Renal papillary necrosis

Definition
- **Ischemic or chemical injury to the top of Malpighi’s pyramid** which causes necrosis, detachment, and expulsion of the papillae into the urine. May be localized or diffuse and entails unilateral (obstruction, infection, renal vein thrombosis) or bilateral (analgesic nephropathy, NSAIDs, DM) involvement.

Etiology
- When an infection of the renal pyramids associated with renal vasculopathy or UT obstruction occurs, subsequent renal papillary necrosis is likely. Patients with diabetes, sickle cell anemia, chronic alcoholism, and vascular disease are especially prone to this complication.

Symptoms
- **Crisis of renoureteral pain.**
- **Hematuria.**
- **Obstruction of the UUT.**
- **Fever.**
- **Septic shock** with a tendency to ARF and **papillary ureteral obstruction**, especially in diabetics.

Diagnosis
- **Urinalysis:** papillary fragments (in few cases), erythrocytes, and proteinuria.
- **Urine culture:** needed to rule out the presence of infection.
- **IVP:** calyceal deformities can be of two types:
  - **Medullary:** central necrosis of the papillary tip causing a round/oval cavity.
  - **Papillary:** with necrosis of larger portion of the papillae. Detachment occurs in the area of the calyceal fornices to give a triangular-shaped image.
- **CT scan:** possible findings include:
  - Poorly defined medullary areas that do not fill with contrast medium.
  - Persistent collections of contrast medium.
  - Filling defects in the collecting system.
  - Calcification in advanced cases.
- **US:** urinary obstruction secondary to sloughed papillae. Necrotic papillae may appear as soft tissue masses within the collecting system or ureter.

Treatment
- **Of the original disease**, with control of diabetes or infection, discontinuation of analgesics, NSAIDs, etc.
- **Hemodynamic support measures.**
- **Endourological procedures:** ureteral catheterization or removal of detached papillae.