

Case Study  
Diagnosed Disease : Acute Renal Failure



*(Government Medical College, Surat)*



# Medical Record of the Patient :

- ❖ Gender : Male
- ❖ Age : 60
- ❖ Date admitted : 17/10/2016 (last visit)
- ❖ Total number of visits : 3
- ❖ Duration of stay : 3 days



# Medical History of the Patient :

❖ Hypertension(High BP)

❖ Jaundice



# Known addictions :

- ❖ Alcohol (Sober since 1 year ago)
- ❖ Smoking (1-2 "bidis" / day)
- ❖ Tobacco



# General Examination :

Heart rate : 90 BPM [70-90 BPM(normal)]

Blood Pressure : 170/90 [120/80 mm of Hg(normal)]

Temperature : High [37 degree Celcius]

Respiratory Rate : High [12-20 breaths per minute]



# Initial Symptoms and general Complaints of the Patient:

- ❖ Decreased Urine output (150-200 ml / day) [0.8-2 L/day]
- ❖ Increased frequency of micturition (4-5 times a day)
- ❖ Chest pain (From 6 months)
- ❖ Pain in the Abdominal region ( From 6-8 months)
- ❖ Edema of the Peripheral limb (specifically : lower limb)
- ❖ The patient arrived with obstructive uropathy.



- ❖ Swelling and pain at joints
- ❖ Numbness
- ❖ Fever
- ❖ Shortness of Breath
- ❖ Loss of consciousness & orientation
- ❖ Cough



- ❖ Headaches
- ❖ Tremors
- ❖ Fatigue & Weakness
- ❖ Palpitations
- ❖ Nausea and Vomiting(from 7-10 days)



# Preliminary tests conducted:

- ❖ Viral infections (HIV, HBV, HCV)
- ❖ PHT(Parathyroid Hormone Test)
- ❖ X-Ray of Abdomen, Kidney, Ureter and Bladder
- ❖ UltraSonograph of Abdomen
- ❖ Chest radiograph; may show evidences of pulmonary edema and pleural effusion.
- ❖ Renal imaging by plain abdominal radiography and ultrasonography maybe of value in the evaluation of post renal ARF.



- ❖ Pre-renal ARF characteristically shows a high urine osmolality ( $>500$  mOSm/kg), low urinary sodium ( $<29$  mmol/L) and a high urine creatinine/plasma creatinine ratio ( $>40$ )
- ❖ Urine analysis may show red cells and red cell casts and proteinuria in glomerulonephritis.
- ❖ In ATN, urinalysis shows epithelial cells and coarsest granular casts with mild proteinuria.
- ❖ In allergic tubulo-interstitial nephritis, the urine shows white cells, red cells and eosinophils.



# Results :(17/10/2016)

	Reading	Reference range	Remark
Creatinine	10.1	0.8-1.3 mg/dl	Crit. High
Na+	124.92	136-145 mg/dl	Crit. Low
K+	4.47	3.5-5.1 mg/dl	Normal
Blood Urea	280.30	10-50 mg/dl	Crit. High
Phosphorus	8.4	2.5-4.5 mg/dl	High



Test	17/10/2016	18/10/2016	Reference range
pH	7.35	7.380	7.35-7.45
PaO2	91 mm of hg	108.9 mm of Hg	75-100
PaCO2	20 mm of Hg	20.6 mm of Hg	38-42
pHCO3	5.6 mmol/l	11.5 mmol/l	22-28
Hb	8.6gm/dl	10.3 gm/dl	13.5-17.5
WBC	18700/cu mm	12000/cu mm	7000-11000



# Disease Diagnosed : Acute Renal Failure

- ❖ **Definition** :it is defined as rapid, potentially reversible deterioration in renal function sufficient to result in accumulation of nitrogenous waste in the body(uremia).
- ❖ **The RIFLE Criteria**: it is used to classify ARF in an increasing order of severity; i.e. Risk, Injury, Failure, Loss and End stage of Kidney disease



Criteria	Definition
Risk	Increased creatinine x1.5 times Or Urine output <0.5 ml/kg/hr x6 hours
Injury	Increased creatinine x2 times OR Urine output <0.5 ml/kg/hr x12 hours
Failure	Increased creatinine x3 times OR Urine output <0.3 ml/kg/hr x24 hours
Loss	Persistent AKI = complete loss of renal function > 4 weeks
End-stage kidney disease	End-stage kidney disease (>3 months)

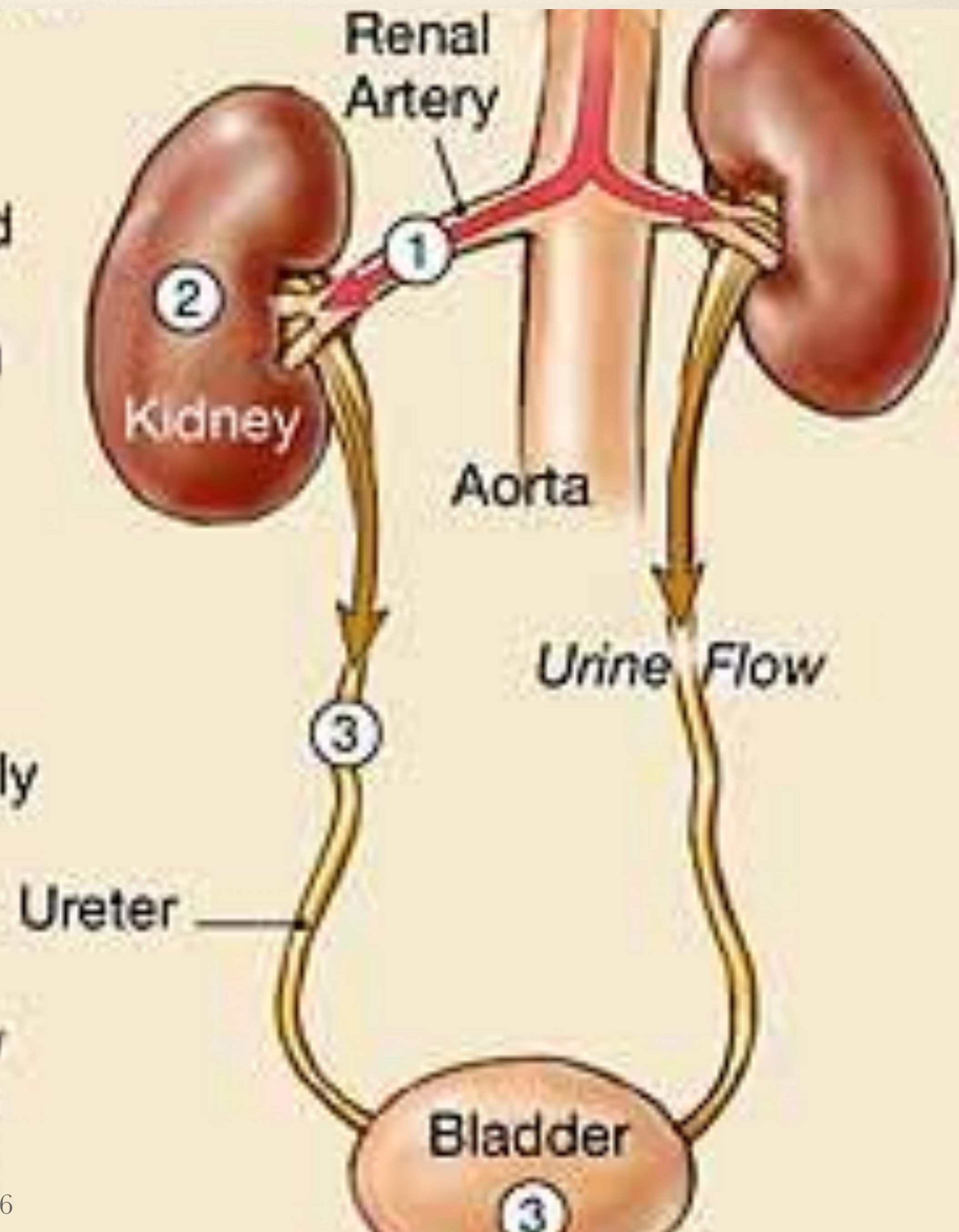


# Aetiopathogenesis:

- ❖ The Kidneys receives around 25% of the cardiac discharge.
- ❖ In pre-renal ARF the kidneys are inadequately perfused(due to diminished cardiac output and the GFR is greatly diminished.
- ❖ Renal causes of ARF result from intrinsic diseases of the kidneys themselves, namely glomerulus, tubulo-intestinal or vascular diseases.
- ❖ Post Renal is caused by obstruction of the urinary tract at any point on its course.



- ① **Prerenal**  
Sudden and severe drop in blood pressure (shock) or interruption of blood flow to the kidneys from severe injury or illness
- ② **Intrarenal**  
Direct damage to the kidneys by inflammation, toxins, drugs, infection, or reduced blood supply
- ③ **Postrenal**  
Sudden obstruction of urine flow due to enlarged prostate, kidney stones, bladder tumor, or injury



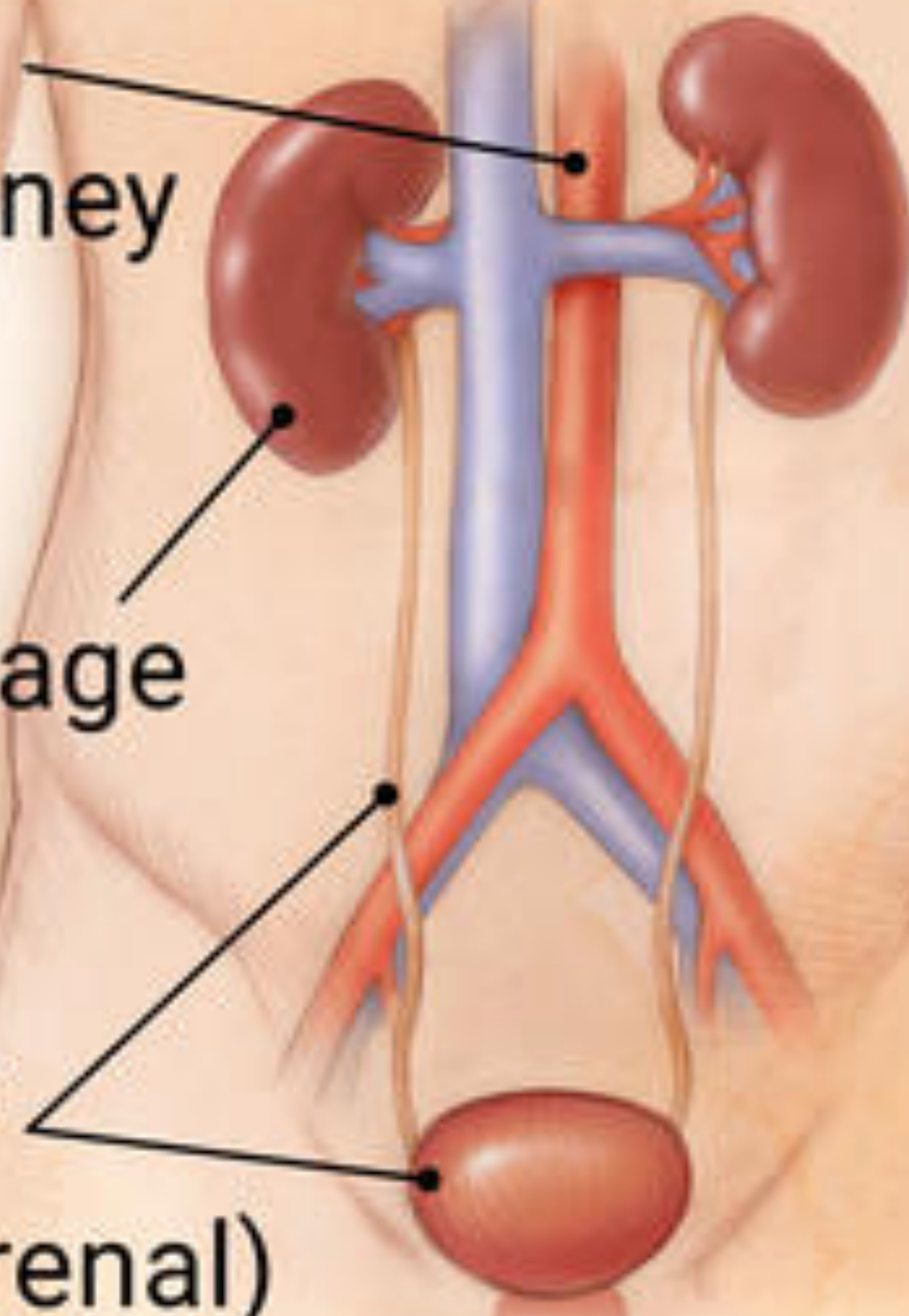


## Causes:

Not enough  
blood to kidney  
(pre-renal)

Kidney damage  
(renal)

Blockage of  
urine (post-renal)





# Pre-Renal causes

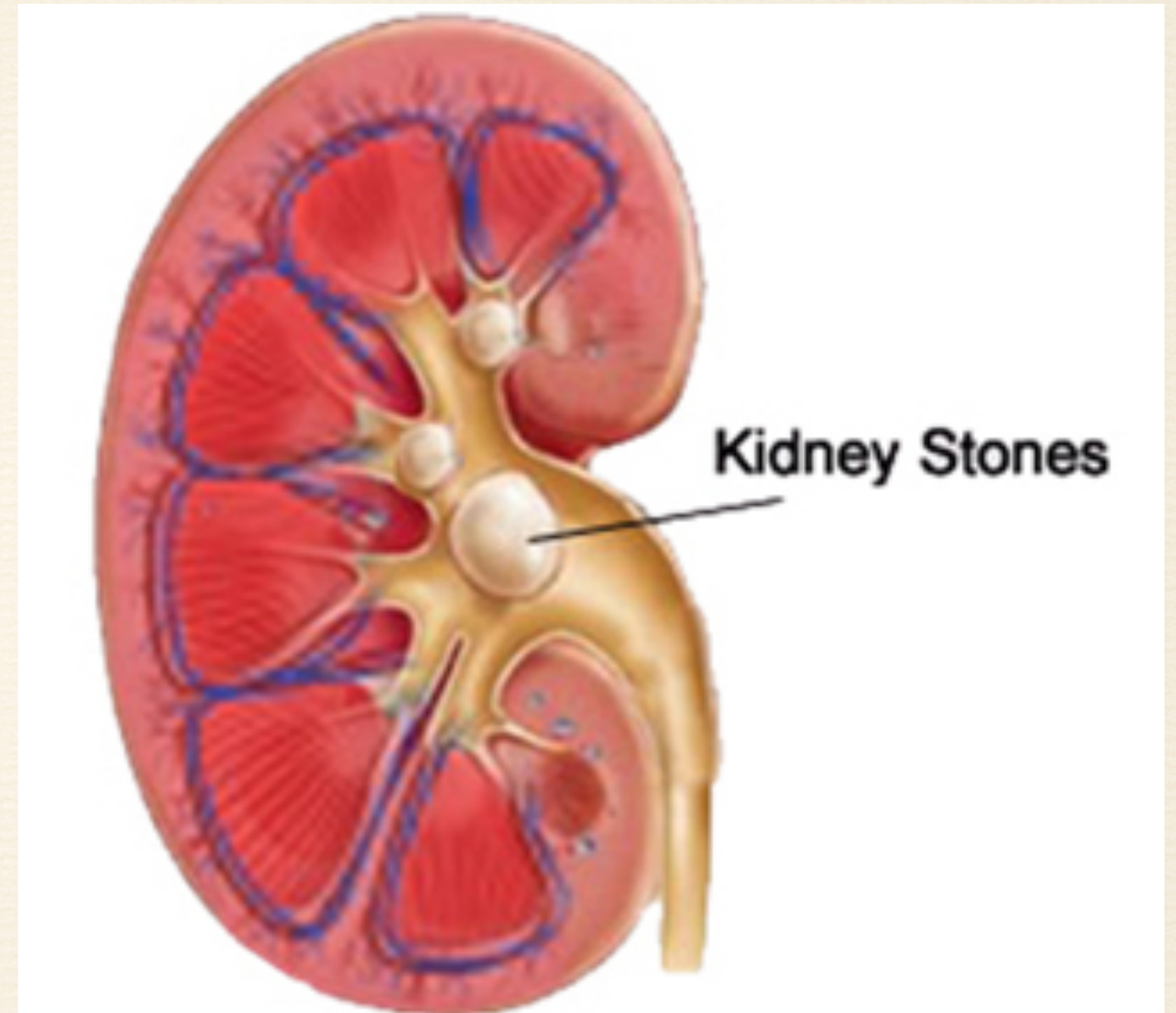
- ❖ Hypovolemia
- ❖ Reduced cardiac output
- ❖ Renal vessel diseases
- ❖ Drugs



# Renal Causes



- 1. Glomerular diseases*
- 2. Vascular diseases*
- 3. Acute tubule interstitial disease*
- 4. ATN*

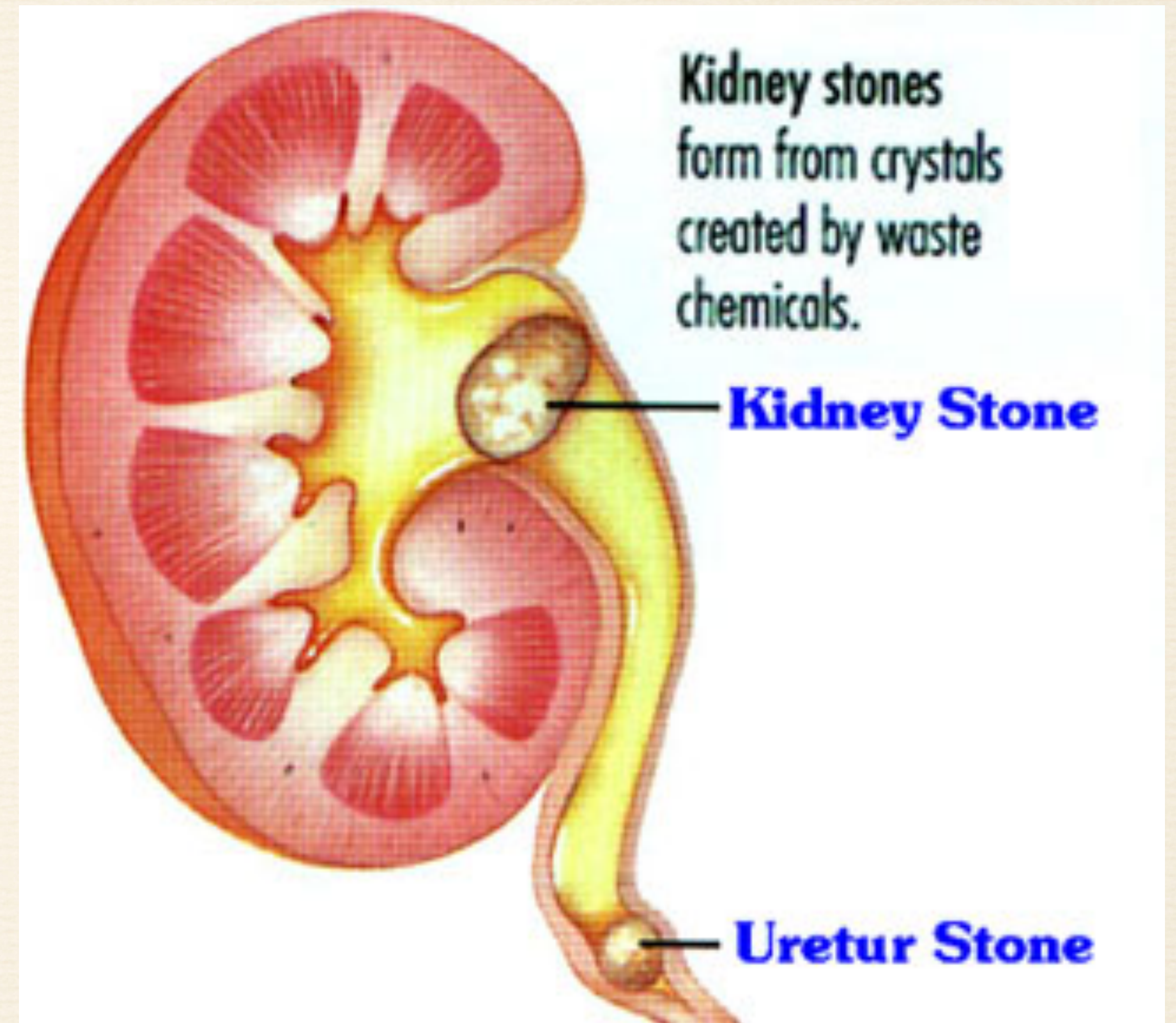




# Post-Renal Causes



- 1. External renal obstruction*
- 2. Internal obstruction*





# Management :

- ❖ Oral sips **ONLY**
- ❖ **NON-nephro-toxic** drugs
- ❖ No fruits / fruit juice
- ❖ Hemodialysis



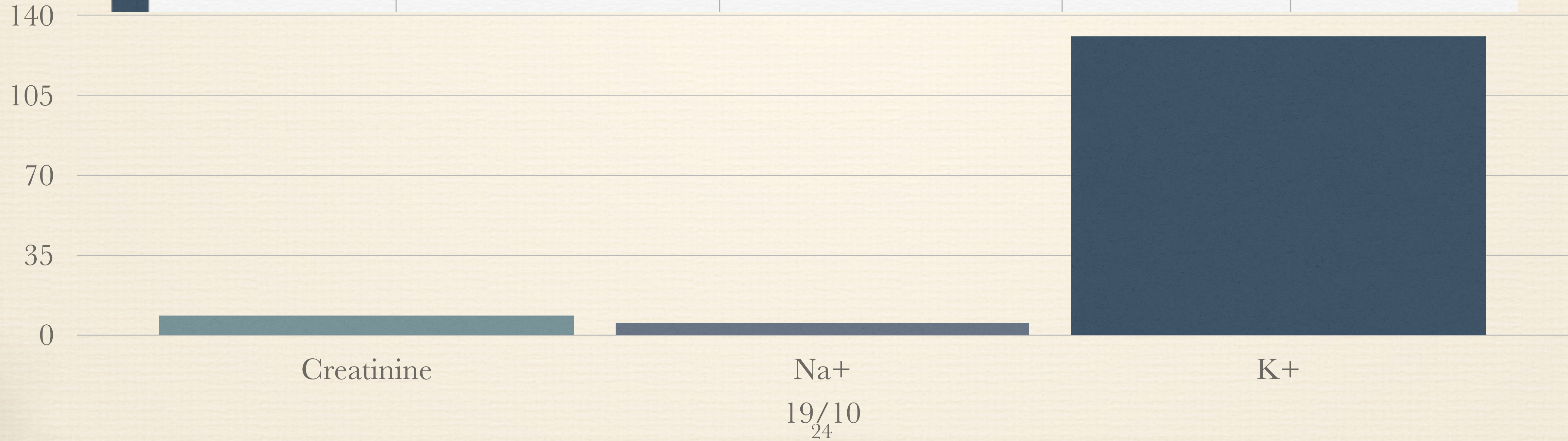
- ❖ Drugs to increase urine output
- ❖ Dietary protein should be restricted to 40g/day
- ❖ Patients with drug-induced acute tubule-interstitial nephritis usually recover after stopping the offending drug. At times short course of steroids may help.
- ❖ Therapy for ARF is directed at correcting fluid and electrolyte abnormalities, treating the underlying cause and preventing complications including nutritional deficiencies.



# Prescribed Drugs:



	17/10(Pre-HD)	17/10(Post-HD)	18/10	19/10
Creatinine	11.6	9.6	10.1	8.6
Na+	5.56	3.84	4.47	5.16
K+	115.15	124.33	124	130.84





*Thank you...*

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