

The background features a blue gradient with several circular gauges and arrows. One large gauge on the left has numerical markings from 140 to 260. Other gauges are smaller and scattered across the frame. Arrows indicate various directions, some pointing clockwise and others counter-clockwise. The overall aesthetic is technical and scientific.

RENAL BLOCK

HALA KFOURY, MD

OBJECTIVES

- Understand the relationship between the anatomical structures of different components of the Renal system and their functions.
- Discuss the pathology, microbiology, pathogenesis, and factors contributing to the development of most common diseases affecting the Renal system.
- Use basic sciences to explain patient's signs and symptoms, interpret investigation results, and provide justifications for their views.

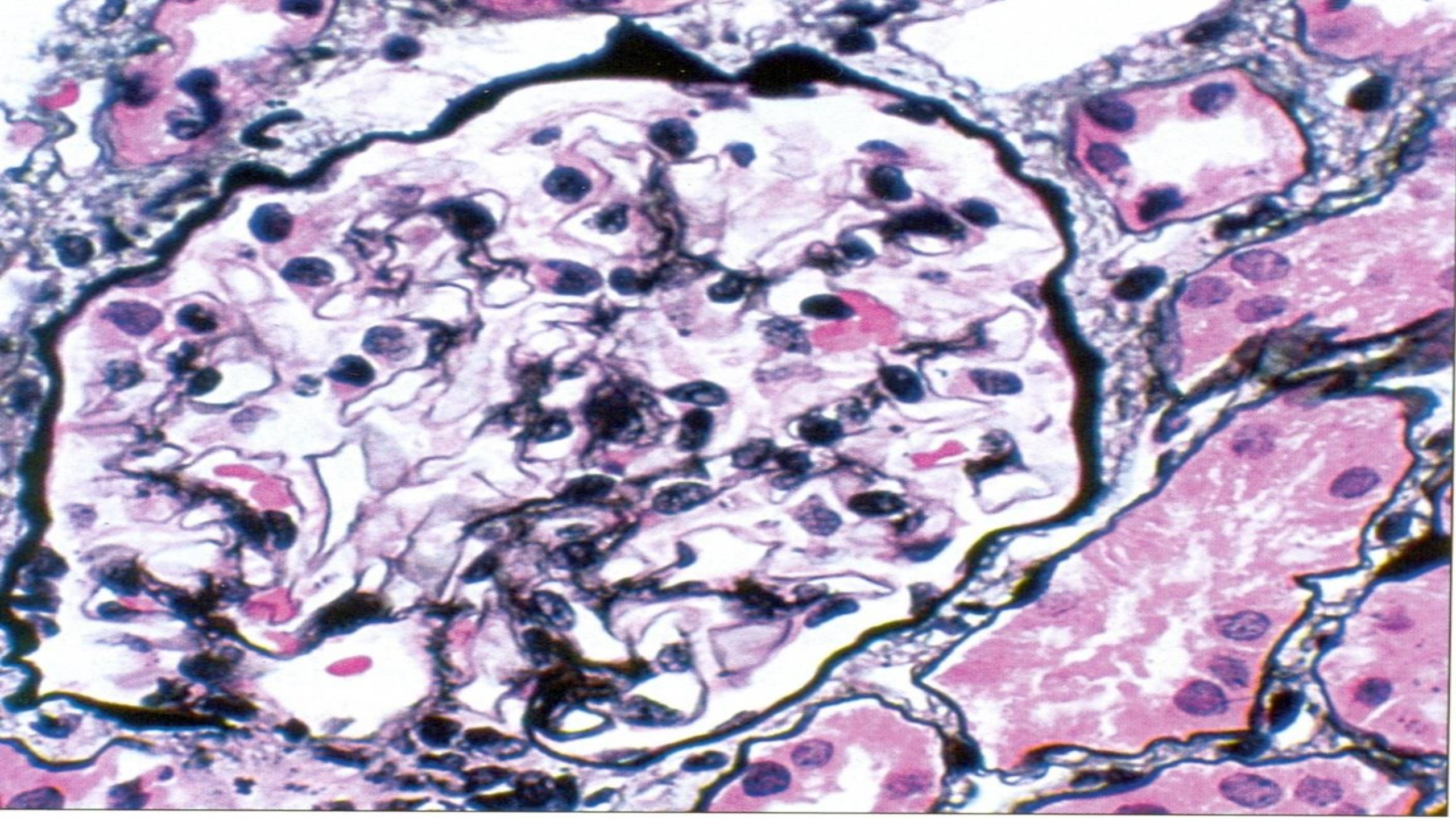
OBJECTIVES

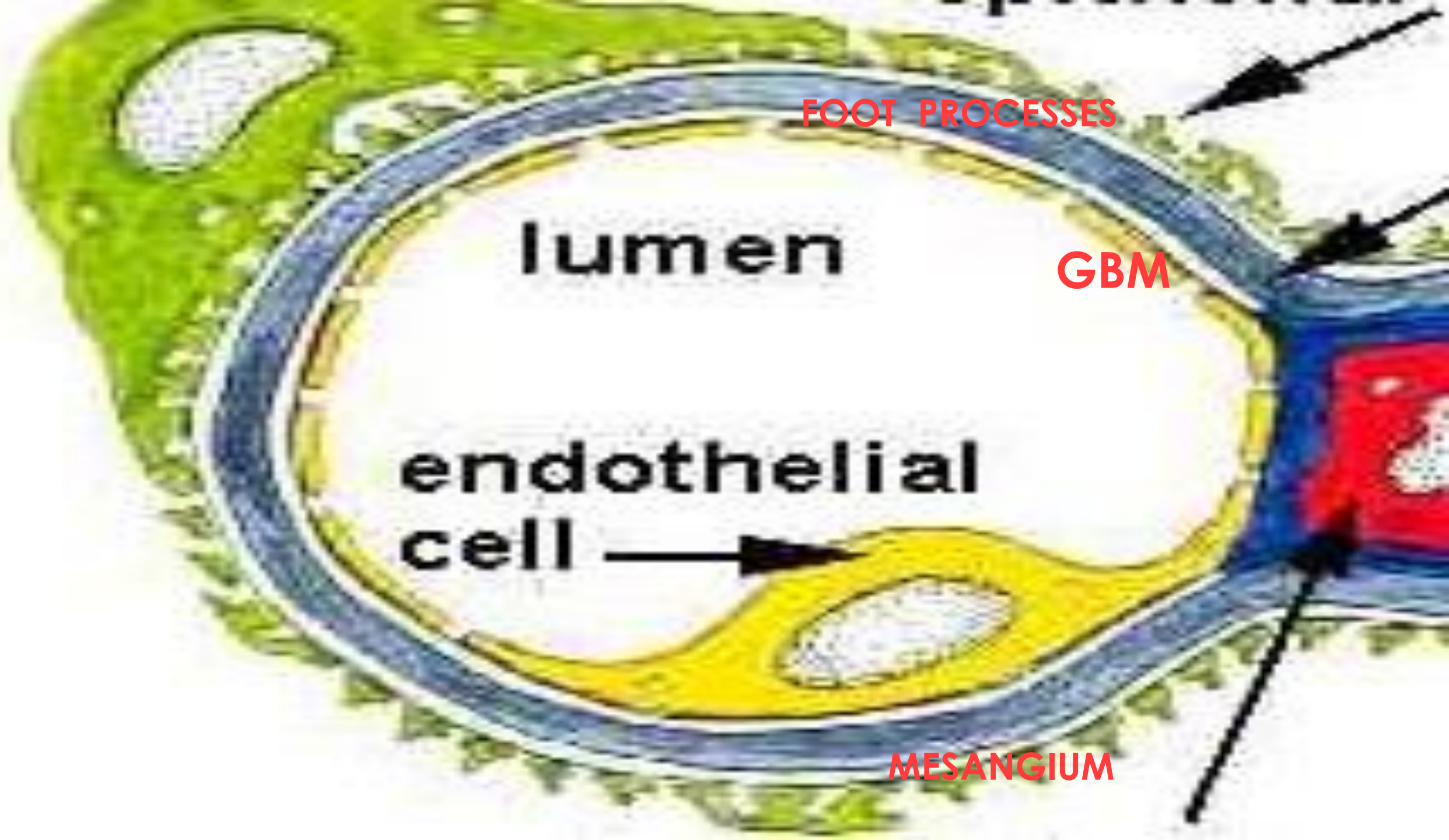
- Develop communication skills and explore psychosocial, and ethical issues in their assessment.
- Use clinical cases to apply knowledge learnt, generate hypotheses, build an enquiry plan, and use evidence to refine their hypotheses, and justify their views.
- Design a management plan, and understand the pharmacological basis of drugs used in the management of common diseases affecting the Renal system.

ACUTE KIDNEY INJURY

OBJECTIVES

- Introduction to the renal pathology
- Acute Kidney Injury
- Definition, Types, Clinical Overview, Causes
- Pathological findings
- Differential Diagnosis





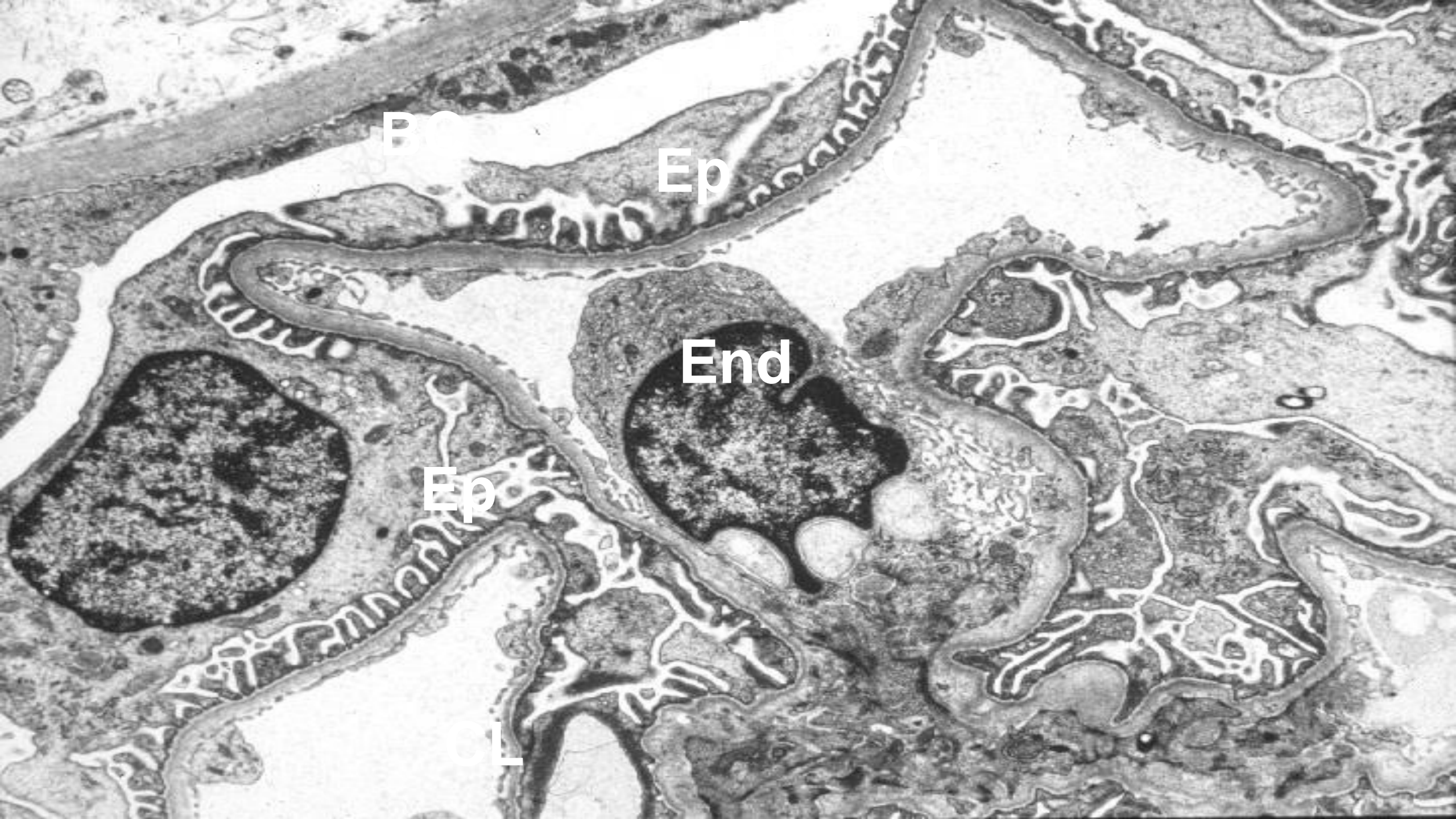
FOOT PROCESSES

lumen

GBM

endothelial
cell

MESANGIUM



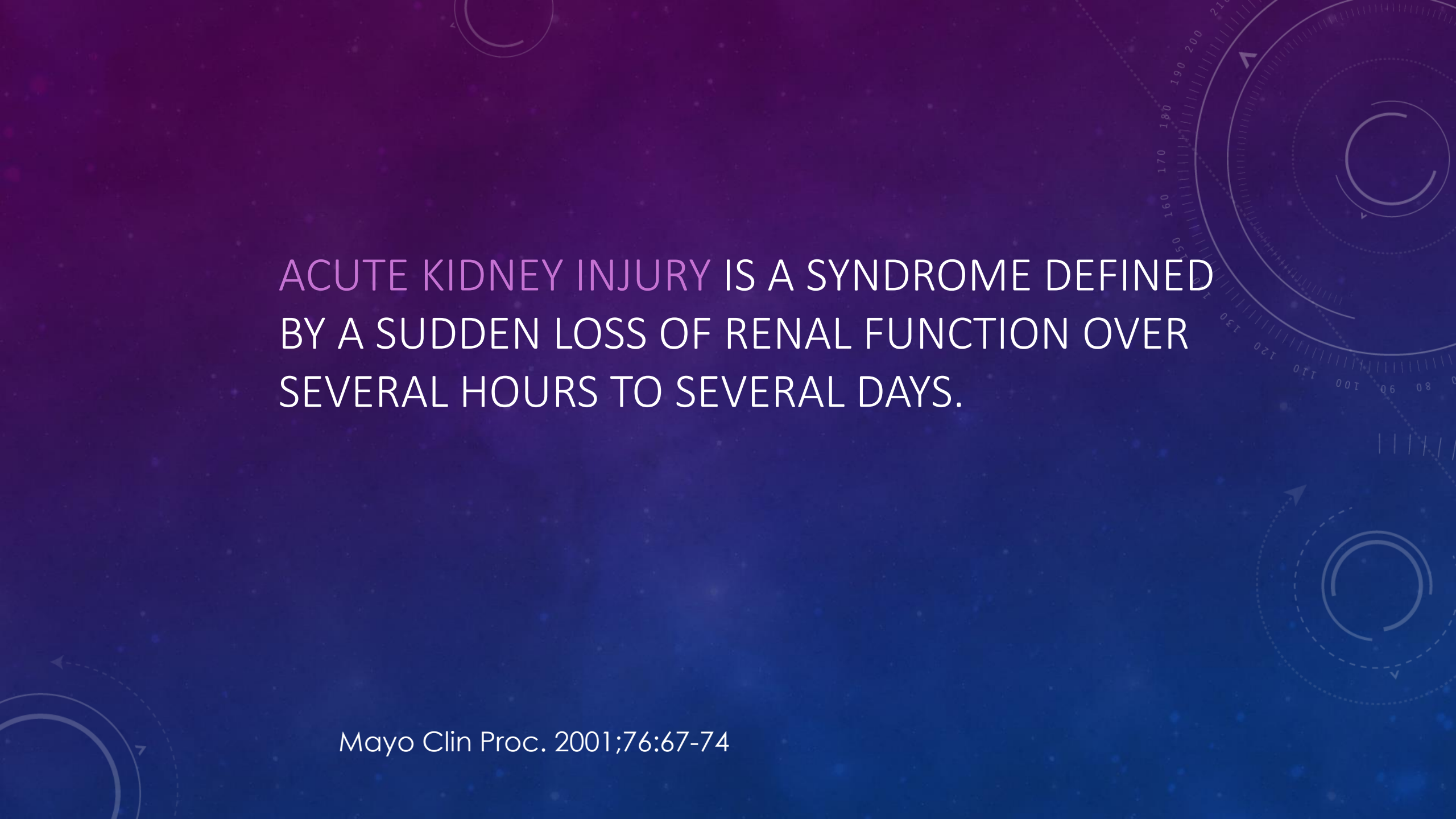
Pc

Ep

End

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L

The background features a dark blue gradient with a subtle pattern of white stars and technical diagrams. On the right side, there are several circular diagrams resembling gauges or dials with numerical scales (e.g., 160, 170, 180, 190, 200, 210) and arrows. On the left, there are dashed circular paths with arrows indicating direction. The overall aesthetic is clean and scientific.

ACUTE KIDNEY INJURY IS A SYNDROME DEFINED
BY A SUDDEN LOSS OF RENAL FUNCTION OVER
SEVERAL HOURS TO SEVERAL DAYS.

Mayo Clin Proc. 2001;76:67-74

WHAT CONSTITUTES THE SYNDROME OF ARF?

- Accumulation of nitrogenous waste products.
- Increased Scr.
- Derangement of extracellular fluid balance.
- Acid-base disturbance.
- Electrolyte and mineral disorders.

WHAT CONSTITUTES UREMIA?

- Renal failure
- Lethargy
- Anorexia
- Dysgeusia
- Pericarditis
- Neuropathy
- Nausea and vomiting
- Pruritis
- Dyspnea

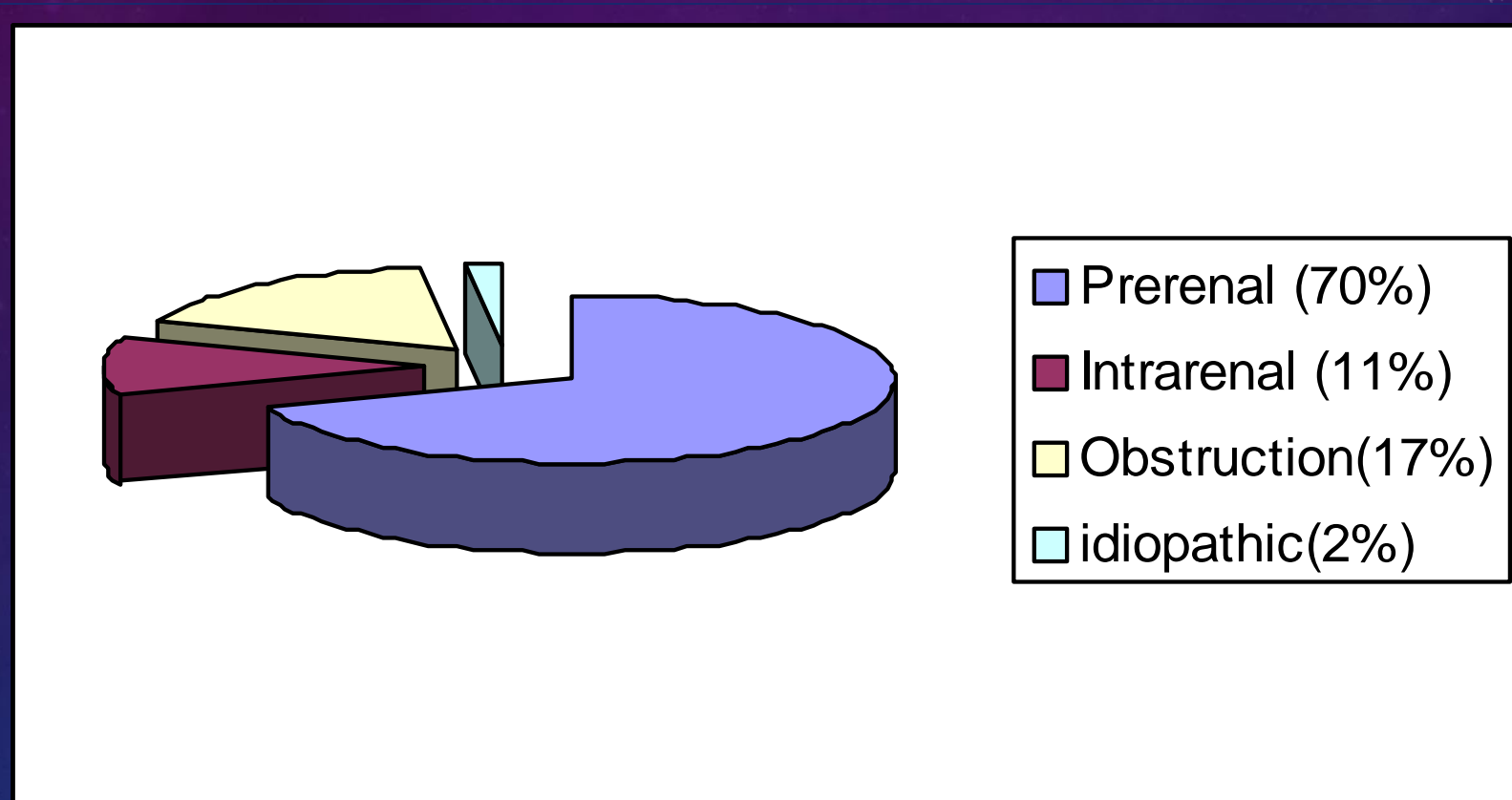
Azotemia: elevated blood urea nitrogen not from an intrinsic renal disease

Oliguria: urine output less than 500cc/24hr.

Nonoliguria: urine output greater than 500cc/24hr.

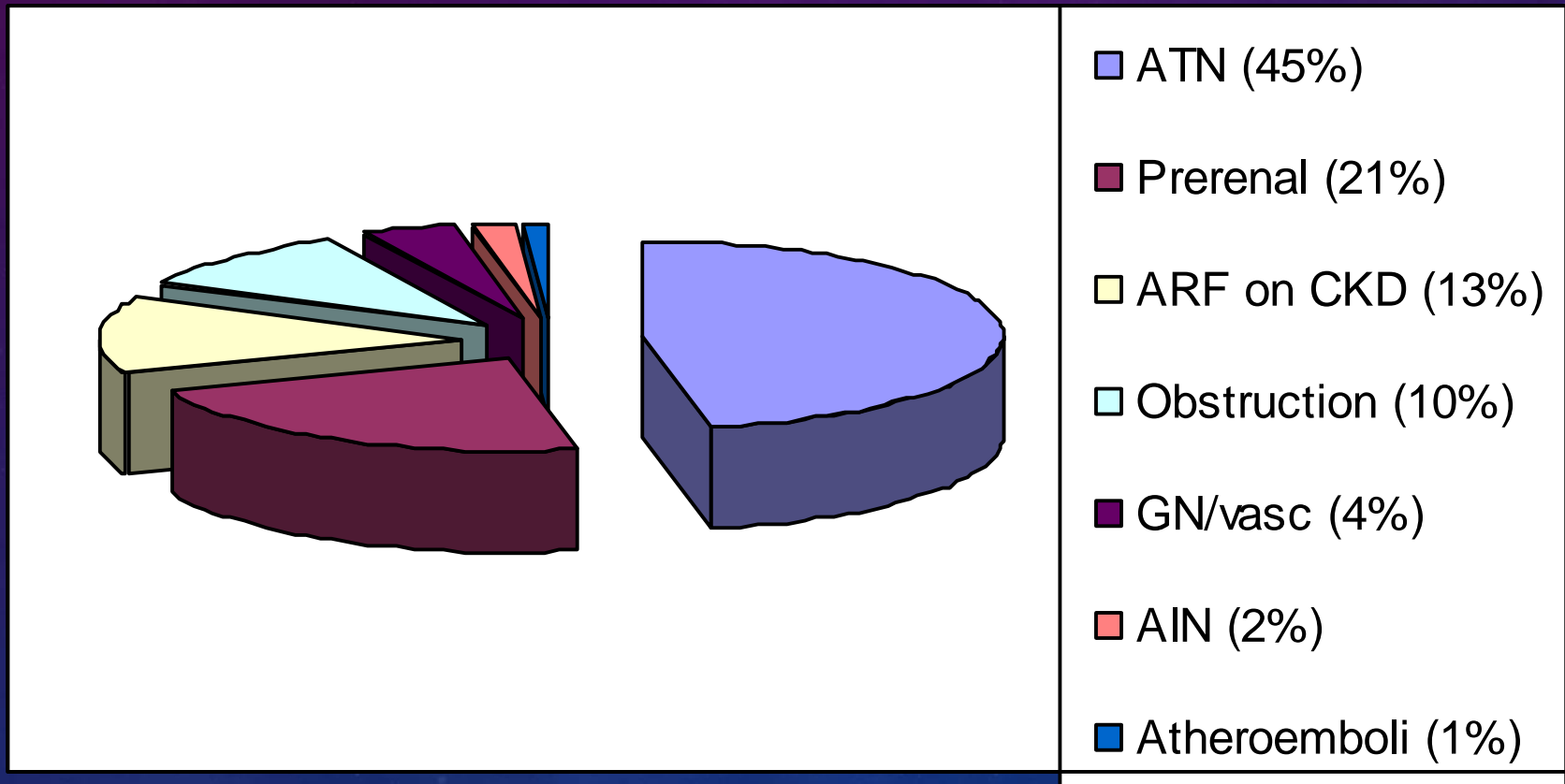
Anuria: urine output less than 50cc/24hr.

ETIOLOGY OF ARF AMONG OUTPATIENTS

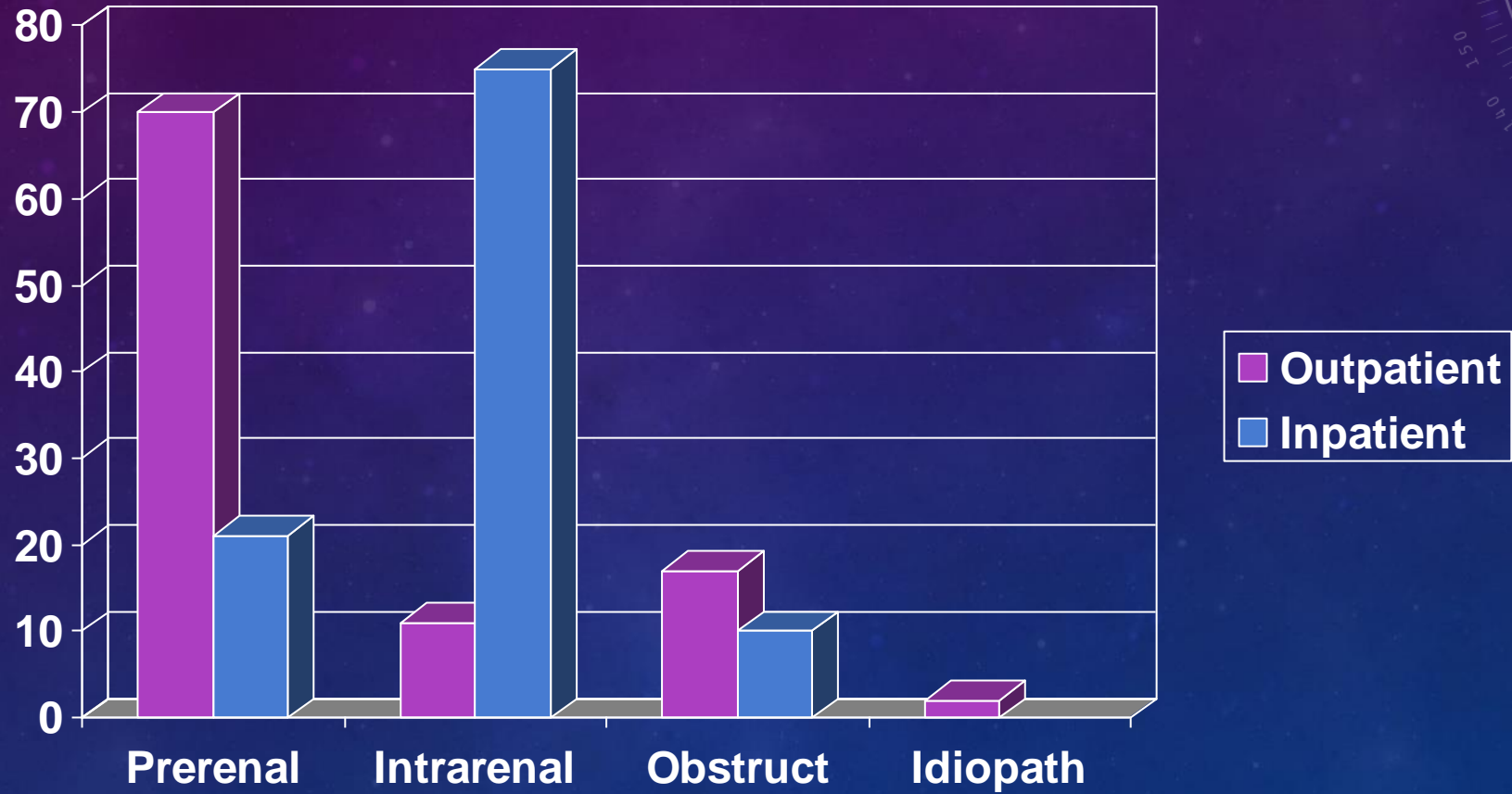


AJKD 17:191-198, 1991

ETIOLOGY OF ARF AMONG INPATIENTS



ETIOLOGY OF ARF



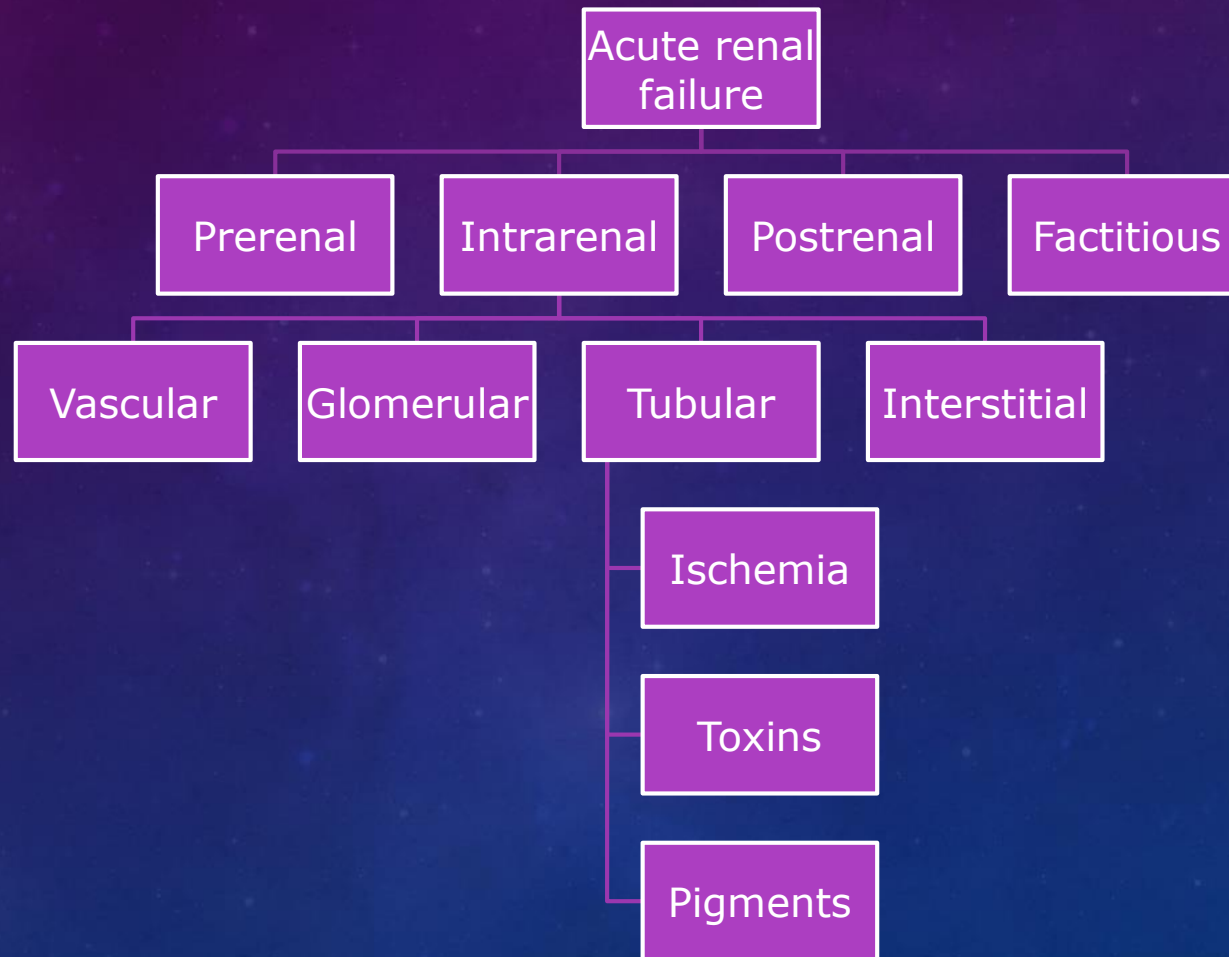
MORTALITY OF ARF

- “Despite technical progress in the management of acute renal failure over the last 50 years, mortality rates seem to have remained unchanged at around 50%.”

PREDICTORS OF DIALYSIS IN ARF

- Oliguria:
 - <400cc/24hr 85% will require dialysis
 - >400cc/24hr 30-40% will require dialysis
- Mechanical ventilation
- Acute myocardial infarction
- Arrhythmia
- Hypoalbuminemia
- ICU stay
- Multi-system organ failure

THE PATHOPHYSIOLOGY OF ARF



PRERENAL ARF (DECREASED RENAL BLOOD FLOW)

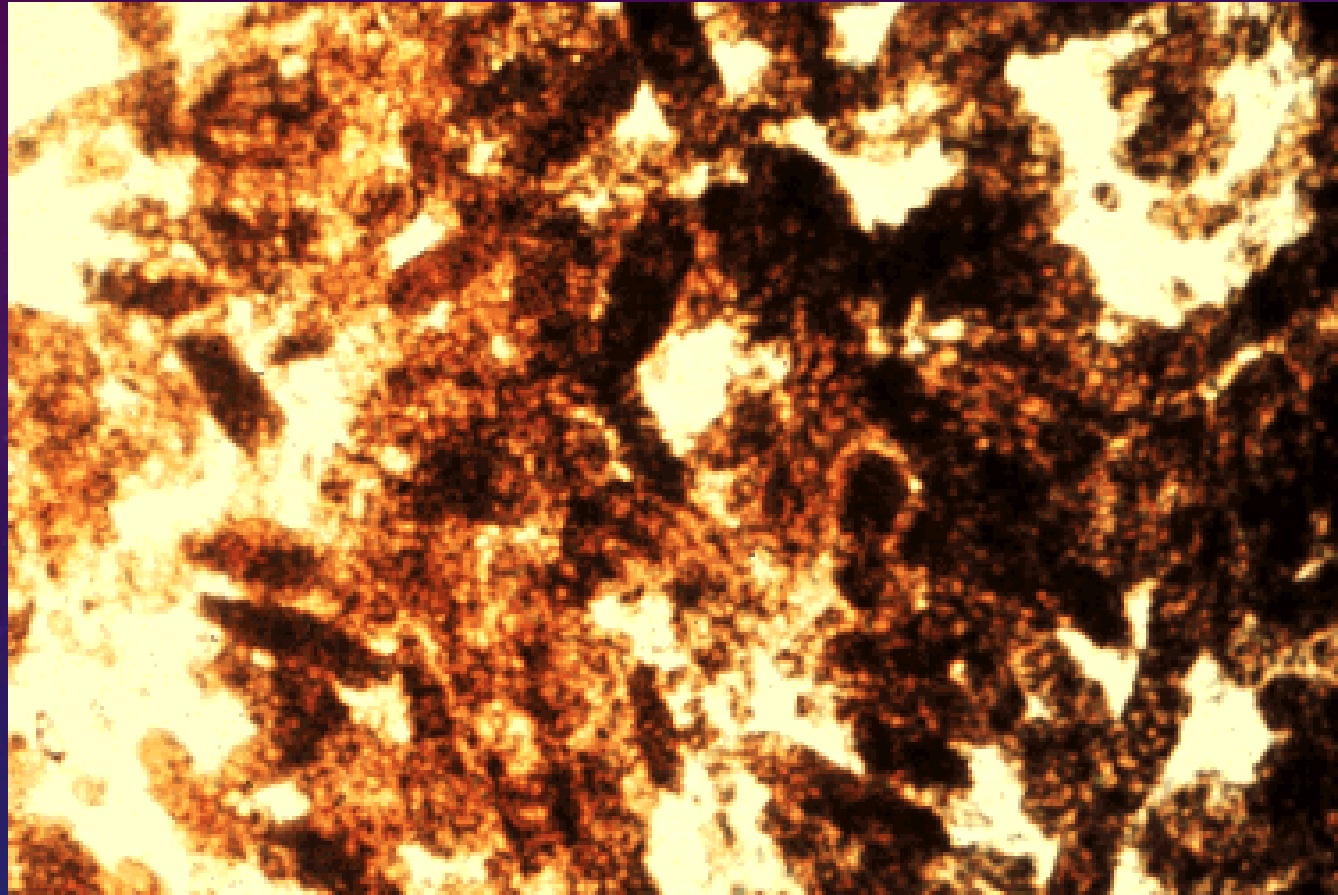
- Hypotension
 - Sepsis, cardiogenic, medication
- Cardiogenic
- Vascular
 - Vasculitis, renal artery compromise, AAA, atheroemboli
- Third Spacing
 - Bowel obstruction, cirrhosis, nephrotic syndrome, major surgery,
- Volume depletion
 - GI losses: vomiting, diarrhea
 - Skin losses: burns, sweat
 - Renal losses: DKA, DI, Addison's, Na wasting
- Drug-induced
 - NSAID, CsA, FK506, ACE, ARB

THERE IS A CONTINUUM FROM
PRERENAL PHYSIOLOGY TO ISCHEMIC
PATHOLOGY.

The background is a dark blue gradient with faint, glowing white and light blue technical graphics. On the right side, there are several circular gauges or dials with numerical scales (e.g., 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210) and arrows. There are also dashed lines and other circular patterns scattered across the background, giving it a scientific or medical aesthetic.

TUBULAR TOXINS

- Antimicrobials: aminoglycosides, vancomycin, foscarnet, pentamidine, amphotericin B
- Chemotherapeutics: cisplatin, mitomycin C, ifosfamide
- Immunotherapy: IVIG
- Complex Sugars: maltose, sucrose, mannitol
- Heavy metals
- Sepsis, hypoxia
- Radiocontrast agents



Sediment in ATN Urine sediment showing multiple, muddy brown granular casts. These findings are highly suggestive of acute tubular necrosis in a patient with acute renal failure. Courtesy of Harvard Medical School.

Uptodate Online 11.2, Rose BD, 2003

ACUTE TUBULAR INJURY IS A
CLINICOPATHOLOGICAL ENTITY: DEFINED BY
1- ACUTE RENAL FAILURE.
2- TUBULAR INJURY/NECROSIS

ACUTE RENAL FAILURE

- I. Acute tubular necrosis (ATN)
- II. Ischemic

- 1. Shock***
- 2. Sepsis***
- 3. Incompatible blood transfusions***
- 4. thrombotic diseases***

ACUTE RENAL FAILURE

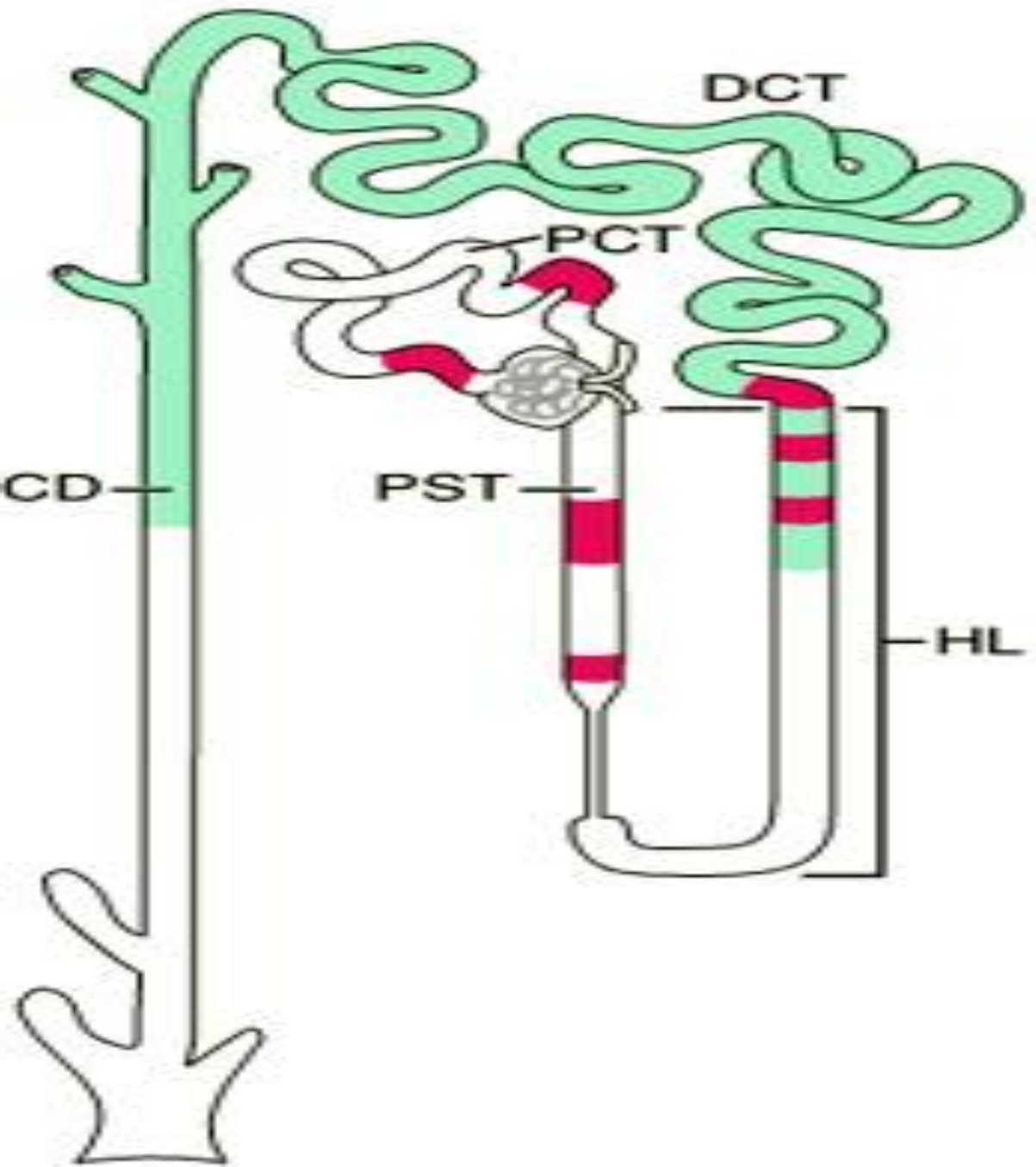
I. Acute tubular necrosis (ATN)

III. Toxic : A- Endogenous: Crush injury- Hemoglobinopathy.
B- Exogenous: Drugs- radiocontrast dye- metals..

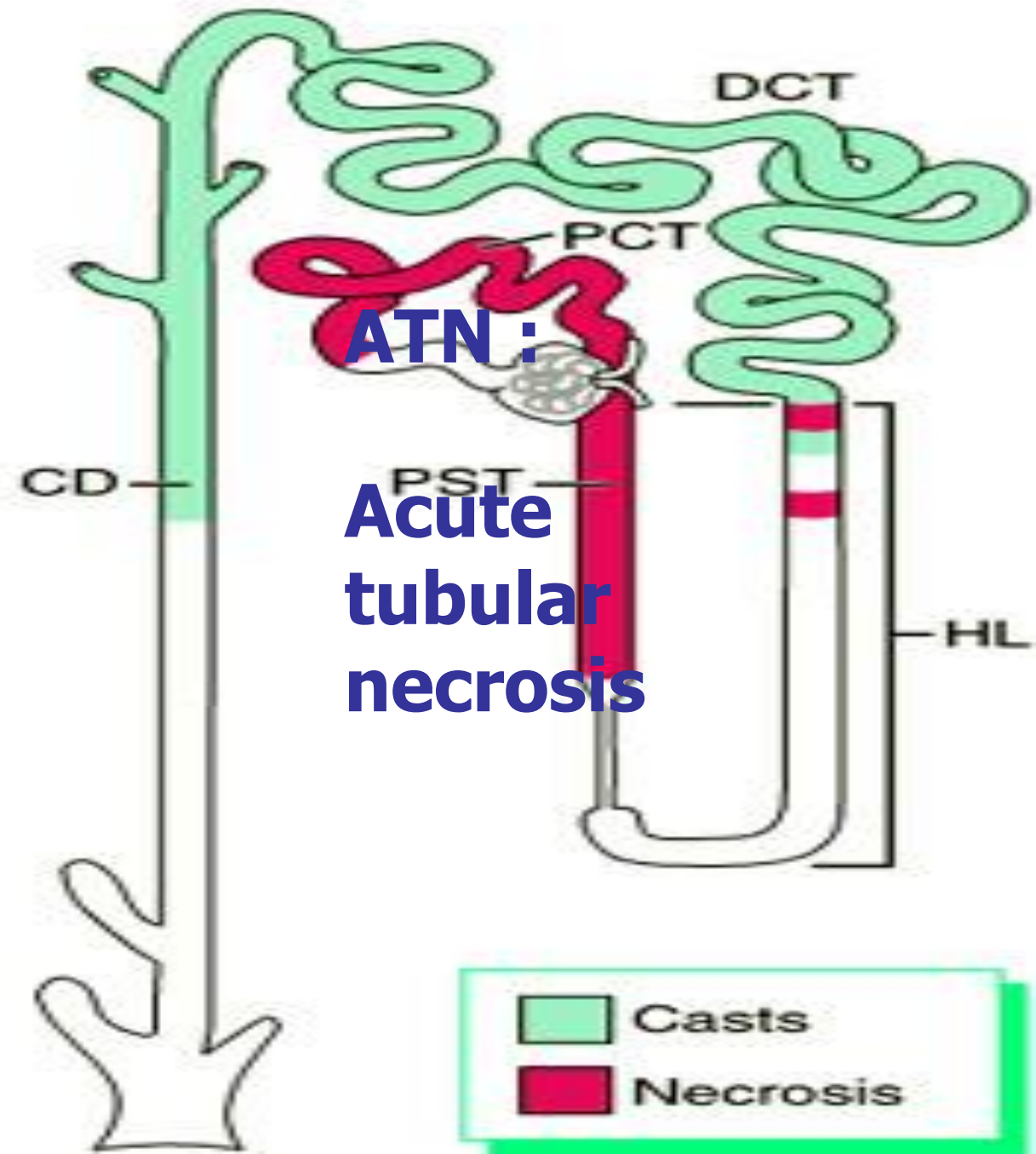
Acute tubular necrosis (ATN)

- ***Clinicopathological entity***
- ***Destruction of tubular epithelial cell***
- ***Clin. acute suppression of renal function
(no urine or below 400 ml/24h)***
- ***Most common cause of renal failure***



ISCHEMIC TYPE

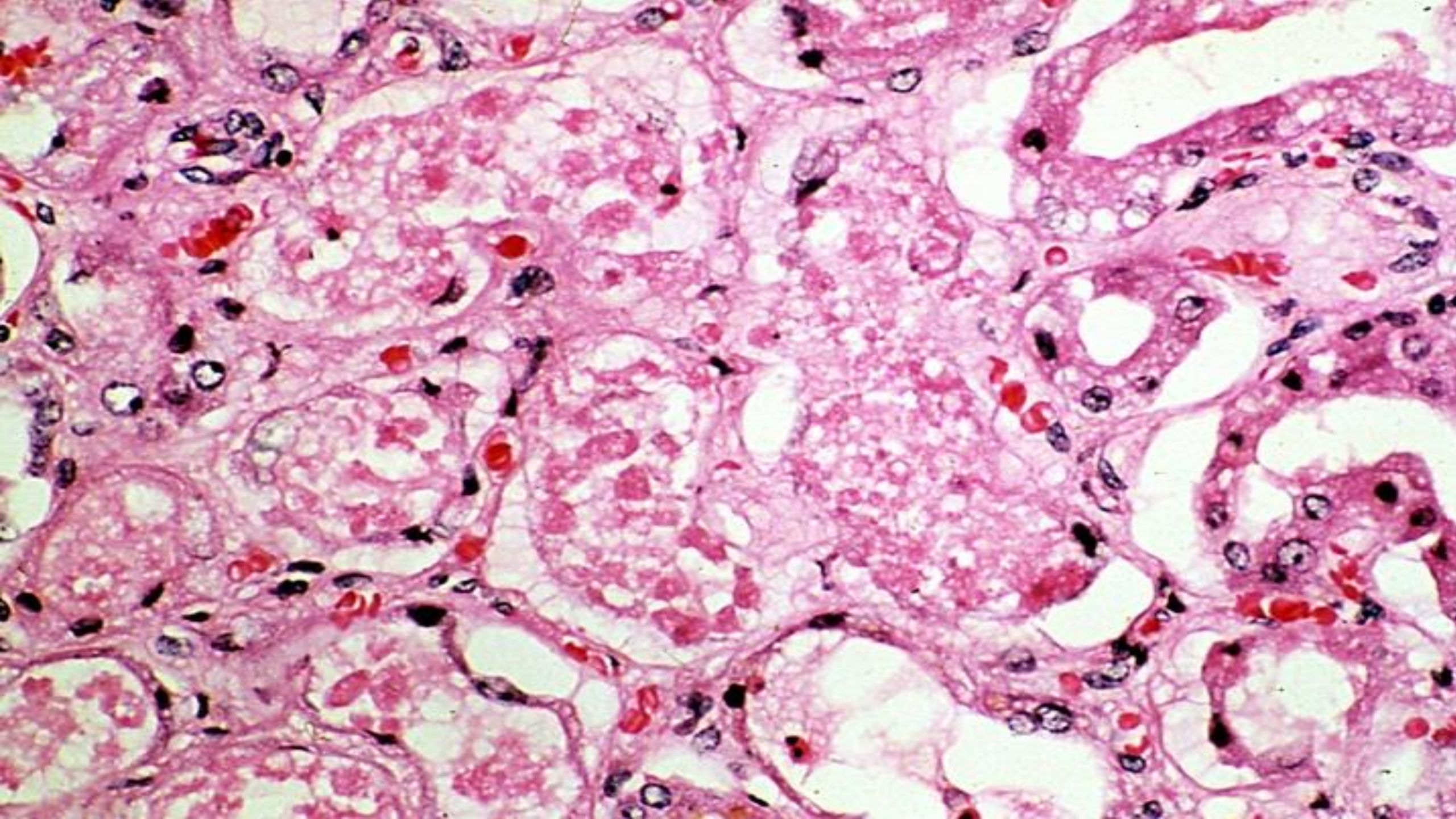


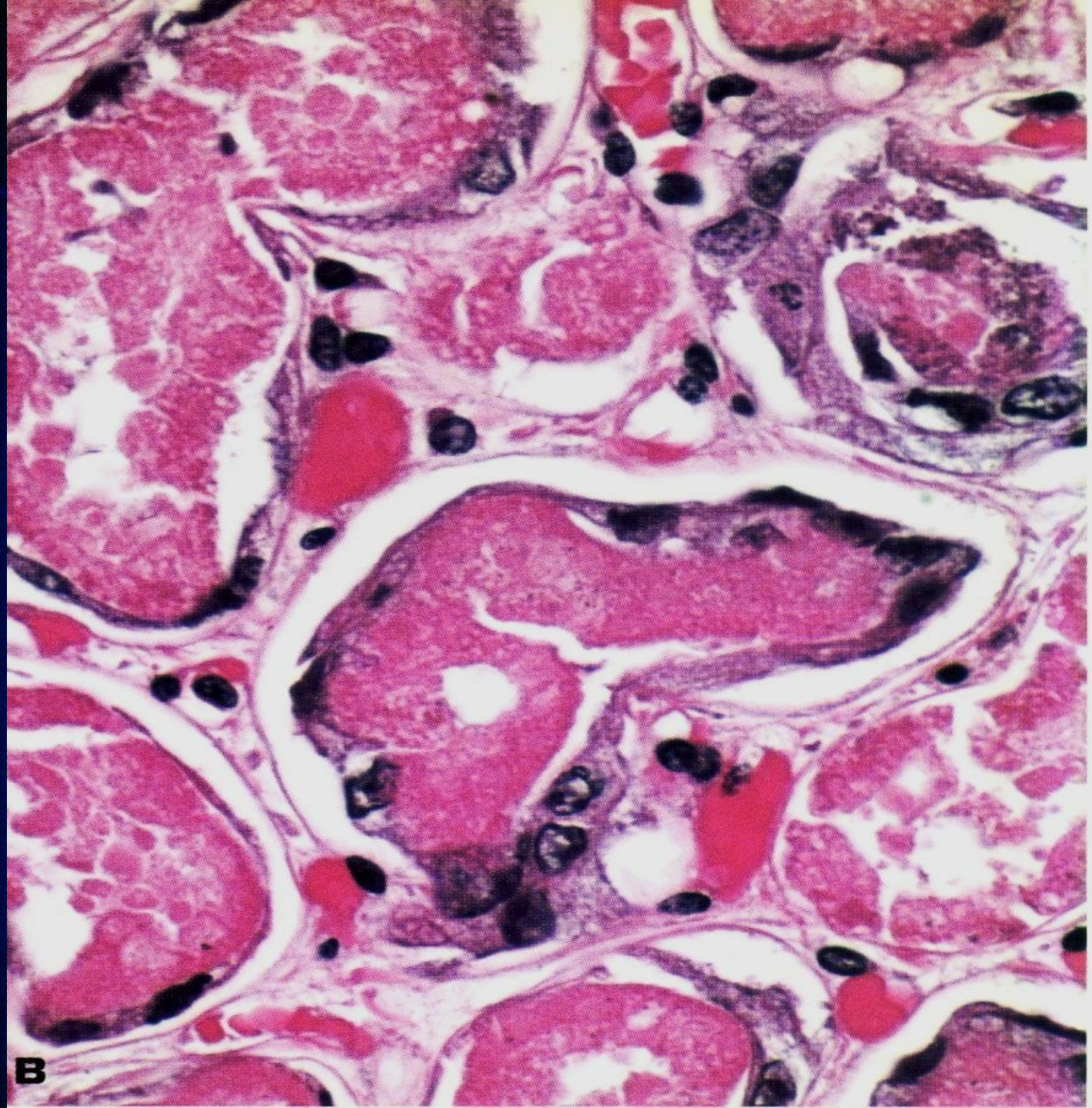
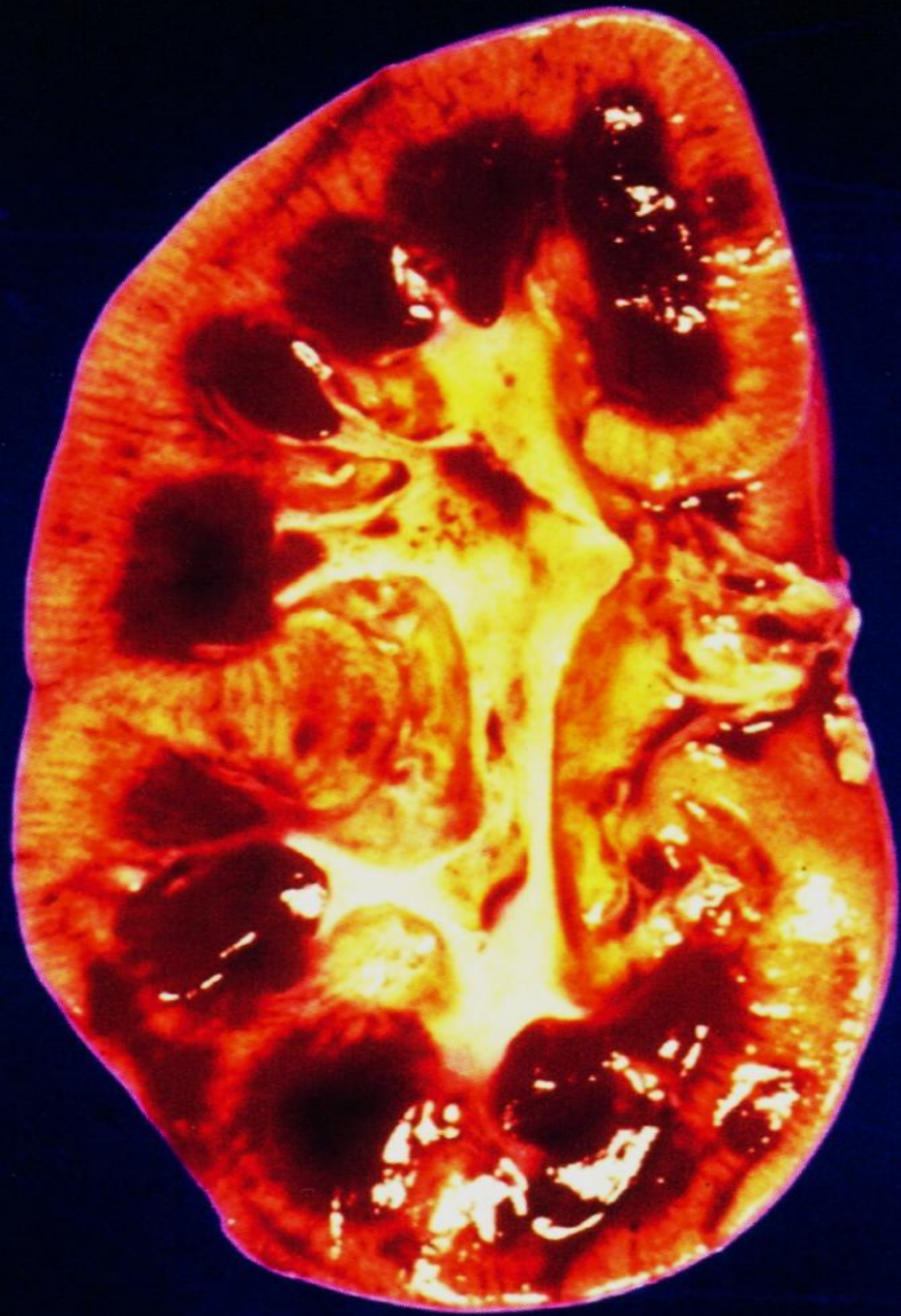
TOXIC TYPE



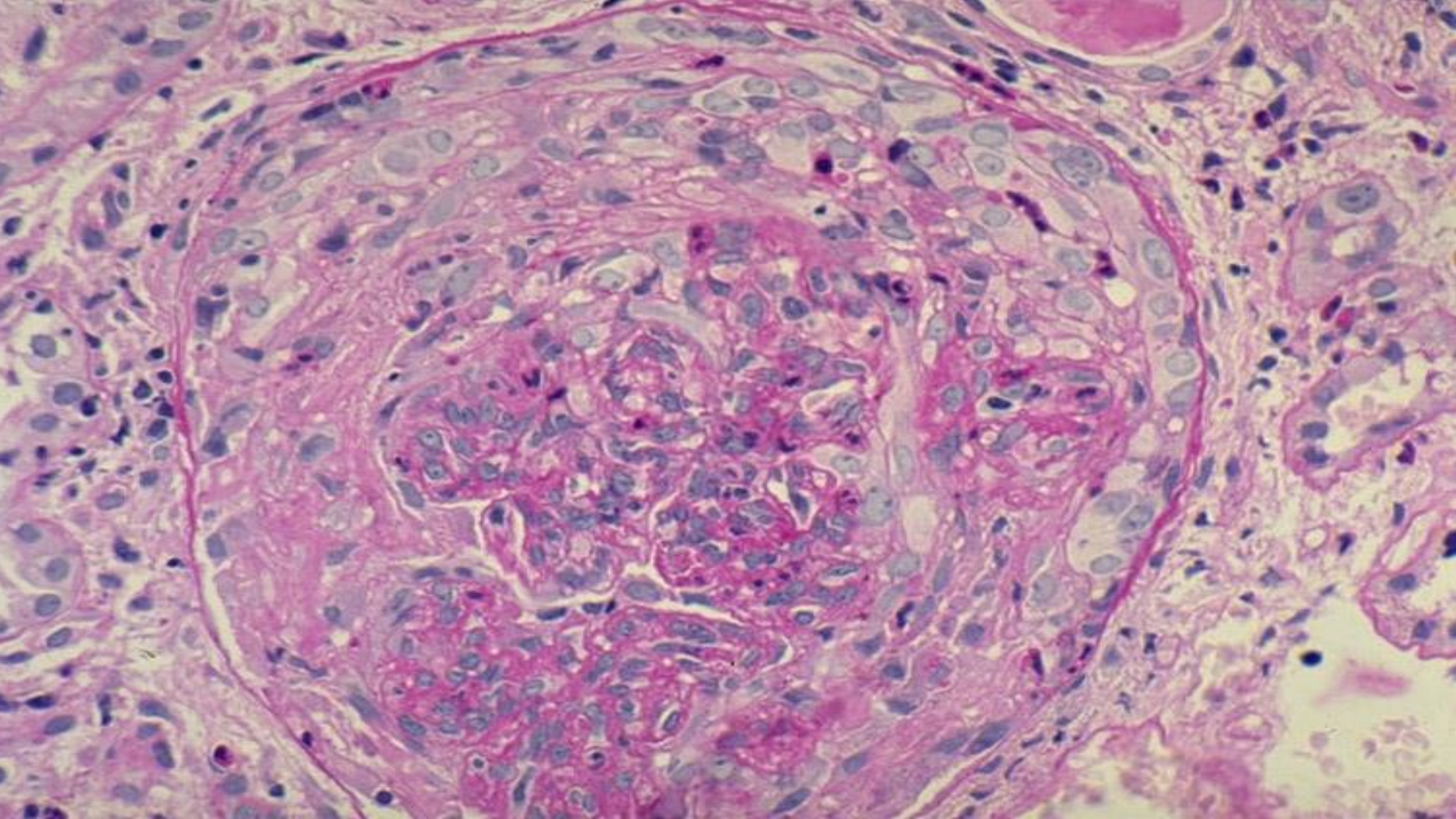
ATN :
Acute tubular necrosis

	Casts
	Necrosis





RPGN (RAPIDLY PROGRESSIVE GLOMERULONEPHRITIS) IS A SYNDROME DEFINED BY THE RAPID LOSS OF RENAL FUNCTION OVER DAYS TO WEEKS DUE TO ACUTE GLOMERULONEPHRITIS.



ACUTE KIDNEY INJURY

- Homework :
- 1- Autosomal dominant polycystic kidney disease
- 2- Autosomal recessive polycystic kidney disease
- 3- Renal dysplasia