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HISTOPATHOLOGY OF BUFFALO (*BUBALUS BUBALIS* L.) KIDNEY INFECTED WITH AMPHISTOME IN SINDH, PAKISTAN

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ABSTRACT

The Asian water buffalo is a major livestock component in Indian subcontinent being a huge bovine animal. The infected kidneys of buffalo with amphistome infection were collected from Karachi, Pakistan. After macroscopic examination, infected portion was fixed in 10% formalin for 24 h embedded blocks of material were made by using wax of 60ºC melting point. Sections were cut using Rotary microtome, stained with haematoxylin and eosin, mounted permanently in Canada balsam. Microscopically the section of kidney tissue showed glomeruli and interlobular arteries dilated. Lymphocytes infiltration along with giant cells and fibrosis. Abnormal collecting tubules with proteineous casts are present in distal tubules.

Key-words: Buffalo, Kidney, Histology, Amphistome, Pakistan.

INTRODUCTION

The studies on histology of buffalo infected by helminths are scarce. This paper highlights some prominent tissue changes in kidney caused by fluke amphistomes along with stones. It is important to include the fact that the adult bovine kidneys are also considered as one of the model for certain urological procedures to study renal complication with special condition for training in nephrolithotomy (Hammond *et al.,* 2004). Biswas *et al.* (2014) stated that among trematodes amphistomes and *Fasciola* are predominant genera among the flukes in fecal samples of mithun cattle.

Keyyu *et al.* (2006) suggested that the overall prevalence of amphistome was 81.9%, 55.5% and 41.1% in traditional, large scale dairy and small scale dairy cattle, respectively. Thus, this study would be an addition to the existing knowledge of helminth infection and the pathology of the buffalo's kidneys.

MATERIALS AND METHODS

Sample of buffalo (*Bubalus bubalis* L.) kidneys were collected during May 2014, from Landhi slaughter house, Karachi, Pakistan.

For macroscopic examination the organ was placed in a tray and its colour, general appearance, presence of lesions, swelling, nodules, cyst formation and hardening were examined. Later dissected for the presence of flukes and stones.

Kidney portion naturally infected with amphistome sp. were fixed in 10% formalin for 24 h embedded blocks of the material were made by using wax of 60ºC melting point by method earlier described by Swarup and Pachauri (1987). Sections of 6-8 microns thick were cut using Rotary microtome, stained with haematoxylin and eosin, mounted permanently in Canada balsam by routine procedures. Photographs of selected portion were taken with Nikon (Optiphot-2) photomicroscope using fungi colour film.

RESULTS

Macroscopically the kidney structure colour and appearance altered as compared to normal kidney, the size was reduced and the surface was uneven, nodular and mucoid with various sizes of stones (Figs. 1 and 2), besides stones fibrosis and fluid were present in the kidneys.

Microscopically the section of kidney tissue showed glomeruli and interlobular arteries dilated (Fig. 3). Lymphocytes infiltration was obvious with disorientation of the renal lobular architecture (Fig. 4). In some sections, fibrosis and giant cells were obvious (Fig. 5). Abnormal collecting tubules along with proteineous casts are present in distal tubules (Fig. 6) were prominent.

Fig. 1. Kidney of buffalo (*Bubalus bubalis* L.) showing discoloration and reduction in size.

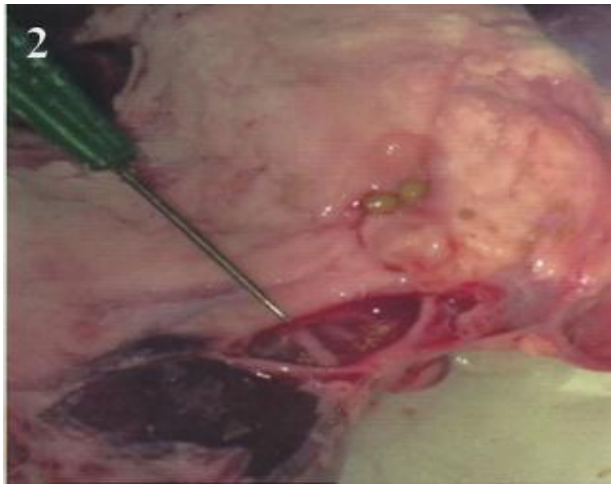

Fig. 2. Portion of kidney showing stones along with fluid.

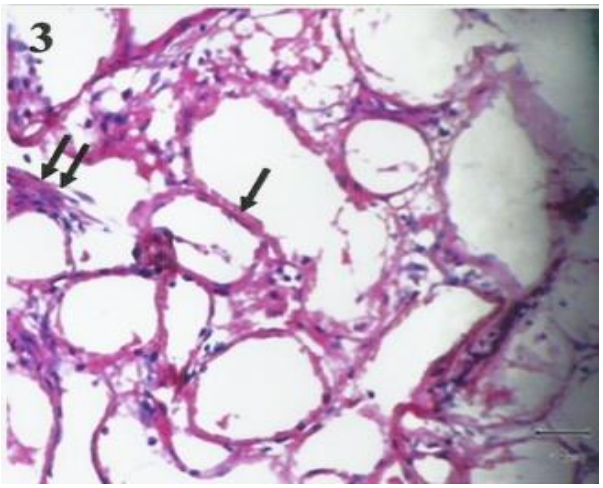

Fig. 3. Photomicrograph of buffalo kidney showing glomeruli (←) and interlobular arteries dilated (⇐) (x 200).

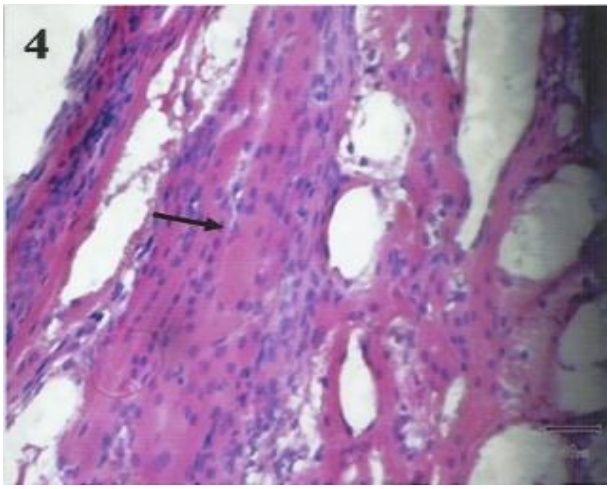

Fig. 4. Photomicrograph of kidney section showing lymphocytes infiltration (←) (x 100).

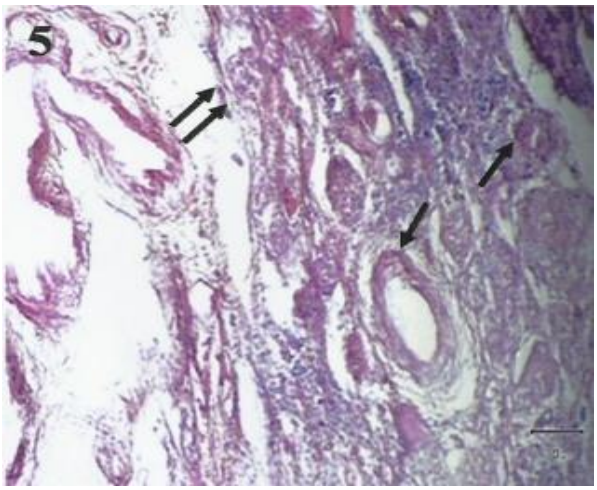

Fig. 5. Portion of kidney section showing renal fibrosis (←) and giant cells (⇐) (x 50).

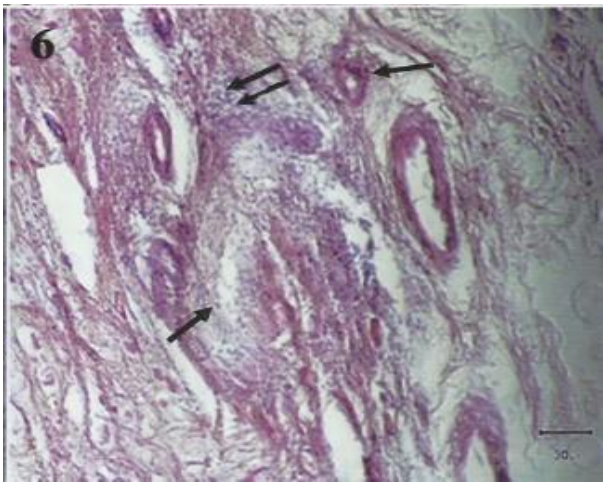

Fig. 6. Portion of kidney section showing abnormal tubules (←) along with proteineous casts are present in distal tubules (⇐) (x 50).

DISCUSSION

Studies on various histopathological studies have been carried out in different countries. The described clinical signs in the current study agreed with those reported in other mammals (Cattell and Jennette, 1998). We have studied prominent changes in buffalo kidneys due to Amphistome. Stones in kidney may frequently lead to renal pathology (Deshmukh *et al.,* 2015). Xavier *et al.* (2015) had also observed lymphocytes infiltration along with disorientation in histopathology of buffalo kidneys. In the present study abnormal collecting tubules along with proteineous casts are present in distal tubules may lead to kidney failure as reported earlier by Sanders *et al.* (1990).

Abdo and Sultan (2013) reported collecting tubules with severe dilation and mononuclear cell infiltration in cattle egret due to trematode *Paratanaisia* spp. Ommer and Mariappa (1970) observed abnormal tubules in Indian buffalo due to heavy infection.

Pfukenyi *et al.* (2005) recommended that young calves are more prone to flukes (amphistomes) and advised first antihelminthic treatment in mid June and the second in late July or early August to remove potentially dangerous immature flukes later in dry season.

The present investigation strongly suggests that the helminth parasitic infection in a vital organ of buffalo may produce severe deleterious effects in the animal causing lethargy, infertility, reduced production of milk and meat and in a number of cases if untreated mortality.

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