Anuria and Oliguria

Tutorial handout for 4th year students in Alkindy Collage of Medicine / University of Baghdad

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Anuria: is defined as complete absence of urine output Or as urine output of less then 100ml in 24 hours

Oliguria: Diminished output of urine with less than 400 mL output in 24 hours or less than 0.5 ml /Kg/hr.

The causes may be divided into:

- **ü** prerenal (where less fluid is delivered to the kidney for filtration)
- **ü** renal (where the kidney is unable to produce urine because of intrinsic disease)
- **ü** postrenal (where the kidney is obstructed and the urine cannot be excreted).

Prerenal causes:

Anything that reduces the blood flow to the kidney may cause anuria. Thus,

- shock from (hemorrhage, myocardial infarction, dehydration, drugs, or septicemia) may be the cause
- CHF in which the effective renal plasma flow is reduced.
- Intestinal obstruction or intense diarrhea may cause the loss of enormous amounts of fluid through vomiting or diarrhea and the accompanying shock results in anuria
- Embolic glomerulonephritis, bilateral renal artery thrombosis, and dissecting aneurysms may cause renal shutdown.

Renal causes: (VINDICATE):

- V - Vascular lesions include embolic glomerulonephritis and dissecting aneurysm; transfusion reactions, intravascular hemolysis of any cause.
- I - Inflammatory lesions include pyelonephritis, necrotizing papillitis, and renal tuberculosis.
- N - Neoplasms of the kidney rarely cause anuria because only one kidney is affected at a time.
- D - Degenerative conditions are unlikely to cause anuria.
- I - Intoxication from numerous antibiotics (e.g., gentamycin, sulfa, streptomycin) and from gold, arsenic, chloroform, carbon tetrachloride, or phenol,
- C - Congenital disorders include polycystic kidneys and medullary sponge kidneys.
- A - Autoimmune disorders form the largest group of renal causes of anuria. Lupus erythematosus, polyarteritis nodosa, acute glomerulonephritis, amyloidosis, and scleroderma
- T -Trauma includes contusions and lacerations of the kidney for completeness

- E - Endocrine disorders include diabetic glomerulosclerosis, necrotizing papillitis from diabetes, and nephrocalcinosis from hyperparathyroidism

Postrenal (obstructive) causes. (SMINT):

- S - Stones: bilateral renal or ureteric stones or unilateral stone with non- functioning other kidney, stricture.
- M - Malformations may cause anuria; they include congenital bands, aberrant vessels over the ureters, horseshoe kidney, and ureteroceles.
- I - Inflammation includes cystitis, urethritis, and prostatitis, Billharisiasis.
- N - Neoplasms include carcinomas of the bladder obstructing both ureters, prostatic hypertrophy, and carcinomas of the uterus or cervix involving both ureters.
- N - Neurologic disorders such as polio, multiple sclerosis, and acute trauma to the spinal cord that may cause anuria.
- T - Trauma signifies surgical ligation of the ureters, ruptured bladder, and instrumentation of the urinary tract

Approach to the Diagnosis:

The initial workup includes:

- CBC
- urinalysis; urine culture and sensitivity, examination of the urine for casts,;
- plain X- ray of the abdomen for kidney size & any urinary stones;
- Chest x-ray; and ECG.
- -The bladder is catheterized for residual urine and if this is significant postrenal azotemia is likely.
- Ultrasonography can be used to determine if there is significant residual urine also.
- CT scan of the abdomen
- Cystoscopy and retrograde pyelography once the patient's condition is stabilized.

Treatment:

- If volume depletion is the cause, intravenous saline and plasma volume expanders are given while carefully monitoring the urine output. If this is ineffective, furosemide and a mannitol drip can be utilized to reestablish urine output.
- Inotropic support with dopamine to improve cardiac efficacy & increase RBF
- Obstructive renal failure is treated by removal of the obstruction by surgery, if the patient is too ill, then the use of percutanous nephrostomy catheters, or double J catheter fixed internally by the use of cystoscopy.
- Peritoneal dialysis.
- Haemodialysis.