Renal vein thrombosis (RVT)

- **Involves the formation of a thrombus** in the interlobar, arcuate, or renal veins that spreads to the renal vein and the cava. 80% occur in children, especially infants.
- **More common in males;** 2/3 of cases occur bilaterally.

**Etiology**

- **Endothelial damage:** external or iatrogenic trauma (during phlebography), renal transplant, infiltration by renal cell carcinoma, vasculitis, hyperhomocysteinemia.
- **Stasis:** dehydration, severe bleeding, hypoxia during labor, and maternal diabetes mellitus are the most common causes of RVT in infants. In adults, other causes are the torsion of the renal vein after transplant or its compression by a retroperitoneal mass.
- **Hypercoagulability:** nephritic syndrome is the most common cause of RVT in adults. Other causes include sepsis, giving birth, metastatic tumors, oral contraceptives, changes in coagulation factors (deficiencies in proteins C and S, antithrombin III, prothrombin, or Leiden factor V), primary or secondary (to systemic lupus) antiphospholipid syndrome, Behçet’s disease, or HIV nephropathy. 53% of infants with renal vein thrombosis have at least one prothrombotic risk factor.

**Symptoms**

- **Classic triad:** abdominal mass, hematuria, thrombocytopenia. All three appear simultaneously in only 23% of newborns.
- **Other signs and symptoms:** proteinuria, edema, ARF, hypertension, pulmonary embolism.

**Diagnosis**

- **Analysis:** uremia, proteinuria, thrombocytopenia, hematuria, prolonged coagulation.
- **Doppler ultrasound:** detects intrarenal or intracaval thrombus and shows irregular hyperechogenic images of the kidney secondary to hemorrhage and subsequent infarction. There may be flow in the renal vein and its main branches, but with increased resistance in the arterial branches due to thrombosis of the small intrarenal veins.
- **IVP:** detects poor renal function on the affected side(s).
- **DMSA:** very useful in children to detect low kidney function.
- **Angio-CT:** the exam of choice to assess the extent of the thrombus. Alternatives include MRI (avoiding the use of nephrotoxic contrast media) or phlebography.

**Treatment**

- **Bilateral cases or involvement of the vena cava:** anticoagulation with low molecular weight heparin and support measures. If there is no improvement, the use of thrombolytic agents or the performance of a thrombectomy or even a nephrectomy must be assessed.
- **Unilateral cases without extension of the thrombus into the cava:** support measures and antimicrobials. If there are prothrombotic risk factors, anticoagulation may be initiated.

**Prognosis**

- **The outcome is often poor,** causing irreversible damage in many cases with renal atrophy, CRF, and hypertension. Sometimes there is spontaneous resolution without complications.