



Pathology of Renal Transplantation

Objectives:

- ▶ Recognize the concept of renal allograft.
- ▶ Describe the pathology of rejection
- ▶ Differentiate between acute and chronic rejection.
- ▶ Recognize the principal infections inherent to renal transplantation.
- ▶ Recognize acute and chronic drug toxicity.

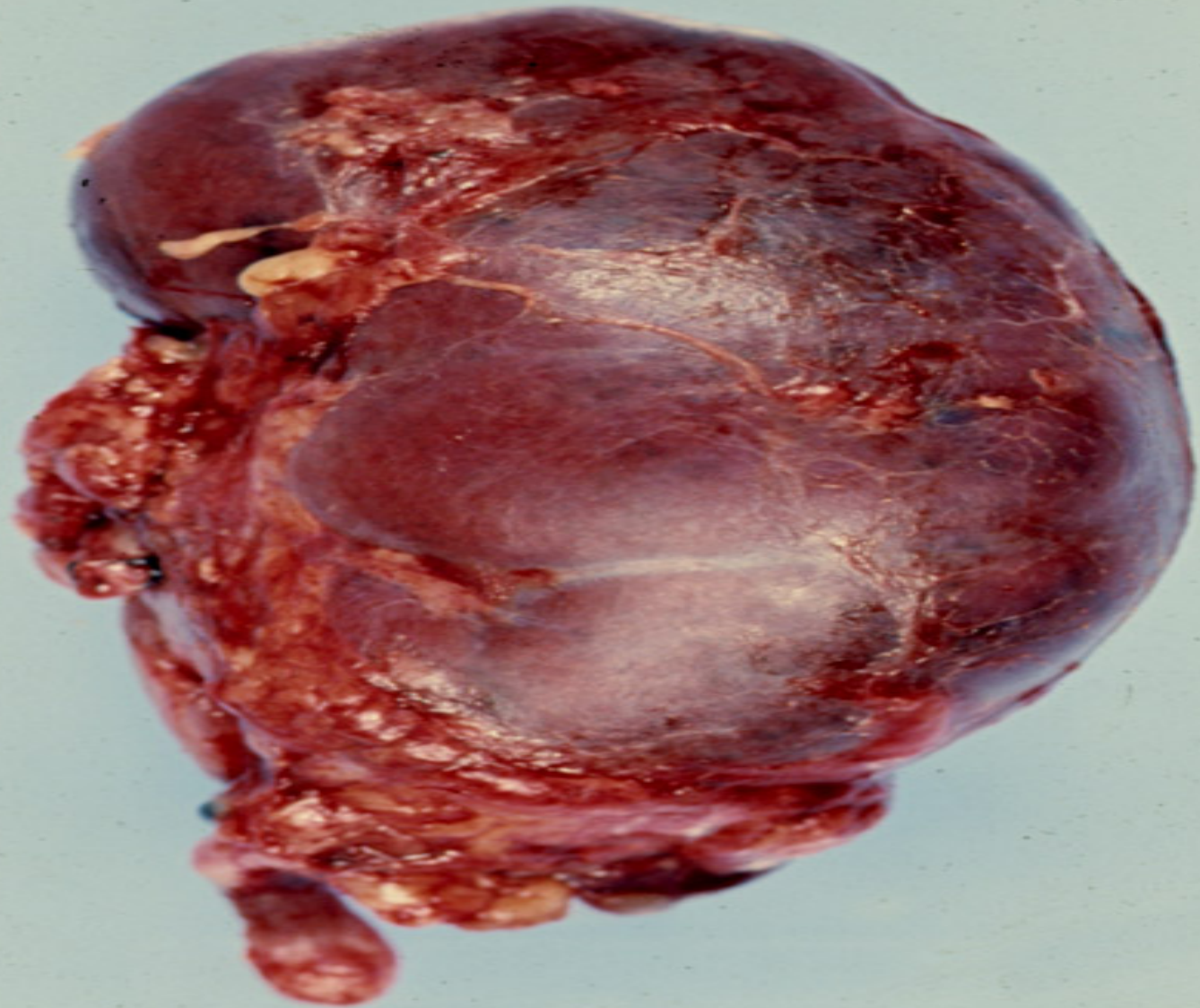


Renal transplantation

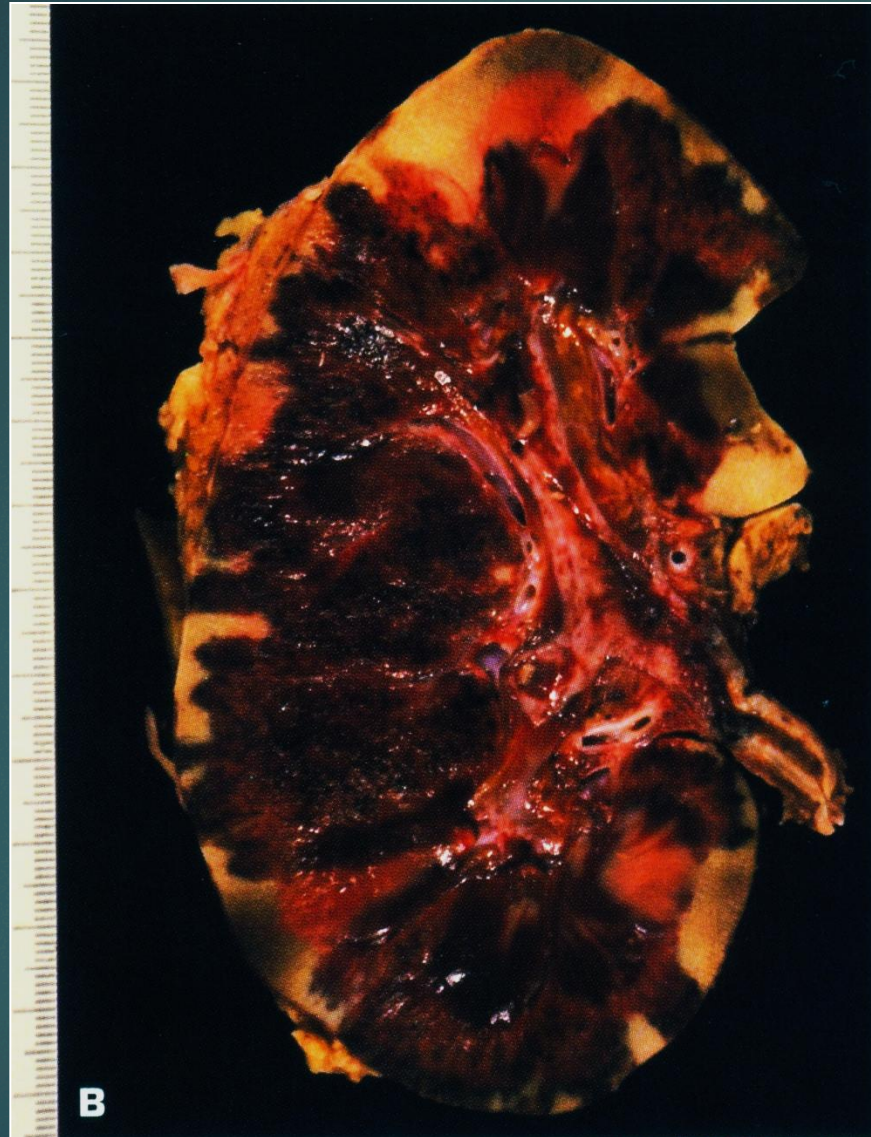
Note the two end-stage native kidneys in normal position, the atrophic first donor kidney (lower left), and the larger second donor kidney (lower right).

The Banff classification: diagnostic categories

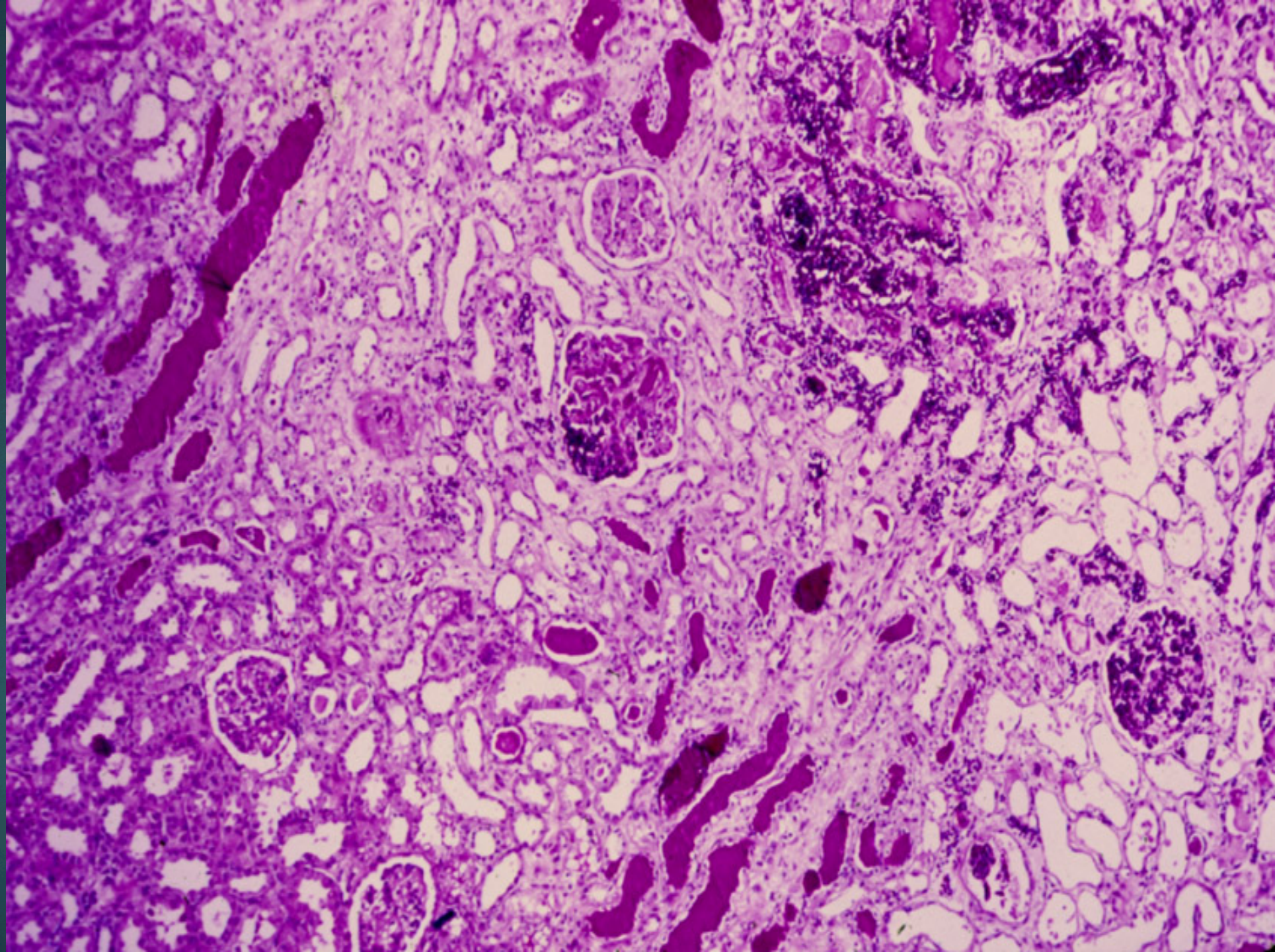
- ▶ Normal
- ▶ Hyperacute Rejection
- ▶ Borderline changes (“very mild acute rejection”)
- ▶ Acute Rejection(Tcell, Antibody-mediated)
- ▶ Chronic Rejection
- ▶ Others



cm 1 2 3 4 5 6 7 8 9 10
SPECIMEN S-77-5847 4 DATE 5/25/77



Subtotal renal infarction
due to **hyperacute**
(antibody-mediated)
rejection.

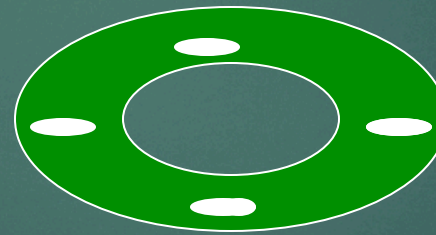


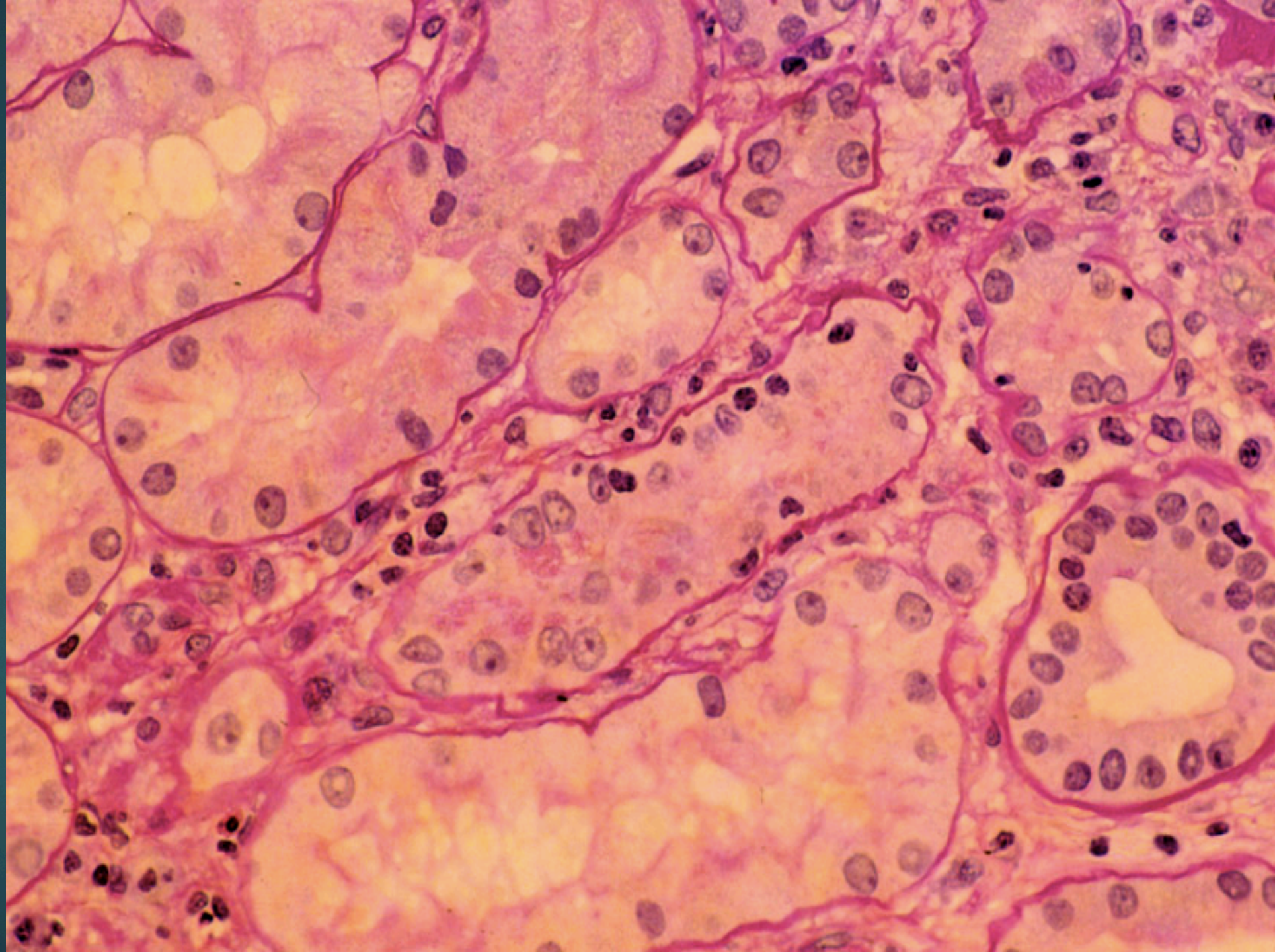


Severe acute rejection of donor kidney. Focal infarcts are present.

The Banff classification

- ▶ Borderline changes (Suspicious for Acute Rejection)





The Banff classification

- ▶ Grade I A :→ Mononuclear interstitial inflammation(>25%).

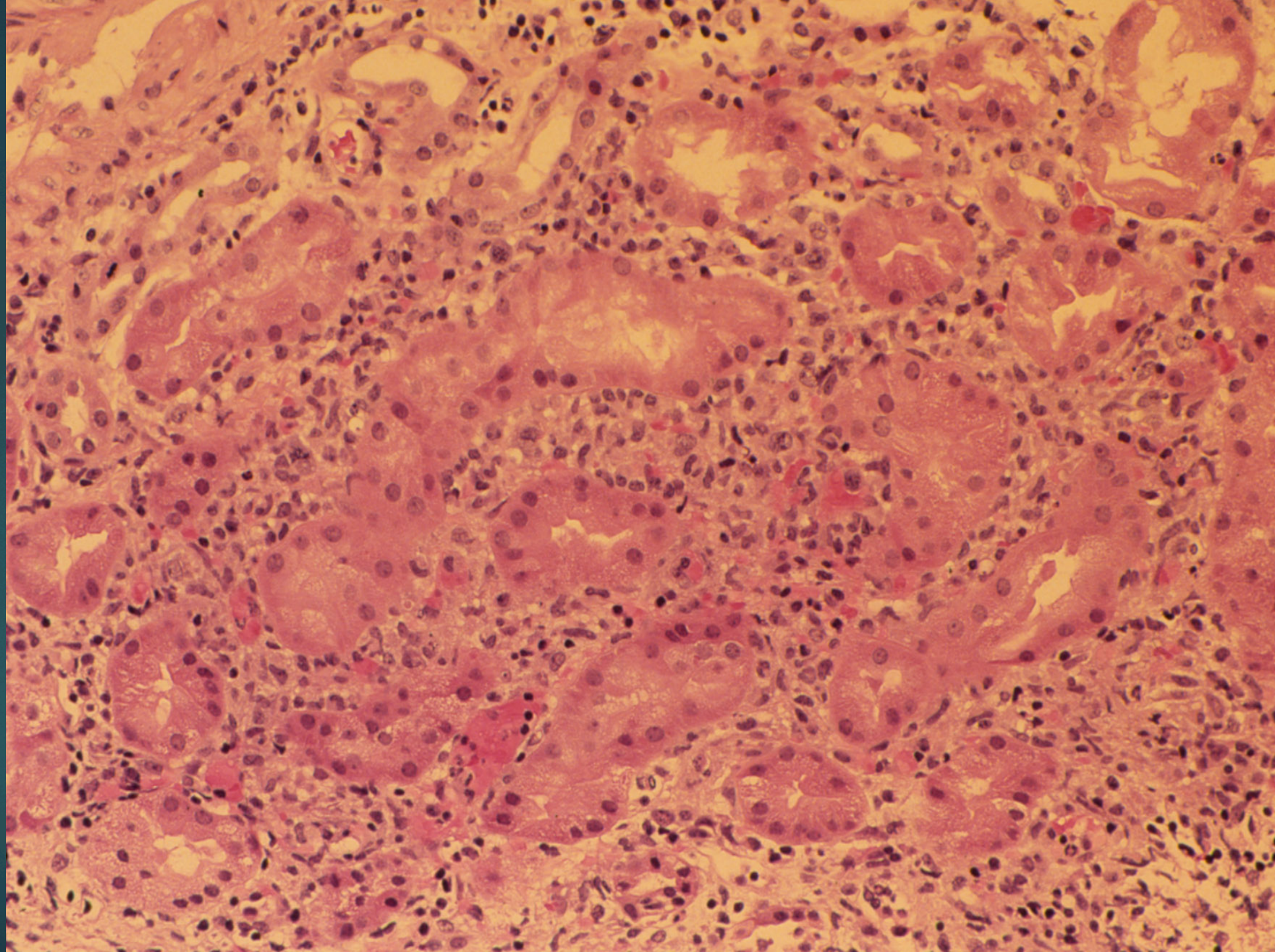
→+ Moderate tubulitis.(5 to 10)

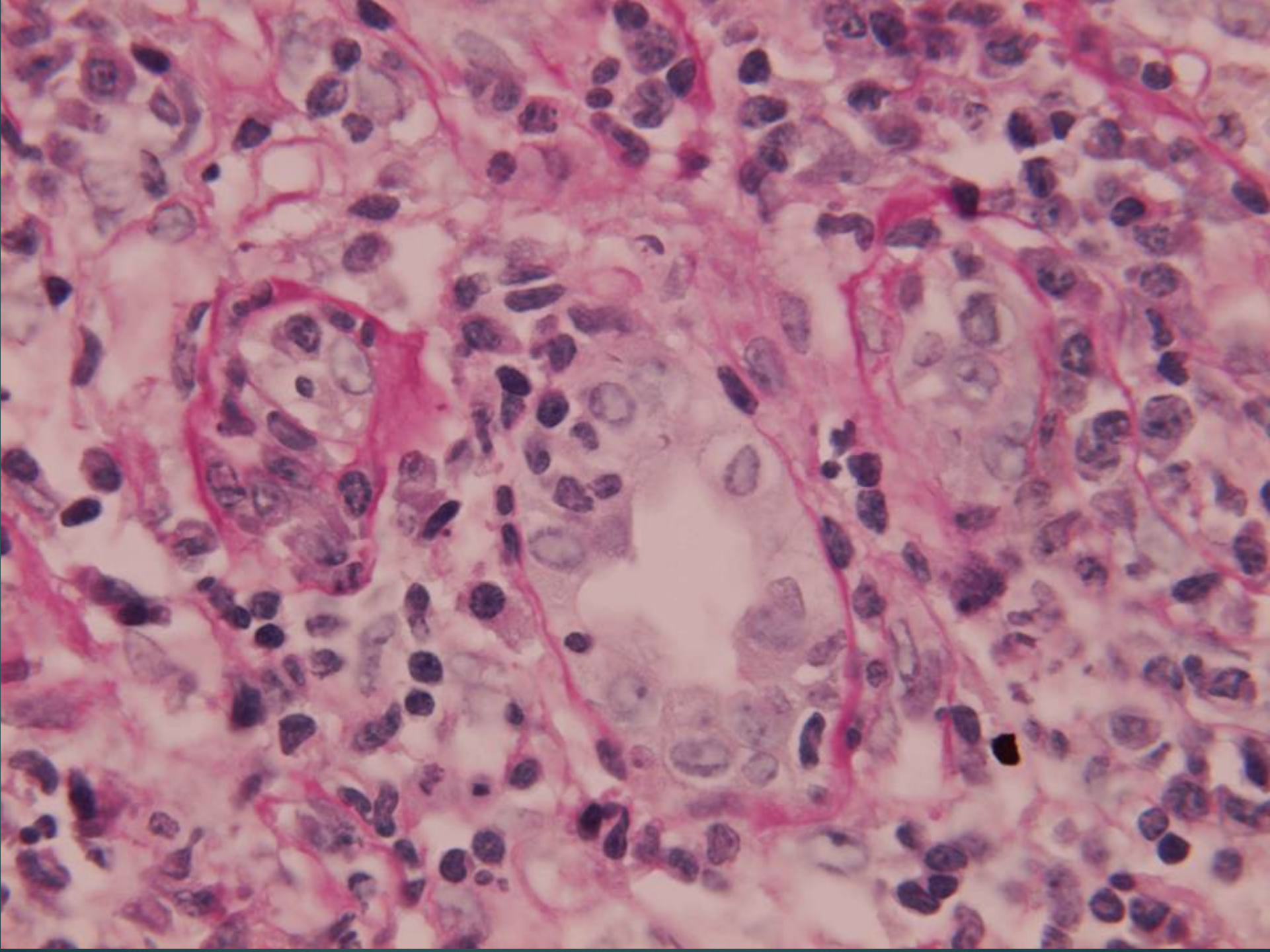


- ▶ Grade I B :→ Mononuclear interstitial inflammation(>25%)

→+ Severe tubulitis(>10)

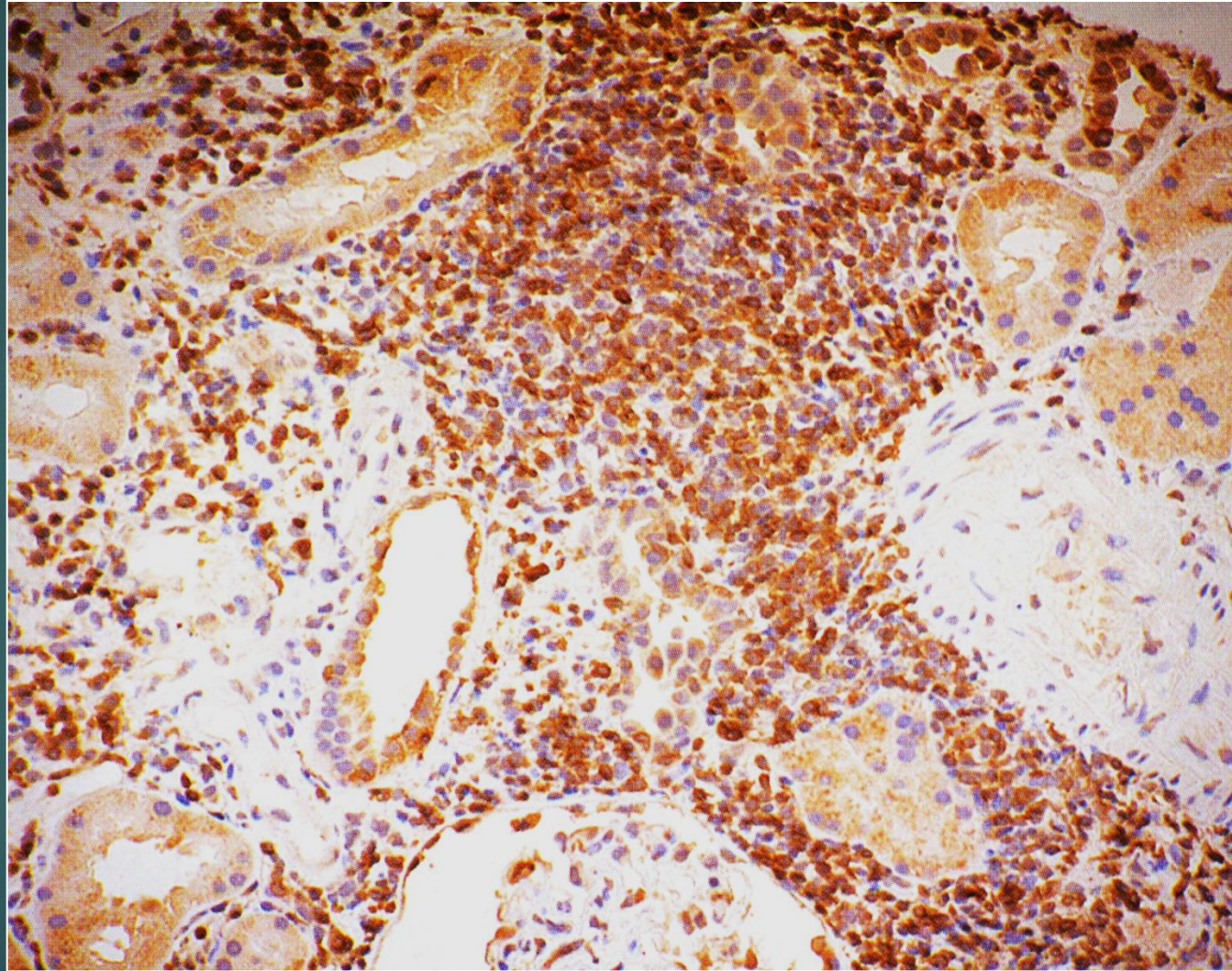






Acute rejection.

The interstitial infiltrate consists of T cells mainly.



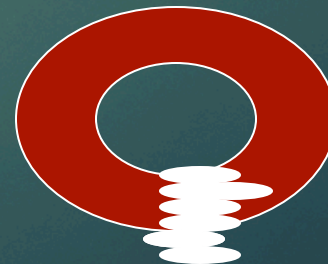
The Banff classification

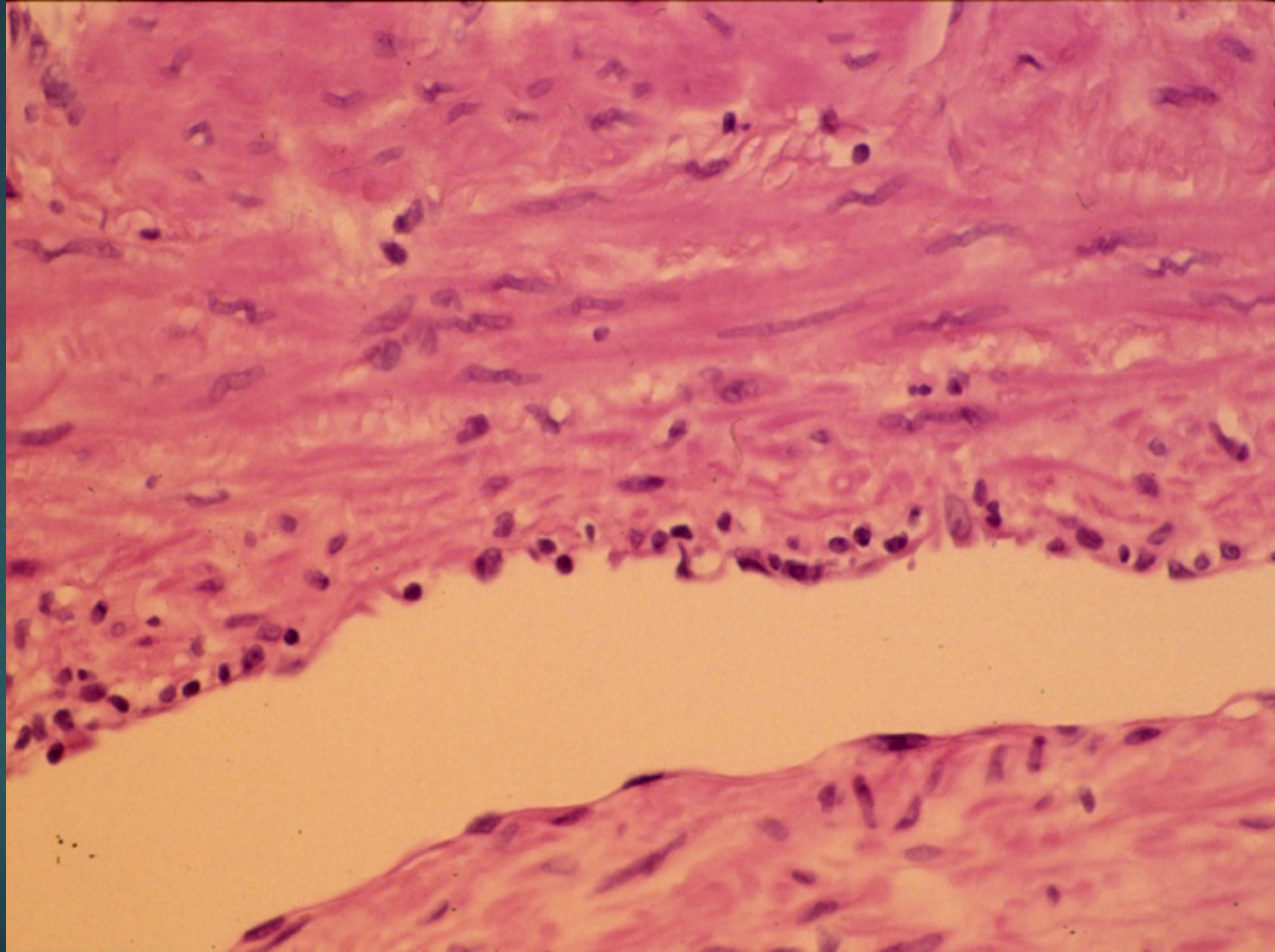
- ▶ Grade II A

Mild to Moderate intimal arteritis :

- ▶ Grade II B

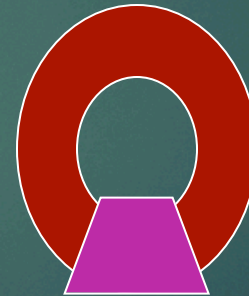
Severe intimal arteritis





The Banff classification

- ▶ Grade III → Transmural arteritis and/or fibrinoid necrosis.

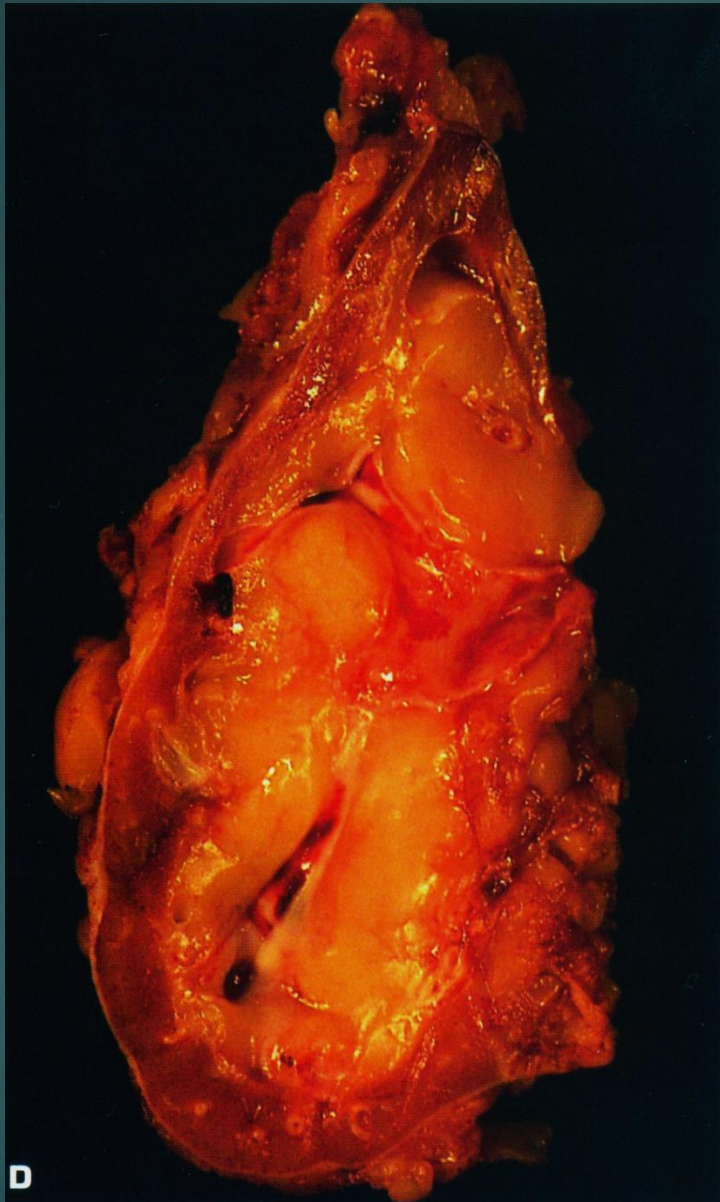


The Banff classification

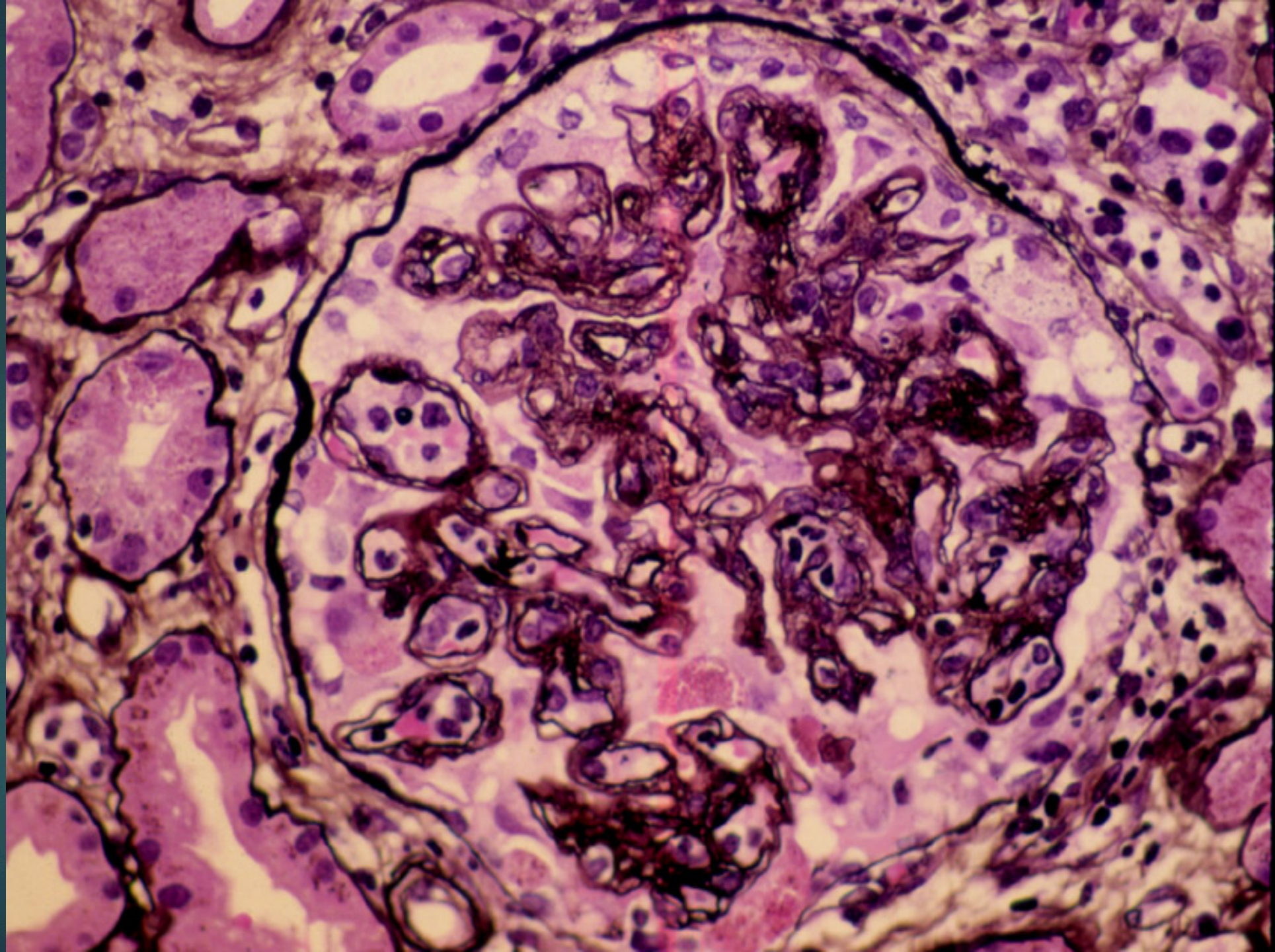


Chronic Allograft Nephropathy:

- ▶ Grade I (Mild)
- ▶ Grade II (Moderate)
- ▶ Grade III (Severe)

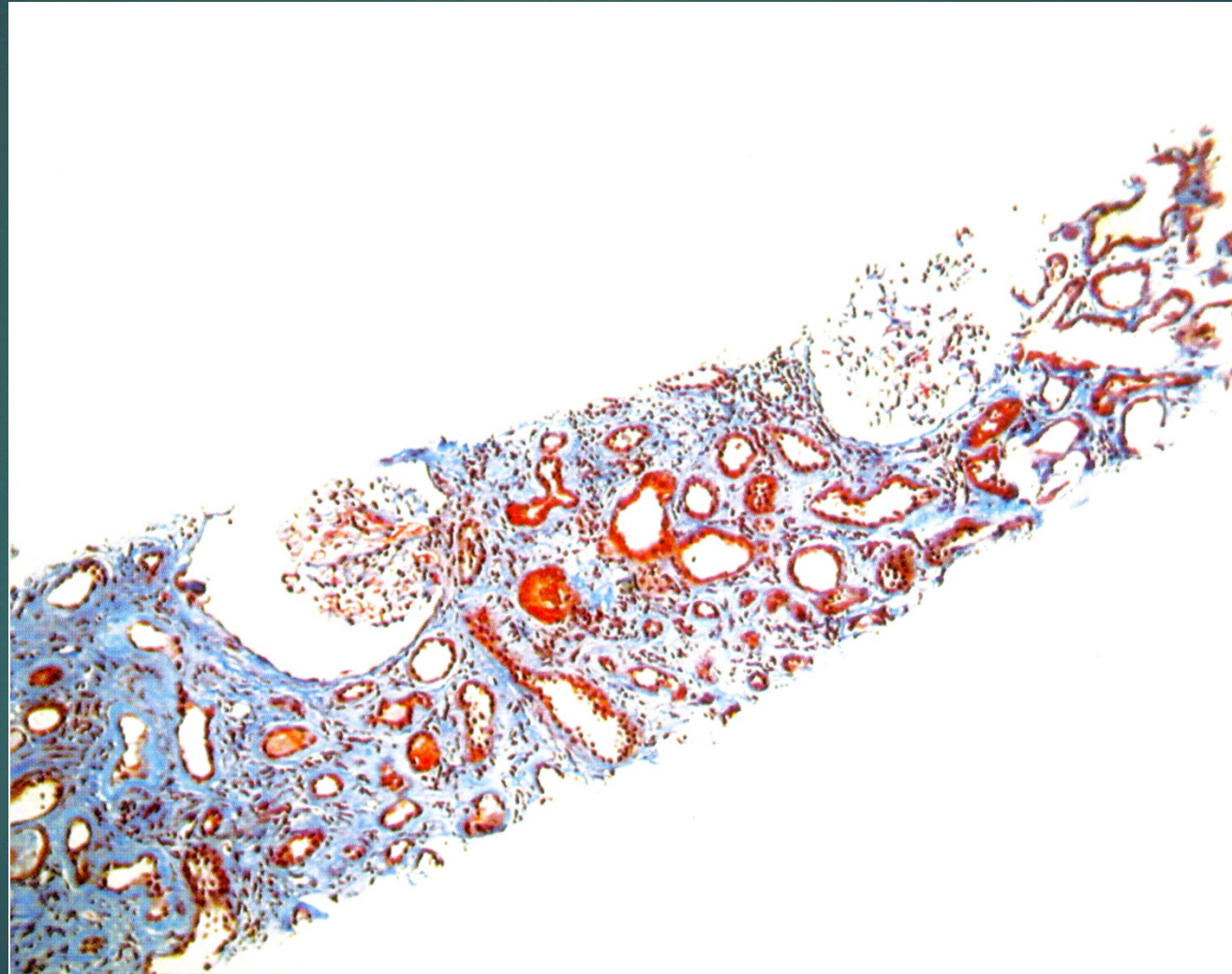


**Severe chronic rejection.
(graft arteriopathy).** Note the
severe parenchymal atrophy
and the thick-walled arteries.



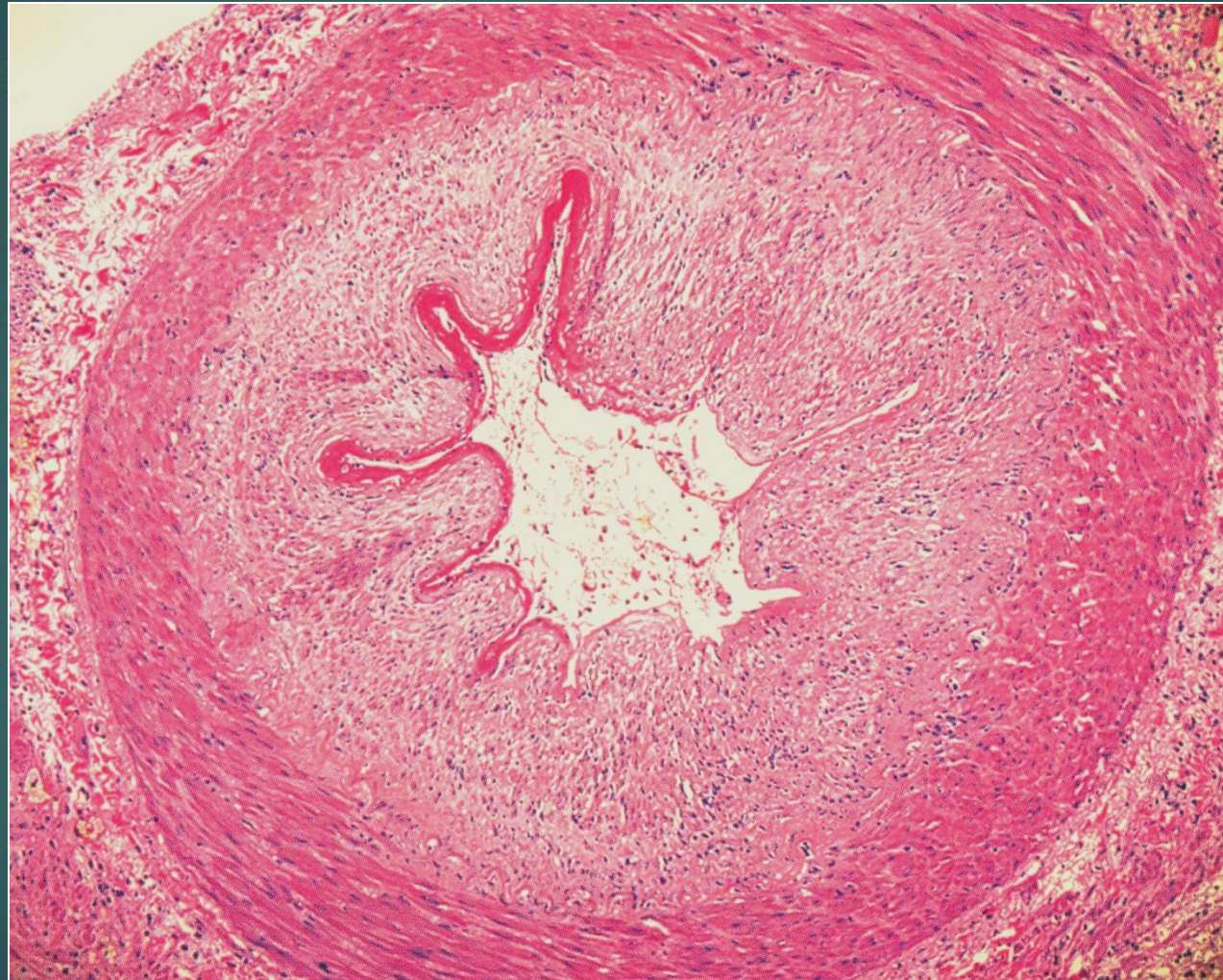
Chronic/ sclerosing allograft nephropathy.

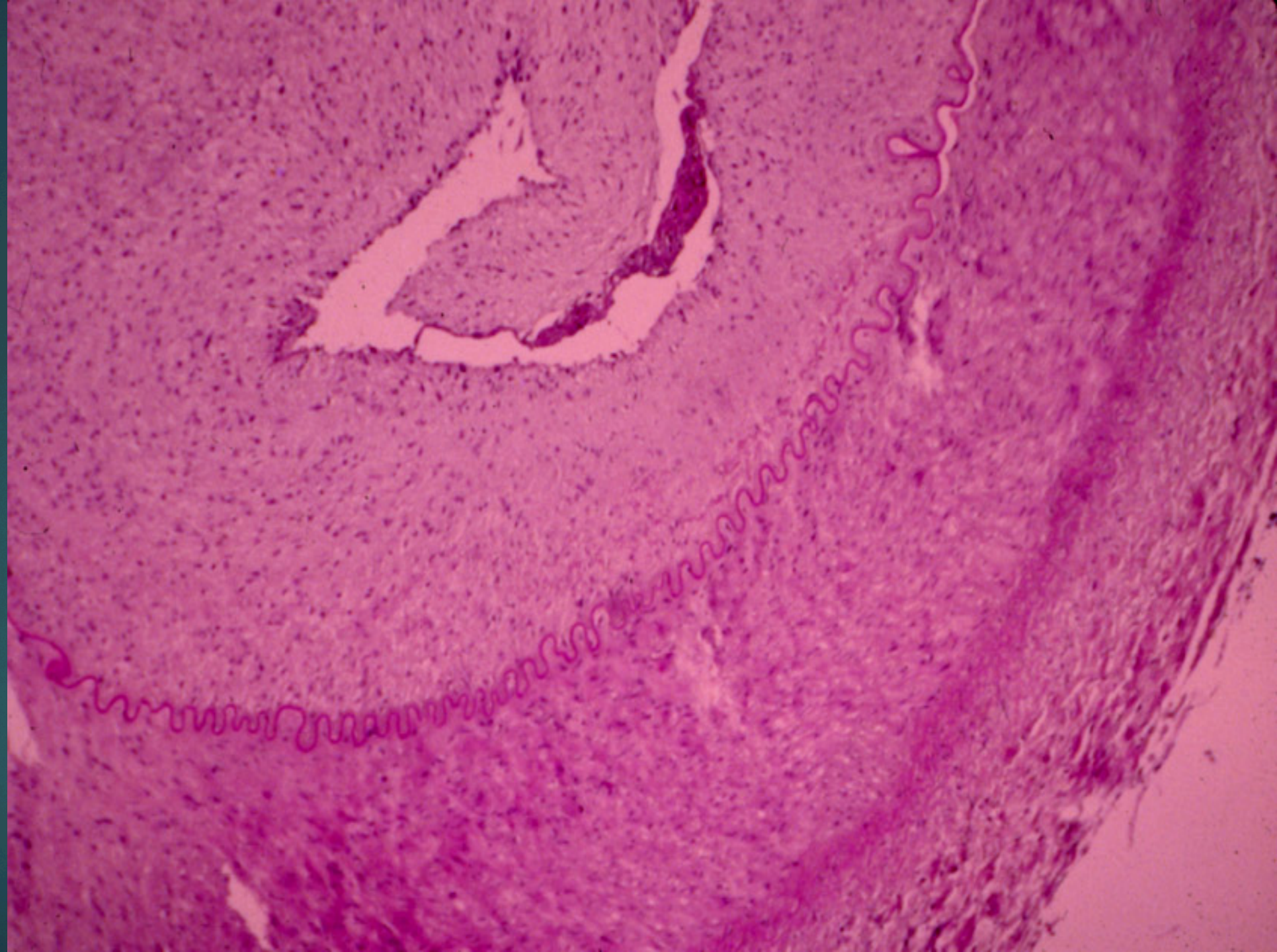
An example of Grade II-III is characterized by a diffuse increase in interstitial tissue and marked tubular atrophy as seen on this trichrome stain.



Chronic/ sclerosing allograft nephropathy.

The classical lesion of chronic transplant vasculopathy is a circumferential proliferation of myointimal cells with an intact internal elastic lamina.





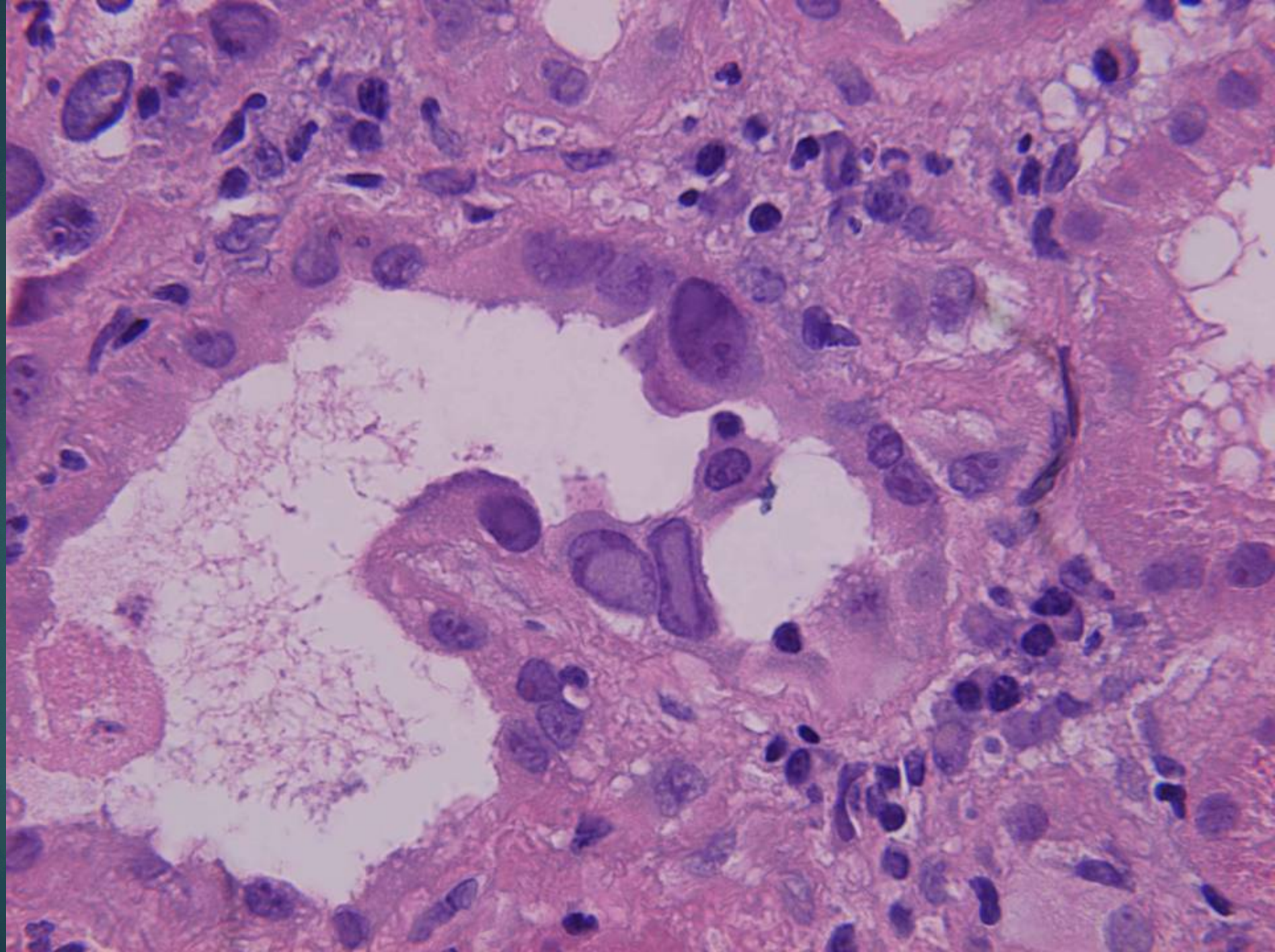
The Banff classification

- ▶ Normal, Suspicious
- ▶ Grade I
- ▶ Grade II
- ▶ Grade III
- ▶ Cyclosporine toxicity
- ▶ Acute Tubular Necrosis
- ▶ Chronic rejection
- ▶ No Treatment
- ▶ Treat if clinical signs+
- ▶ Treat
- ▶ Treat or Abandon
- ▶ Reduce Cyclosporine
- ▶ Await recovery or treat
- ▶ Temporize



Infections

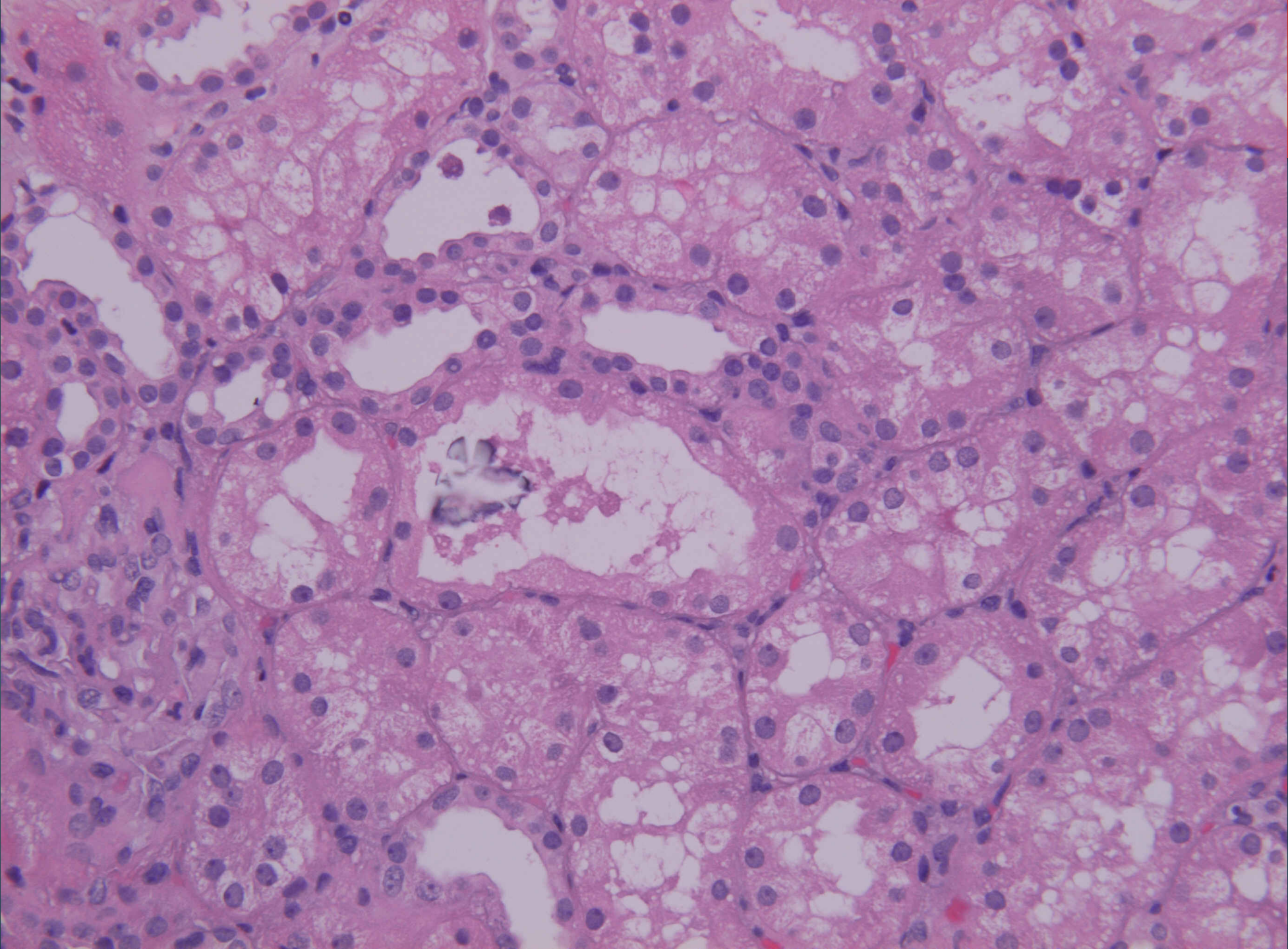
Recurrent or De Novo GN

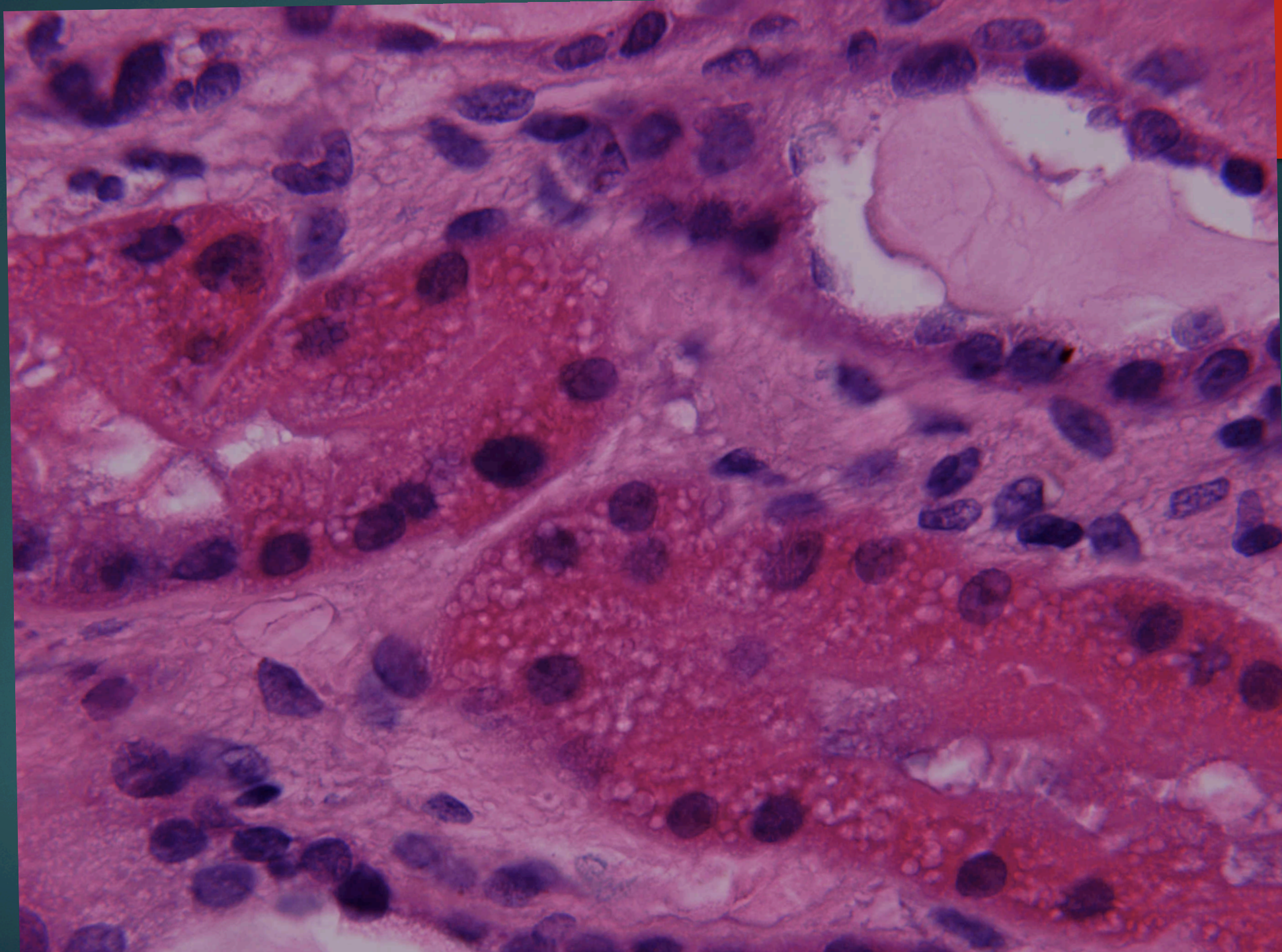






DRUG TOXICITY

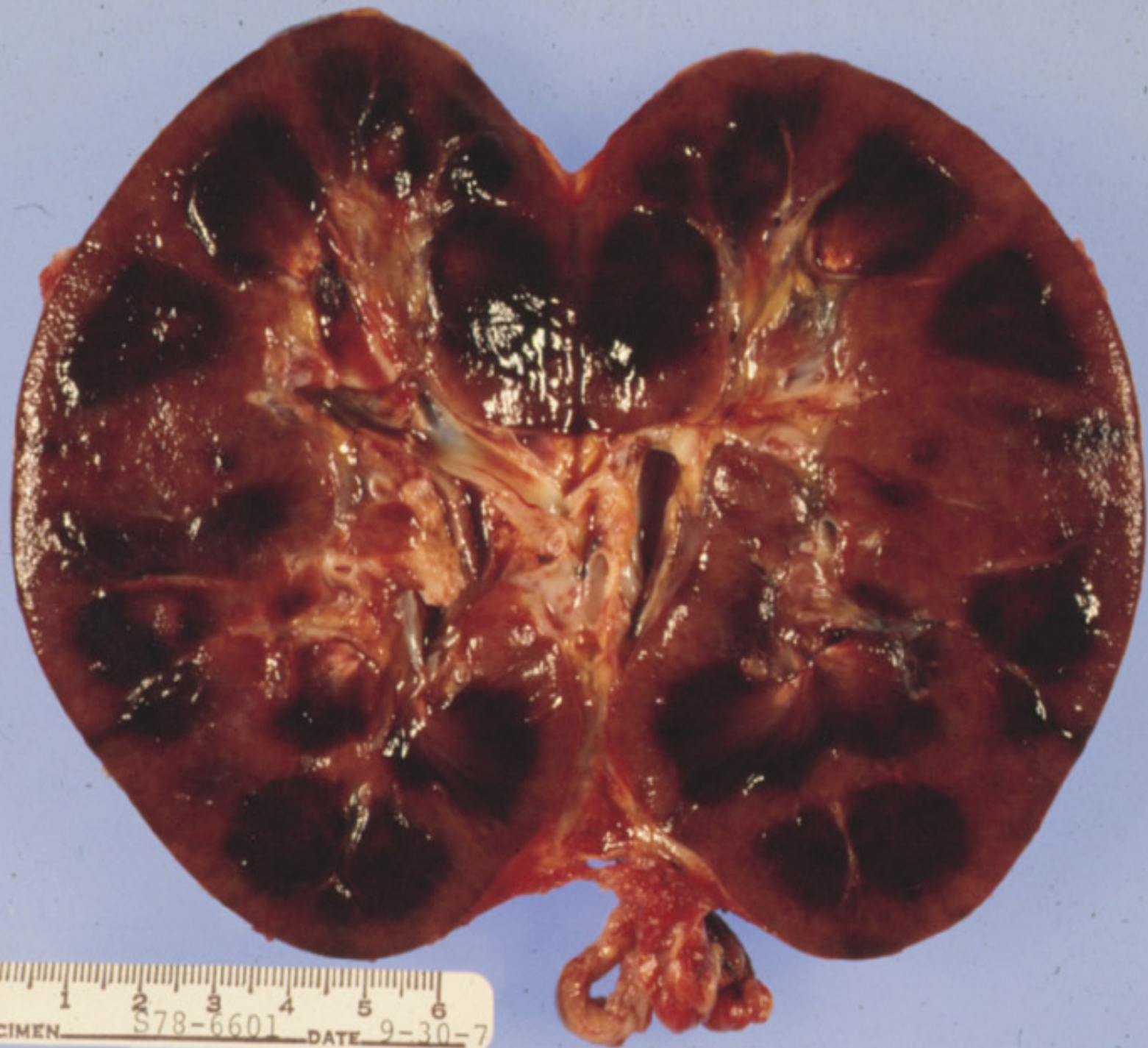




The Banff classification

Conclusion

- ▶ The Banff classification has proposed a schema for interpretation and gradation of the histological findings in renal allograft biopsies that can be used as an indication for therapeutic consequences and expected graft survival.



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