**Principles of treatment of urinary tract disease**

  **Fluid and electrolytes :**

 Treatment acute renal failure in all species is aimed at removing the primary cause and restoring at normal fluid balance by correction dehydration ,acid – base disorders and electrolyte abnormalities .

 The prognosis for acute renal failure will depend on the initiating cause and severity of the lesion .

 If the acute disease process can be stopped the animal may be able to survive on its remaining function renal tissue.

 Balanced electrolyte solutions or normal saline supplemented with potassium and calcium can be used to correct fluid and electrolyte deficits .

 If anuria or oliguria is present the rate of fluid administration should be monitored to prevent over hydration .

 If the patient has oliguria often the fluid volume deficit is corrected a diuretic may be used to help restore urine flow .

 Furosemide (1-2 mg /kg Bw every 2 hours ) or mannitol(o.25 -2.0 g/kg B.w in a20% solution ) may be used until .

 Diuretics should not be used until dehydration has been corrected .

 Animals that remain anuria have a grave prognosis and can only be managed with peritoneal of vascular dialysis .

 In chronic failure ,therapy is aimed at prolonging life .Animal in chronic failure should have free access to water and salt , un less edema is present .

 In food –producing animal ,emergency slaughter is not recommended because the carcass is usually unsuitable for human consumption .

 **Antimicrobials:**

 Selection of antimicrobials for the treatment of urinary tract infections should be based on quantitative urine culture .

 The ideal antimicrobial for the treatment of urinary tract infections should meet several criteria , it should have :-

 -Activity against the caused bacteria .

 - Be exacted and concentrated in the kidney and urine .

 -Be active at the PH of urine .

 -Low toxicity .

 -Be easily administered.

 - Low in cost .

 -No harmful interactions with other concurrently administered drugs.

 Appropriate first line antimicrobials include penicillin in ruminant and trimethoprim –sulfa in horses.

 Administered therapy for lower urinary tract infection should continue for at least 7 days .for upper urinary tract infection 2-4 weeks of treatment is often necessary .success of therapy can be evaluated by repeating the urine culture 7-10 days after the last treatment

**DISEASES OF THE KIDNY**

 **Nephrosis:**

 Includes degenerative and inflammatory lesion primarily affecting renal tubules .

 It can occur as a sequel to renal ischemia and following toxic insult to the kidney .

 Nephrosis is the most common cause of acute kidney failure .

 Renal ischemia :

 Reduced blood flow through the kidneys the kidney usually results from general circulatory failure . there is transitory oliguria followed by anuria and uremic if the circulatory failure is not corrected.

 **Etiology** : is may be acute or chronic

 1- Acute renal ischemia

 General circulatory emergencies such as shock ,dehydration acute hemorrhagic anemia ,acute heart failure.

 Embolism of renal artery ,recoded in horses .Extreme ruminal distention in cattle.

 2- Chronic renal ischemia

 Chronic circulatory insufficiency such as congestive heart failure .

 **Pathogenesis:**

 Acute ischemia of the kidneys occurs when compensatory vasoconstriction affects the renal blood vessels in response to a sudden reduction in cardiac output. As blood pressure falls ,glomerular filtration decreases and metabolites that are normally excreted accumulate in the blood stream .

 The concentration of urea in the blood increases giving rise to the name pre -renal anemia .As glomerular filtration falls , tubular reception increases causing reduced urine flow .

 The nephrosis of hemoglobin urea appears to be caused by the vasoconstriction of renal vessels rather than a direct toxic effect of hemoglobin on renal tubules . with uremia in acute hemolytic anemic and in acute muscular dystrophy with myoglobinuric may be exacerbated by plugging of the tubules costs of coagulated proteins .but ischemia is also an important factor.

**CLINICAL FINDINGS**

Oliguria and azotemia will go unnoticed in most cases if the circulatory defect is corrected in the early stages. The general clinical picture is one of acute renal failure

and is described under uremia.

**TREATMENT**

Treatment must be directed at correcting fluid, electrolyte and acid-base disturbance as soon as possible.

**Diseases of the bladder, ureters and urethra**

**CYSTITIS:-**

Inflammation of the bladder is usually associated with bacterial infection and is

characterized clinically by frequent, painful urination (pollakiuria and dysuria)

and the presence of blood (hematuria), inflammatory cells and bacteria in the

urine.

**ETIOLOGY**-

Cystitis occurs sporadically as a result of the introduction of infection into the

bladder when trauma to the bladder has occurred or when there is stagnation of

the urine.

 In farm animals the common associations are:

- Cystic calculus

- Difficult parturition

- Contaminated catheterization

- Late pregnancy

- As a sequel to paralysis of the bladder.

In the above cases, the bacterial population is usually mixed but predominantly

E. coli. There is also the accompaniment of specific pyelonephritis in cattle

associated with C. renale.

**PATHOGENESIS:**

Bacteria frequently gain entrance to the bladder but are usually removed by the

flushing action of voided urine before they invade the mucosa. Mucosal injury

facilitates invasion but stagnation of urine is the most important predisposing cause.

Bacteria usually enter the bladder by ascending the urethra but descending

infection from embolic nephritis may also occur.

**CLINICAL FINDINGS**

The urethritis that usually accompanies cystitis causes painful sensations and the desire to urinate. Urination occurs frequently and is accompanied by pain and sometimes grunting; the animal remains in the urination posture for some minutes after the flow has ceased, In very acute cases there may be moderate abdominal pain, as evidenced by treading with the

Hind feet, kicking at the belly and swishing with the tail, and a moderate febrile reaction. Chronic cases show a similar syndrome but the signs are less marked. Frequent urination and small volume are the characteristic signs. In chronic cases, the bladder wall may feel thickened on rectal examination and, in horses, a calculus may be present.

**CLINICAL PATHOLOGY**

Blood and pus in the urine is typical of acute cases and the urine may have a strong ammonia odor.

 Microscopic examination of urine sediment will reveal erythrocytes, leukocytes, and desquamated epithelial cells.

 bacterial culture

**TREATM ENT**

Antimicrobial agents are indicated to control the infection.