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## **Summary**

The present study involved clinical, laboratory and pathological investigation of 176 sheep aged from 6 months to over 3 years from Sohag , Balasfora and Akhmim slaughter houses in Sohag governorate .

Out of them 123 animals were proved to be suffered from urinary tract disease and 53 were clinically healthy and showed no clinical or laboratory abnormalities and taken as control group .

The present investigation declared , that the most common urinary tract disorders in examined diseased sheep were nephrosis with (44%), focal interstitial nephritis with (27.6%) caused by leptospiroza organism which were detected pathologically ,pyelonephritis as (10%) , glomerulonephritis with a percentage of (11.3%) , urolithiasis as (7.3 %), and cystitis as (41.4%)acute cases where chronic cases were (35.7%) from cystitis cases of diseased sheep .

### **1-Nephrosis:-**

Sheep suffered from nephrosis showed white turbid urine with increased of specific gravity ,also presence of protienuria and haematuria. Significant increase in blood serum levels of urea ,creatinine , calcium ,phosphorus were markedly observed . Bacterial examination showed single isolates as Staph. aureus ,

Strept.pyogens ,E.coli and Coryn. renale ,also there was mixed infection as Coryn.+Strept ,Coryn +E.coli or Staph.+E.coli .

Pathologically microscopical examination showed necrobiosis which may involved some renal glomeruli . Thickening of the renal capsules were also observed .

### **2-Pyelonephritis :-**

Twelve animals were proved to be affected with pyelonephritis with 10%of all cases .Subsequent urine analysis revealed turbid white flocculent urine in all cases with increased specific gravity . Marked protienuria with granular and leucocytic casts .,microscopic haematuria (22-32 cells/HPF)were observed .

Bacterial urine and tissue culture confirmed pyelonephritis in all of suspected cases where Coryn.renale ,E.coli ,Strept.pyogens ,Staph aureus microorganisms were isolated from kidneys and urinary passages of these animals .

Blood urea and serum creatinine were found to be significantly increased reflecting azotaemia and renal insufficiency resulted from bilateral involvement of both kidneys with decreased blood serum protiens .

Grossly kidneys showed dark reddish or blackish discolouration. Histopathological examination of tissue samples showed inflammatory cell reaction surrounding the renal pelvis ,

degenerative and necrobiotic changes of collecting tubules surrounding renal pelvis.

### **3-Focal interstitial nephritis (leptospirosis):-**

Thirty four animals were affected with focal interstitial nephritis with 27.6% of all cases. Out of them twelve animals proved to be affected with leptospirae .The urine analysis showed protien ,blood and increase specific gravity and pH.

Bacteriological examination of urine sample &tissue samples showed Strept.pyogens, Staph.aureus ,Coryn.renaleand E.coli added to leptospirae which was detected previosly by histopathlogy .

Biochemical analysis of blood samples showed on increase in creatinine ,urea and phosphorus levels ,where a decrease calcium ,sodium ,chloride ,total protien ,and albumin levels were detected .

Histopathologically there were multiple focal areas of cellular reaction associated with a necrosis of the glomeruli and renal tubules . Leptospira microorganisms were detected with silver impregation technique (Levaditi stain )in the brush border of renal tubules .

#### **4-Glomerulonephritis:-**

Fourteen animals were affected with 11.3% of all diseased cases .

Diseased animals have dark congested and ,enlarged kidneys. Microscopically the affected kidneys showed a marked swelling of the glomerular tuft ,filling the glomerular corpuscles and the glomeruli became more prominent.

#### **5-Renal calculi :-**

Nine animals have urinary obstruction 7.3% of all diseased cases .Large calculi were observed in the renal pelvis and renal medulla .

Microscopically ,multiple microscopic calculi were observed mainly in renal medulla .The calculi were associated with congestion of the interstitial blood vesseles and degeneration of the surrounding tubular structures .

#### **Acute cyctitis:**

Fifty one animals were affected with acute cystitis with 41.4% of all diseased cases .

Macroscopically urinary bladder was severely congested with edematous wall. Microscopically the affected urinary bladder showed necrosis and sloughing of the transitional epithelial lining with congested blood vessels in the lamina propria.

Urine analysis revealed the presence of protein and blood. Also increased pH and specific gravity.

Bacteriological examination of urine and tissue swab showed the presence of Staph.aureus+E.coli in most cases of acute cystitis .

Biochemical examination of blood serum showed decreased levels of serum total protein ,albumin, sodium, chloride, calcium, inspite of there were increased levels of potassium ,urea, creatinine, and phosphorus

### **Chronic cystitis**

Fourty four were affected with chronic cystitis with 35.7% of all diseased cases .

Macroscopically the wall of urinary bladder were thickened with marked mucosal corrugation .Microscopically the wall showed multiple polypoid formation in the bladder mucosa .Thickening of wall usually due to diffuse monocyctic and lymphocytic cellular reaction associated with connective tissue proliferation .

Urine analysis revealed decreased of specific gravity and the presence of protein is slight .

Biochemical analysis of serum showed decreased levels of sodium ,chloride ,total protein , albumin and calcium but there were increased levels of potassium ,urea ,creatinine and inorganic phosphorus.

## Conclusion

The present investigation finally declared that :-

- It could be concluded that sheep are exposed to urinary tract diseases in Sohag governorate as nephrosis ,glomerulonephritis, pyelonephritis ,focal interstitial nephritis including leptospirosis, urolithiasis ,acute cystitis and chronic cystitis.
- Correlation of levels of those elements were ensued in diseased cases as further aid to diagnosis of urinary tract diseases in sheep .
- Sodium ,chloride ,total protein ,albumin ,globulin and calcium were decreased ,however ,blood urea nitrogen, and creatinine were elevated .
- Some bacteria were isolated from infected cases as Coryn. renale ,E.coli ,Staph.aureus, and Strept.pyogens.

The collected results complete the picture of urinary tract status in sheep .

- One of the most important results of this work ,when compared with the available literature is the presence of leptospirosis ,including focal interstitial nephritis detected by histopathological techniques . This point need further investigations as it is not sufficient in the available literature.