

PATHOMORPHOLOGICAL STUDIES ON CYSTITIS IN DOMESTIC GOAT

DUSHYANT DEV BHAL, ANITA RATHORE*, HAKIM MANZER¹, SARJNA MEENA² and VIKRAM POONIA¹

Department of Veterinary Pathology, ¹Department of Veterinary Parasitology,
College of Veterinary and Animal Science, Navania, Udaipur - 313601, RAJUVAS, Bikaner, Rajasthan

²Department of Veterinary Pathology, PGIVER, Jaipur, RAJUVAS, Bikaner- 334001, Rajasthan

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SUMMARY

In the present investigation the total number of 1725 goat's urinary system (organs) samples were examined in southern Rajasthan. The 68 specimens of the lower urinary tract were suspected for abnormalities further processed for histopathological examination. The occurrence of various pathological conditions was observed as 3.94 % out of 1725 in the lower urinary tract. The occurrence of acute cystitis and chronic cystitis were 7.35% and 8.82% respectively. Gross necropsy findings were congestion, oedema with catarrhal exudate and thick mucosa in urinary bladder. Histopathologically, degeneration of transitional epithelium, edematous fluid with mononuclear cell infiltration, connective tissue thickening of the submucosa and hypertrophy of the muscularis layer were observed in bladder.

Keywords: Cystitis, Goat, Histopathology, Transitional epithelium, Urinary bladder, Urinary system

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Goats have been associated with the man since a dawn of agriculture and the domestication of animals, making them socioeconomically, a very important animal providing products (meat, milk, fiber, hair) and a service to the man throughout the world. But in Rajasthan state a decline in the goat population 3.81 per cent suggesting the need of sustainable management for preserving goat breeds and the population. The kidney and urinary bladder are an important structure within the urinary system. Various pathological conditions involving goat's urinary tract are renal congestion (Saiyari *et al.*, 1996), infarction (Bamnele *et al.*, 2014), cystic kidney (Boru *et al.*, 2013), renal abscess (Ali *et al.*, 2017), cystitis, ureteritis and urolithiasis (Sarfinaz *et al.*, 2013; Dhaka 2016), but very scarce literature is available on the pathomorphology of urinary bladder in goats till date. Viewing the lack of study on pathomorphology of urinary bladder in Udaipur division of Rajasthan, the present study was conducted on occurrence of cystitis in urinary bladder of goat.

The specimens of the urinary system (organs) were collected from carcasses of the goat irrespective of the age, sex and breeds subjected to post-mortem examination at various veterinary clinics and the slaughter house of Udaipur, Dungarpur, Chittorgarh, and Rajsamand districts of Udaipur division of Rajasthan. The samples were also collected from the carcasses submitted to the Department of Veterinary Pathology, College of Veterinary and Animal Science, Navania, Udaipur for the routine post-mortem. During the post mortem examination, the samples were thoroughly examined for various pathological abnormalities. The study was conducted from October 2018 to October 2019. For histopathology, all tissues were

fixed in 10% formalin and processing of tissues was done by paraffin embedding using acetone and benzene technique (Lillie, 1965). The 4 to 5 microns thick sections were cut and stained with the Haematoxylin and Eosin (H&E) (Luna, 1968).

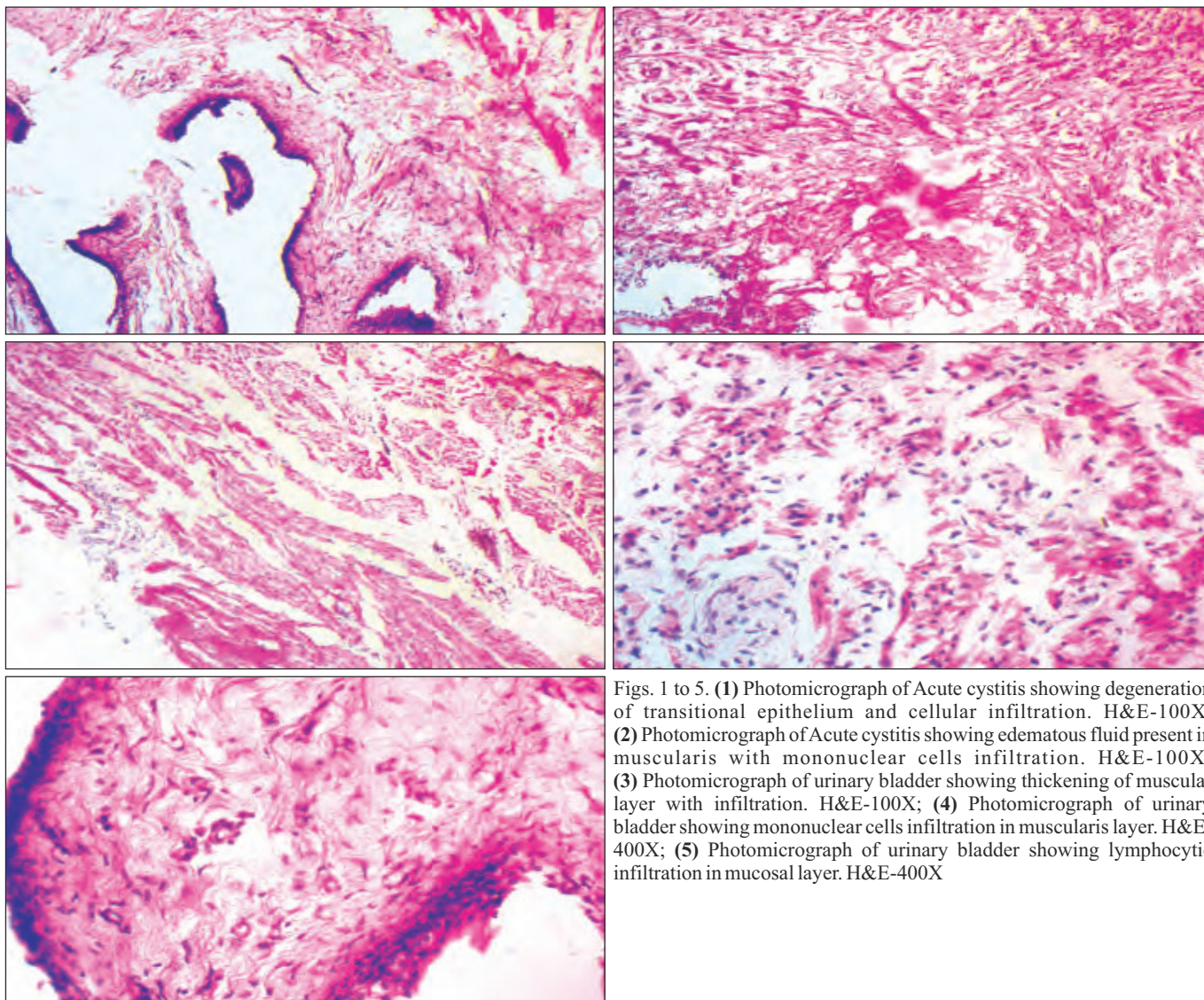
For the present investigation, a total number of 1,725 specimens of urinary system of goat, suspected for abnormalities were examined irrespective of age, sex and breed. Out of these, 68 samples of lower urinary tract revealed pathological lesions were further processed for histopathological examination.

An occurrence of various pathological conditions was observed as 3.94 per cent (68 out of 1725) in lower urinary tract (ureter, urinary bladder and urethra). The occurrence of acute cystitis and chronic cystitis 7.35% and 8.82% were found in urinary bladder respectively (Table 1). The gross pathology of urinary bladder of goat showed moderate hyperaemia with thickening, oedema and the surface covered with a layer of tenacious catarrhal exudate in bladder. Microscopically, there were congestion, marked degeneration of transitional epithelium and cellular infiltration observed. (Fig. 1). In some cases, edematous fluid present in muscularis with mononuclear infiltration (Fig. 2), thickening of muscular layer with infiltration (Fig. 3), epithelial desquamation, muscularis, mucosa and submucosa were heavily infiltrated with mononuclear and lymphocytic inflammatory cells (Fig. 4 and Fig. 5). In acute cystitis the incidence of this condition was recorded 7.35 per cent. Higher incidence 9.85 per cent was recorded by Yadav (2017) and lower incidence 5.66 per cent was recorded by Dhaka (2016). Grossly the bladder showed pale, congested, inflamed and

*Corresponding author: anni_vet11@rediffmail.com

Table 1. Occurrence of cystitis in lower urinary tract of goat (*Capra hircus*) in Udaipur division of Rajasthan

S.No.	Name of condition	Name of district								Total No. cases	Percentage
		Udaipur		Dungarpur		Chittorgarh		Rajsamand			
		No. of cases	%	No. of cases	%	No. of cases	%	No. of cases	%		
1	Urinary bladder										
1.1	Acute cystitis	1	4.76	1	7.14	1	6.25	2	11.76	5	7.35
1.2	Chronic cystitis	2	9.52	1	7.14	2	12.50	1	5.88	6	8.82



Figs. 1 to 5. (1) Photomicrograph of Acute cystitis showing degeneration of transitional epithelium and cellular infiltration. H&E-100X; (2) Photomicrograph of Acute cystitis showing edematous fluid present in muscularis with mononuclear cells infiltration. H&E-100X; (3) Photomicrograph of urinary bladder showing thickening of muscular layer with infiltration. H&E-100X; (4) Photomicrograph of urinary bladder showing mononuclear cells infiltration in muscularis layer. H&E-400X; (5) Photomicrograph of urinary bladder showing lymphocytic infiltration in mucosal layer. H&E-400X

edematous. Similar as recorded by Dhaka (2016). The microscopic finding revealed marked degeneration and desquamation of transitional epithelium and infiltration of leucocytes in all layer of the bladder wall. Similar as described by Dhaka (2016) and Jubb *et al.* (2007). In chronic cystitis the incidence was recorded 8.82 per cent. Higher incidence 9.43 per cent was recorded by Dhaka (2016) and 12.50 per cent by Sarita (2016). Grossly, congestion and fibrosis were found and these findings were almost similar as described by Dhaka (2016). The

microscopic finding revealed degeneration and desquamation of transitional epithelium and sub mucosa and infiltration of mononuclear cells along with few neutrophils. There was connective tissue thickening of mucosa and hypertrophy of the muscularis. These finding were similar as described by Dhaka (2016) and Jubb *et al.* (2007). Cystitis occur may be due to chemical injury (cyclophosphamide and bracken fern poisoning), bacterial (*Corynebacterium renale* and *E. coli*) and viral infection as described by Vegad (2007).

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