

# OCCURRENCE AND PATHOLOGY OF PYELONEPHRITIS IN SHEEP (*OVIS ARIES*)#

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## ABSTRACT

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The present was undertaken to elucidate the occurrence of pyelonephritis in sheep. A total number of 1,298 specimens of kidney of sheep were examined irrespective of age, sex and breeds in North-West Rajasthan. Out of these, 211 specimens of kidney suspected for abnormalities were further processed for histopathological examination. Pyelonephritis was recorded in 13 (6.16 per cent) cases. Grossly, the kidneys were enlarged, congested and the capsule could be stripped readily. The calyces were dilated and filled with a greasy purulent mass. Microscopically, the pelvis epithelium and renal parenchyma were infiltrated with inflammatory cells and congested with desquamation of pelvic epithelium.

**Key words:** Sheep, pyelonephritis, histopathology

## Introduction

India has an enormous sheep population 65.06 million which contributes 12.71 per cent of total livestock population in the country. In India, out of this sheep population, Rajasthan possesses 13.95 per cent. Rajasthan had around 16 per cent sheep of total livestock population of state (19<sup>th</sup> Livestock Census, 2012). Sheep with its multi facet utility for wool, meat, milk, skin and manure, form an important component of rural economy, particularly in arid, semi-arid and mountainous areas of the country where climate remains unfavorable. The production of wool, meat and manure provide three different sources of income to the shepherd. It has tremendous potential of maintaining its production ability of utilizing low quality fodder to yield animal products. Various pathogenic organisms and toxins enter the blood stream and bound to pass the liver and kidneys. Kidney is one of the most intriguing and challenging organ to the pathologist, both as regards to the altered structure and disturbed function (Boyd, 1961). Therefore, it becomes pertinent to study the renal affection in sheep. The present study was carried out for the occurrence and pathology of pyelonephritis.

## Materials and Methods

In the present study, a total of 1,298 samples of urinary system in sheep were examined grossly for pathological conditions, in which 211 samples of kidney showing frank gross lesions were collected in 10 per cent formal saline for further histopathological examination. For histopathological examination, processing of tissues was done by paraffin embedding using acetone and benzene technique (Lillie, 1965). The tissue sections of 4-6 micron thickness were cut by help of hand operated microtome and stained with haematoxylin and eosin staining method as a routine. As far as possible, results were recorded by gross observations and microphotographs.

## Results and Discussion

The incidence of pyelonephritis in the present study was recorded as 6.16 per cent. A relatively lower incidence has been reported by Panisup *et al.* (1980) as 0.8 per cent and Sankarappa and Ramarao (1982) as 0.05 per cent. A significantly higher incidence was recorded by Al-Sultan *et al.* (1987) as 46.5 per cent. Grossly, the kidneys were congested with multiple pin-head, and whitish-yellow raised foci on the sub-capsular surface. The calyces were dilated and filled with purulent material. The wall of calyces was red and ulcerated. The renal papilla was hyperaemic with cortical haemorrhage. The pelvis were widely dilated with pus are also observed in the present study. The above findings are in concurrence with those described by Krishna *et al.* (1974) and Runnells (1976).

Microscopically, the pelvis epithelium was infiltrated with inflammatory cells and congested with desquamation of epithelium (Fig. 1). The infiltration of polymorphonuclear cells was present in the cavity of Bowman's capsule and surrounding tissue. Glomerular loops were also filled with polymorphonuclear cells and with few mononuclear cells. There were large numbers of cells casts in the renal tubules. Leucocytic cells were found renal parenchyma (Fig. 2). There were interstitial inflammatory infiltration, necrosis and fibrosis along with extensive degeneration of tubules was present showing shrunken kidneys.

Microscopic findings correspond well with the observations of Sriraman *et al.* (1979) who observed glomerular loops and Bowman's capsules filled with polymorphonuclears along with few mononuclear cells and bacteria. The epithelial lining of the pelvis was necrosed and there was leucocytic infiltration in accordance with finding of Higgins and Weaver (1981) and Mathur (1996). The glomeruli were less affected in comparison to the tubules. The interstitial tissues were infiltrated with lymphocytes and plasma cells. The renal pelvis was infiltrated with neutrophils have also been recorded earlier by Kumar *et al.* (2013).

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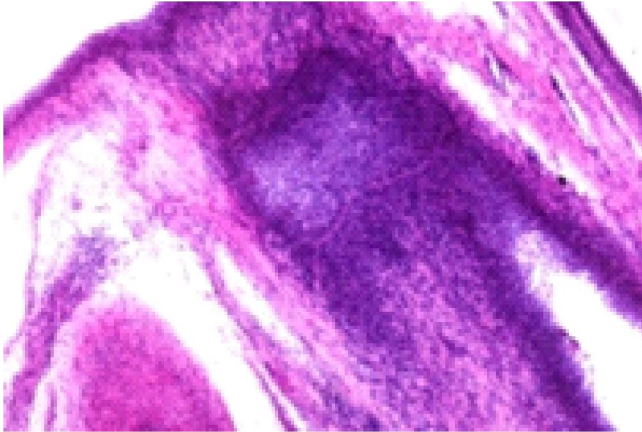


Fig .1: Microphotograph of kidney showing pyelonephritis with leucocytic infiltration in pelvis (H & E 200X).

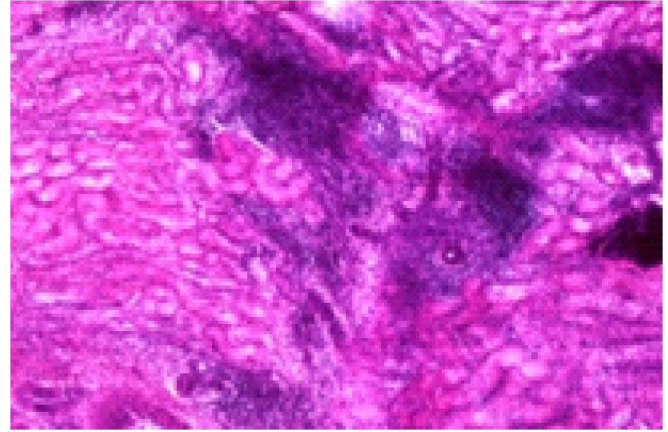


Fig. 2: Microphotograph of kidney showing pyelonephritis with neutrophils infiltration in renal parenchyma (H & E 100X).

This suppurative condition of kidney might be due to ascending route of infection by stasis of urine. Infectious agent such as *Corynebacterium renale*, *C. pyogenes* and *Coliforms* ascend to pelvis due to urine stasis (Sastry and Rao, 2001).

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