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## Occurrence and pathology of amyloidosis in buffalo kidneys

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### Abstract

Present study was carried out to study the occurrence and pathology of renal amyloidosis in buffalo kidneys in Jaipur division of Rajasthan. Amyloidosis in buffalo kidneys was recorded in 1.75 per cent cases out of 228 grossly affected kidney specimens. Kidney samples showing gross frank lesions were further processed for histopathological examination. Grossly, affected kidneys were slightly increased in size and pale colored. The kidneys were enlarged, yellow and waxy in appearance. There was presence of non-adherent tensed capsule and widened cortex. Microscopically, amyloid deposition was observed as presence of pink stained proteinaceous fluid in tubules and glomeruli along with infiltration of polymorphonuclear cells in renal parenchyma.

**Keywords:** Buffalo, kidney, amyloidosis, infiltration, parenchyma

### Introduction

Livestock has been an integral component of Indian agricultural and rural economy. Buffaloes are one of the key animals in agriculture economy contributing substantially to the gross national products by the way of good quality milk, export quality leather, draught power. Urinary system is one of the important systems in the body which excretes toxic metabolites, regulates blood volume and blood pressure, controls level of electrolytes and metabolites, retains useful substances by the process of selective reabsorption and regulates blood PH (Kumar *et al.*, 2019) [3]. Pathological study of urinary system is very important as renal diseases bear a major segment of total burden of diseases and considered to be most important cause of illness and death in many animal species (Abdelghafar and Almubarak, 2016) [1]. So, histopathological studies of buffalo kidneys are very important for the pathologist both as regards to the disturbed function and altered structure (Mathur *et al.*, 2012; Mahouz *et al.*, 2015; Kumar *et al.*, 2018; Kumar *et al.*, 2019) [5, 7, 2, 3]. Renal amyloidosis is a very important condition among various pathological abnormalities of kidney. The present study records the occurrence and pathology of amyloidosis in buffalo kidneys in Jaipur division which is very important looking to the immediate need of understanding the various pathological conditions involved in urinary diseases and for providing timely diagnosis.

### Materials and Methods

A total number of 1054 specimens of urinary tract of buffaloes were collected from various organized and non-organized slaughter house of Jaipur division. Out of these, 228 specimens of kidneys showing gross abnormalities were further proceeded by paraffin embedding using acetone and benzene technique (Lillie, 1965) [4]. The tissue section of 4-6 micron thickness were cut and stained with haematoxylin and eosin method of staining.

### Results and Discussion

The incidence of amyloidosis in present study was observed in 1.75 per cent cases. A lower incidence was recorded by Tavassoly (2003) [10] as 0.3 per cent in bovine kidney. A comparatively higher incidence was recorded by Yener and Erer (2000) [11] as 2.1% and Nourmohammadzadeh *et al.* (2010) [8] as 2.85%.

### Gross Findings

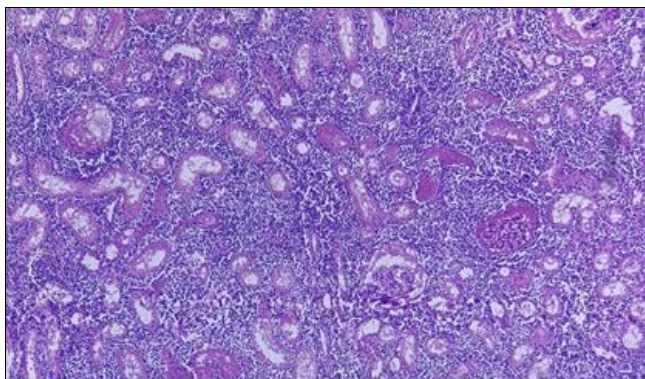
The affected kidneys were slightly increased in size and pale colored (Fig. 1). The kidneys were enlarged, yellow and waxy. There was presence of non-adherent tensed capsule and widened cortex. The capsule stripped off smoothly, showing a finely stripped appearance of cortical surface due to presence of numerous fine yellow dots and grey points of translucence. The affected kidneys were slightly increased in size and pale to yellow colored. The kidneys were enlarged, yellow and waxy. Similar findings were observed by Murray *et al.* (1972) [6] and Seifi *et al.* (1997) [9].



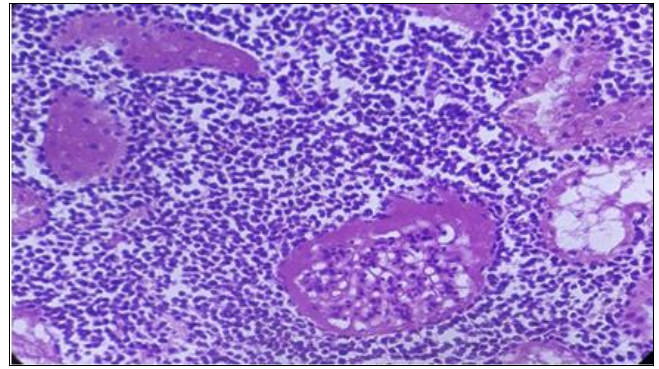
**Fig 1:** Photograph of kidney having renal amyloidosis and showing enlarge, swollen and pale areas over the surface

### Microscopic Findings

Amyloid deposition was observed as presence of pink stained proteinaceous fluid in tubules and glomeruli along with infiltration of polymorphonuclear cells in renal parenchyma (fig. 2 and 3). Deposition of amyloid was present in capsular space, tubular basement membrane and around the tubules. The tubules were dilated and showing presence of pink hyaline casts of protein. Lymphocytic infiltration, tubular and glomerular atrophy were also seen. Microscopic findings of amyloid deposition as presence of pink stained proteinaceous fluid in tubules and glomeruli along with infiltration of polymorphonuclear cells in renal parenchyma are in agreement with the findings of Seifi *et al.* (1997) [9]. Thus, renal amyloidosis is a very important pathological condition among various pathological conditions of buffalo kidney to understand the various pathological conditions involved in urinary diseases.



**Fig 2:** Microphotograph of kidney having amyloidosis showing Pink stained proteinaceous fluid in tubules and glomeruli along with infiltration of polymorphonuclear cells in renal parenchyma H & E 100X



**Fig 3:** Higher magnification of figure 2. H & E 400X

### Conclusion

In buffalo, mostly renal disease are diagnosed and examined of kidney tissue based on the histopathology given a confirmative assessment of renal amyloidosis in buffalo kidneys. Looking to the immediate need of understanding the occurrence and pathology of renal amyloidosis in buffalo kidney is used for allocate timely diagnosis.

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