحية (5 عزلات) الأسيشريشيا القولونية (4 عزلات) جرثومة بوسينيا السل الكاذب والمكورات العنقودية الذهبية والمكورات العنقودية الجلدية وزوجات الارجوف الجلدية (عزلة واحدة) وجرثومة وديات البقر (2 عزلات لكل منها) إضافة إلى جرثومة الكوباليا (عزلة واحدة).