A DETAILED STUDY ON HISTOPATHOLOGICAL LESIONS INVOLVING URETER AND URETHRA IN DROMEDARY CAMEL (*CAMELUS DROMEDARIUS*)[#]

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ABSTRACT

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In the present investigation, total 41 samples involving ureter and urethra were collected and examined irrespective of age, sex and breeds in North-West Rajasthan. These samples were further processed for detailed histopathological studies to evaluate incidence of various pathological conditions. The incidence of ureteritis and urethritis was 4.87% each.

Key words: Histopathology, ureter, urethra

Introduction

Ureter and urethra are part of lower urinary tract. Ureter being lined by transitional epithelium whereas urethra is lined by transitional epithelium cranially (anteriorly) and stratified squamous epithelium caudally (posteriorly) (Vegad, 2007). Although, the bladder and ureters are often exposed to bacteria and urine generally supports bacterial growth. The combined effects of bladder emptying by urination and an intrinsic defence mechanism associated with bladder epithelium assist in resisting bacterial infection of the bladder and other urinary tract (Cox and Hinman, 1961 and Nassan, 2009). Although, little work has been done on lower urinary tract in cattle (Yeruham *et al*., 2006) and slaughtered buffalo calves (Sarfinaz *et al*., 2013). The present investigation is done to investigate histopathology in ureter and urethra.

Materials and Methods

Collection of samples

A total of 41 samples for the proposed investigation were collected (based on gross pathological alterations) from the carcasses of camels (*Camelus dromedarius*) irrespective of age, sex and breeds. All the samples were observed for gross alterations and then properly preserved in 10% formalin till further histopathological examination.

Histopathology

Samples measuring 2-5 mm thickness were processed by paraffin embedding using acetone and benzene technique (Lillie, 1965). The tissue sections of 4-6 micron thickness were cut and stained with hematoxylin and eosin staining method.

Results and Discussion

Ureter (ureteritis)

The incidence of ureteritis was recorded 4.87%. Previously similar incidence was reported by Jubb *et al.* (2007). The gross lesions were swollen, pale and congested ureter (Jubb *et al.,* 2007). Histologically, congestion in mucosa and submucosa was present. Infiltration of polymorphonuclear cells and mild mononuclear cells alongwith degeneration and desquamation of transitional epithelium and congestion in between muscle bundles (Fig. 1) (Jubb *et al.,* 2007). Uretritis is rare in the absence of cystitis.

Urethra (urethritis)

The incidence of urethritis in the present study was recorded as 4.87%. Grossly, the urethra was congested,

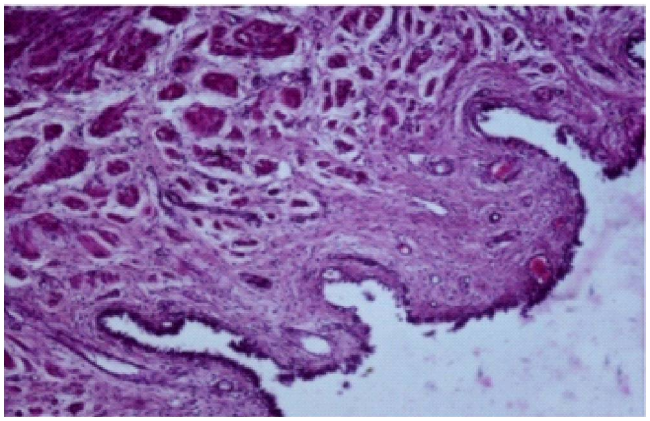

Fig.1: Ureteritis showing inflammatory infiltration in submucosa and muscularis layer and congestion in between muscle bundles (H & E 100X)

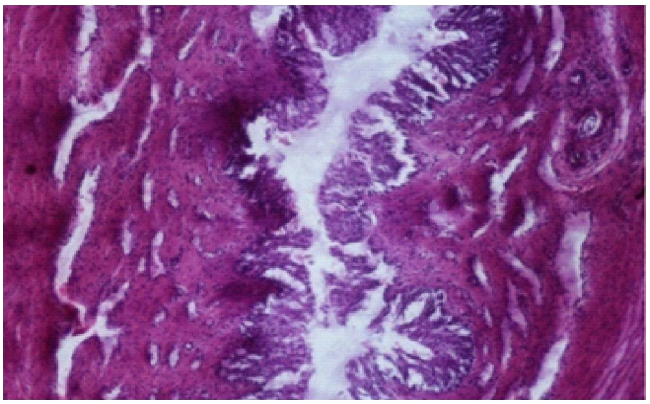

Fig. 2: Microphotograph of urethritis showing infiltration of neutrophils and lymphocytes in mucosa and submucosa (H & E 100X)

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hyperaemic, pale and swollen. Histologically, congestion in submucosa and venous spaces was present. Infiltration of polymorphonuclear cells and mild mononuclear cells in mucosa and submucosa alongwith degeneration and desquamation of epithelium in some cases were found (Fig. 2) (Jubb *et al.,* 2007).

Predisposition to urinary tract infection (UTI) occurs as a result of urine stagnation due to obstruction, incomplete voiding at micturion, or urethelial trauma. Other risk factors include catheterization, vaginoscopy, urinary incontinence, vaginitis, or administration of antibiotics or corticosteroids within the last 60 days. Defence mechanisms in urethra which prevent bacterial adhesion to mucosal surfaces are essential if bacteria are to be removed by urine flow. Local production of immunoglobulins A and a surface glycosaminoglycan layer is probably important in preventing attachment of organisms to the normal urothelium, and immunoglobulin G may have similar activity in specific UTIs. Ascending infection from urethra cause cystitis and the origin is almost always the rectal flora. Hormone induced changes as occur in hyperestrogenism may also affect the functional integrity of the urethral and vesicular epithelium, and the role of hormones in the production of glycosaminoglycans in the urogenital tract may also change the susceptibility to UTIs (Jubb *et al.,* 2007).

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