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PATHOLOGICAL STUDY ON SOME RENAL LESION IN SHEEP AND GOATS IN DIYALA PROVINCE

Noura N. Ali & Khalil H. Aljeboori
Department of Pathology, college of Vet, Medicine University of Baghdad, Iraq

ABSTRACT
The present study was carried out to determine the prevalence of renal lesion in sheep and goats that were slaughtered at diyala abattoirs from October 2016 to March 2017. A Total number 1030 animals sheep and goats of different breed, sex and age were randomly selected and for histopathological study renal samples were taken, a pieces of lesion were collected in 10% buffered formalin for fixation and send to the laboratory of histopathology. Out of 580 sheep and 450 goats studied, 62 (10.68%) and 48 (10.66%), respectively had renal lesion, the histopathological finding of Chronic interstitial nephritis 42(67.7%) of sheep kidneys and 25(52%) of goats kidneys. The other renal lesion observed in sheep, Pyelonephritis 8 cases (12.9%), Glomerulonephritis 8 cases (12.9%), Renal fibrosis 4(6.5%), Spongy kidney 1(1.6%). In goats, the renal lesion were Purulent abscess 8 cases (16.7%), Pyelonephritis 6(12.5%), Embolic nephritis 5(10.42%), Glomerulonephritis 3 cases (6.7%) and Micro-abscess 1 case (2%). The most common observed lesion was chronic interstitial nephritis in sheep and goats.

KEY WORDS: sheep, goats, kidney, pathology.

INTRODUCTION

The kidney is one of the vital organs of the body and its function in metabolism, fluid balance and excretion make it an important system renal disease is not uncommon in food animals. Renal diseases are important clinical problems and are causes illness and death in many animals' species (Mahouz *et al*., 2015). Several kidney diseases may be associated with morphologic renal disease that affects one or both kidneys (Divers, 2008). Sheep and goats as food animals act as worthy asset of a nation (Dutta *et al*., 2016).

MATERNALS & METHODS

Across- section study was carried out from October 2016 to march 2017 in order to determine the spread of renal lesion in sheep and goats. A total number of 1030 of sheep and goats from diyala abattoir. Firstly the kidneys examined macroscopically for gross lesion and then taken sample for histopathological studies. The samples included the lesion which were taken from the kidneys and fixed in 10% neutral buffered formalin for 48hours. Farther processed by embedding in paraffin and sectioned into 5µm thick a further part of the tissue samples was snap-frozen in liquid nitrogen and stored at -80C for cryostat sections. Stained with hematoxlyin and eosin staining. The section examined using light microscope.

RESULTS

Chronic interstitial nephritis

Characterized grossly by shrinkage of renal capsule and granular surface of the kidney (Fig.1) microscopically characterized by extensive proliferation of fibrous connective tissue a companied with mononuclear cells replacing the renal tissue between glomeruli and tubules also included cloudy swelling, kidney vacuolar degeneration, hyaline cast and necrosis .Where the prevalence percentage was 42/62(67.7%).

Pyelonephritis

Grossly Characterized by swelling in the renal pelvic and medullary region microscopically characterized by extensive infiltration of inflammatory cells of neutrophils and mononuclear cells (lymphocyte, macrophage and plasma cell) in distal convoluted tubule causing atrophy of renal tubule with few fibroblasts and calcified materials, where the prevalence percentage was 8/62 (12.9%).

Glomerulonephritis

Grossly: appear normal, they were pale and hypertrophied and the cut surface was shiny.

Microscopically:characterized by extensive proliferation of mesangial cells together with infiltration few mononuclear cells and causing narrowing of bowman space also there is the similar cellular reaction in filter the pre-glomerular area (fig. 9), where the prevalence percentage 8/62 (12.9%). (fig.3)

Renal fibrosis

Grossly:macroscopically, shrunken kidney and normal appearance.

Microscopically: characterized by extensive proliferation of fibrous connective tissue replacing the whole cortical region and medulla of the kidney and there is Spongy kidney**:**

Grossly: characterized by enlarged, soft and edematous.

Microscopically:dilation of distal convoluted tubule together with hyalinization emnant renal tubules (figs.10-11), where the prevalence percentage 4/62 (6.5%).

Renal pelvic abscess:

Grossly: the abscess localized on the capsule of the kidney filled with pus and its diameter 5-7cm. (Fig.4)

Microscopically: characterized by extensive of inflammatory cells consist of neutrophil, lymphocyte, macrophage together with fibroblast in the pelvic region

and destroyed the adjacent renal tissue,peri-renal abscess there is extensive petulant exudate composed of dead and living neutrophil necrotic tissue debris and congested blood vessels and hemorrhage surrounded by extensive fibrosis in the renal capsule where the prevalence percentage was 8/48 (16.7%).(fig.5.)

Embolic nephritis

Grossly: characterized by the presents of abscess of various size which ranged from tiny small yellowish abscess distributed randomly on the sub scapular space of renal cortex to variable sized multifocal yellow patches of pyogranulomes in the renal cortex.

Microscopically: characterized by moderate infiltration of mononuclear cells in the glomeruli and adjacent renal blood vessels replacing some renal tubules and combined by cloudy swelling of proximal convoluted tubules, where the prevalence percentage was 5/48 (10.4%).

Micro-abscess

Grossly: appear normal, no clear lesion.

Microscopically: characterized by composed of suppurative exudate consisted from infiltration of dead and live neutrophils and necrotic tissue debris replacing of focal area of renal tissue (focal abscess), where the prevalence percentage was 1/48 (2%). (fig.6)

TABLE 1. Shows the types of renal lesion in goats (n=48).

Renal lesion	NO.	100%
Chronic interstitial nephritis	25	52%
Abscess	8	16.7%
Pyelonephritis	6	12.5%
Embolic nephritis	5	10.42%
Glomerulonephritis	3	6.7%
Micro-abscess	1	2%
Total	48	10.7%

TABLE 2. Shows the type of renal lesion in sheep (n=62).

Renal lesion	No.	100%
Chronic interstitial nephritis	42	67.7%
Pyelonephritis	8	12.9%
Glomerulonephritis	8	12.9%
Renal fibrosis	3	4.8%
Spongy kidney	1	1.6%
Total	62	10.7%

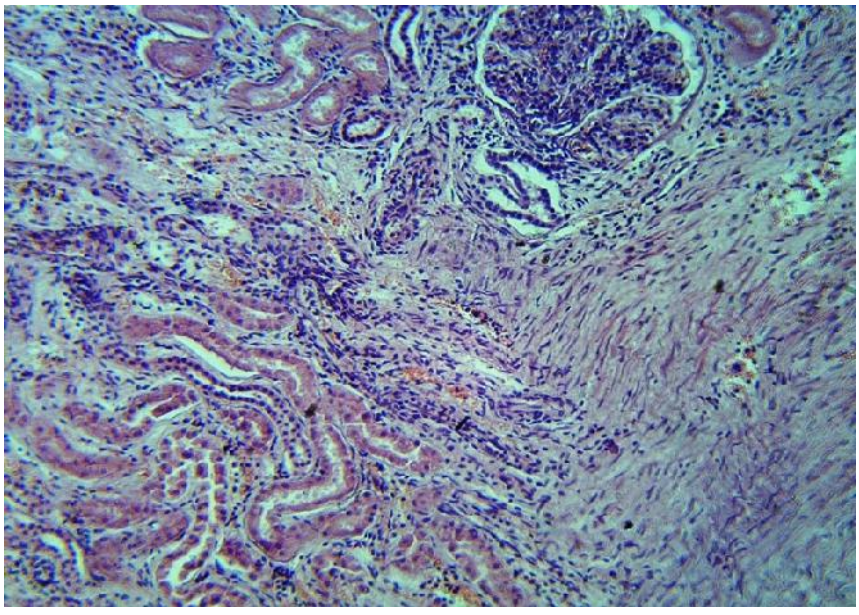

FIGURE.1: Chronic interstitial nephritis there is extensive proliferation of fibrous tissue accompanied with mononuclear cell replacing the renal tissue between glomeruli and tubules (H&E) ×200.

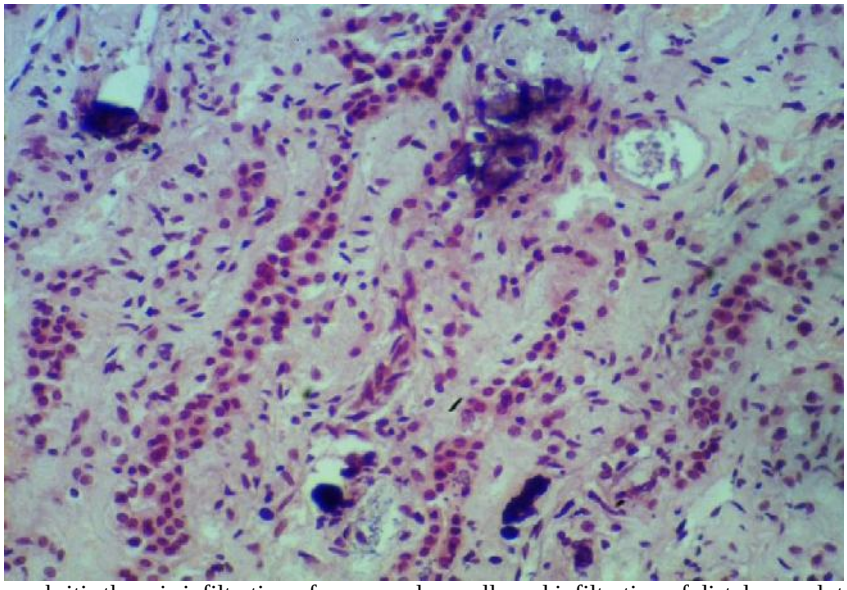

FIGURE 2: Pyelonephritis there is infiltration of mononuclear cells and infiltration of distal convoluted tubule causing atrophy of renal tubule with calcified materials. (H&E)×200.

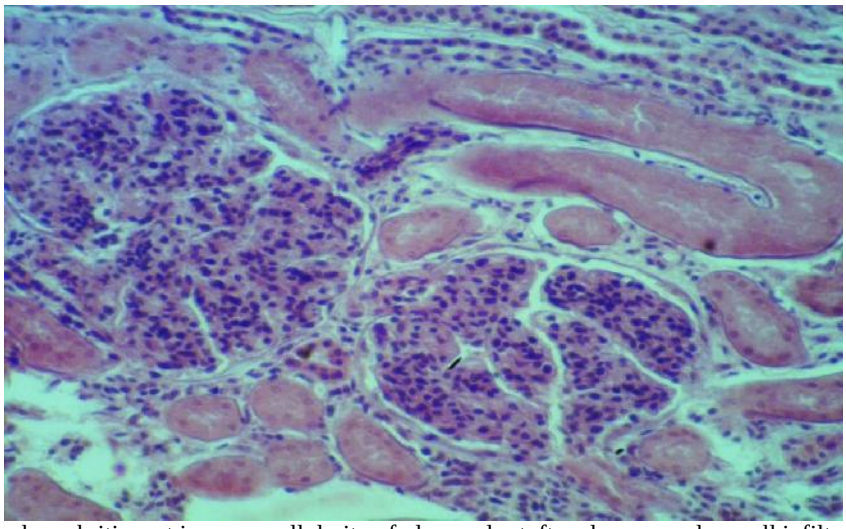

FIGURE 3: Glomerulonephritis: not increase cellularity of glomerular tuft and mononuclear cell infiltration. (H&E)×200

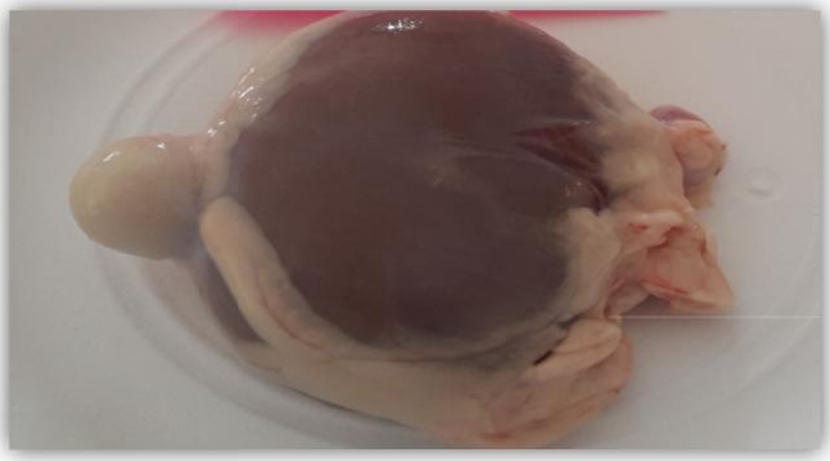

FIGURE 4: Kidney of goat abscess localized on the capsule of the kidney filled with pus

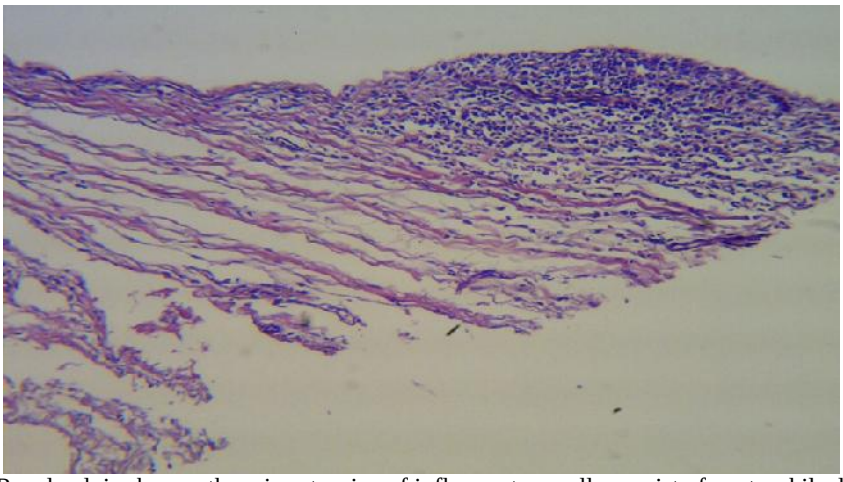

FIGURE 5: Renal pelvis abscess there is extensive of inflammatory cells consist of neutrophils, lymphocytes, macrophages together with fibroblast in the pelvic region destroyed the adjacent renal tissue. (H& E) ×100

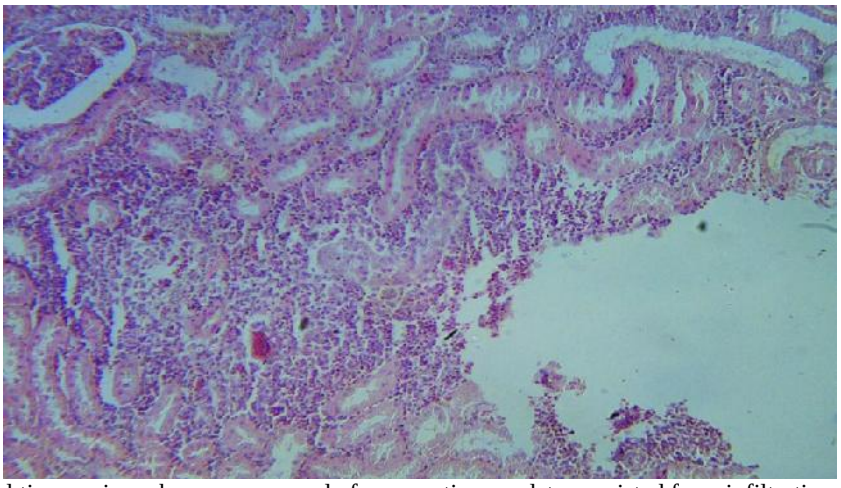

FIGURE 6: renal tissue micro abscess composed of suppurative exudate consisted from infiltration of dead and live neutrophils and necrotic tissue debris replacing of focal area of renal tissue (focal abscess).(H&E)

DISCUSSION

This study showed the percentage of renal lesion in both (sheep and goats) 10.7% through the examination of 1030 animals, 580 head of sheep and 450 head of goats and this percentage is lower than those reported by mahouz *et al.* (2015) which was 22, 66% and higher than those reported by Baghban and Yaripour (2016) which was 0.8% in sheep and 1.2% in goats and also lower than those reported by Sahoo & Rae (1973) in Australia which was 1.95%, this variation in the prevalence of renal lesion in sheep and goats may reveled to the genetic predisposition of sheep and goat in Iraq compatibles to other parts of the world together with nature of weather, food and the number of sheep and goats examined so we examined 1030 sheep (62(10.7%) and goat (48(10.7%) comparable to high numbers of sheep and goats examined in other parts of the world.

The most common lesion is interstitial nephritis characterized grossly by shrinkage of renal capsule and granular surface ,microscopically characterized by extensive infiltration mononuclear cell between renal tubules and adjacent blood vessels these inflammatory reaction replacing the renal tubule also causing atrophy with high prevalence rate 67.7% in sheep (62) cases) and 52% in goats (48%), this result higher than that reported by Aktar *et al.* (2015) when examined 50 kidney were the prevalence rat of interstitial nephritis 2%, Baghban & Yaripour (2016) their results higher than our results were the prevalence rate 10.14%, 89.86% male and female of sheep respectively, in goat male and female 7.35% and 92.65%, respectively. Pyelonephritis were present (12.9%) in sheep lesion renal, (12.5%) in goats, this result higher that reported by Sankarappa and Rao (1982) which was 0.05% and those reported by Sinha *et al.* (1983) which was 4.36%. The prevalence of glomerulonephritis was recorded in this study 8/62 (12.9%) in sheep, 3/48(6.25%) in goats, this results are higher reported by Zhirik (1974) the prevalence was (9, 7%) glomerulonephritis, where as 0.69%reported by Sankarappa and Rao (1982). Renal fibrosis grossly: shrunken kidney. Microscopically: characterized by extensive proliferation of fibrous connective tissue replacing the whole cortical region and medulla of the kidney and there are remnant renal tubules, where the prevalence percentage 4/62 (6.5%), renal fibrosis recorded only in the present study. Spongy kidney grossly**:** characterized by enlarged, soft and edematous. Microscopically**:** dilation of distal convoluted tubule

together with hyalinization (present protein materials) this results is similar to those reported by Vyas and Arya (1983). Renal pelvic abscess grossly: the abscess localized on the capsule of the kidney filed with pus and its diameter 5-7cm. Microscopically: characterized by extensive of inflammatory cells consist of neutrophil, lymphocyte, macrophage together with fibroblast in the pelvic region and destroyed the adjacent renal tissue, peri-renal abscess there is extensive petulant exudate composed of dead and living neutrophil necrotic tissue debris and congested blood vessels and hemorrhage surrounded by extensive fibrosis in the renal capsule where the prevalence percentage was 8/48 (16.7%) this results is higher than those reported by Baghban and Yaripour (2016) which was 10.64% in goats and 15.47% in sheep and those reported by Nayak and Bhowmik (1991) which was 0.6% in goat. Embolic nephritis was recorded in the present study in goats only .Grossly characterized by the presents of abscess of various sizes which ranged from tiny small yellowish abscess distributed randomly on the sub scapular space of renal cortex to variable sized multifocal yellow patches of pyogranulomes in the renal cortex. Microscopically: characterized by moderate infiltration of mononuclear cells in the glomeruli and adjacent renal blood vessels replacing some renal tubules and combined by cloudy swelling of proximal convoluted tubules , where the prevalence percentage was 5/48 (10.4%) this result is agreement with that reported by Elgumaa *et al*. (2017) which was 10.5% in sheep and lower than in goats 16.66%. Micro-abscess: Grossly**:** appear normal no clear lesion. Microscopically: characterized by composed of suppurative exudate consisted from infiltration of dead and live neutrophils and necrotic tissue debris replacing of focal area of renal tissue (focal abscess), where the prevalence percentage was 1/48 (2%).

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