



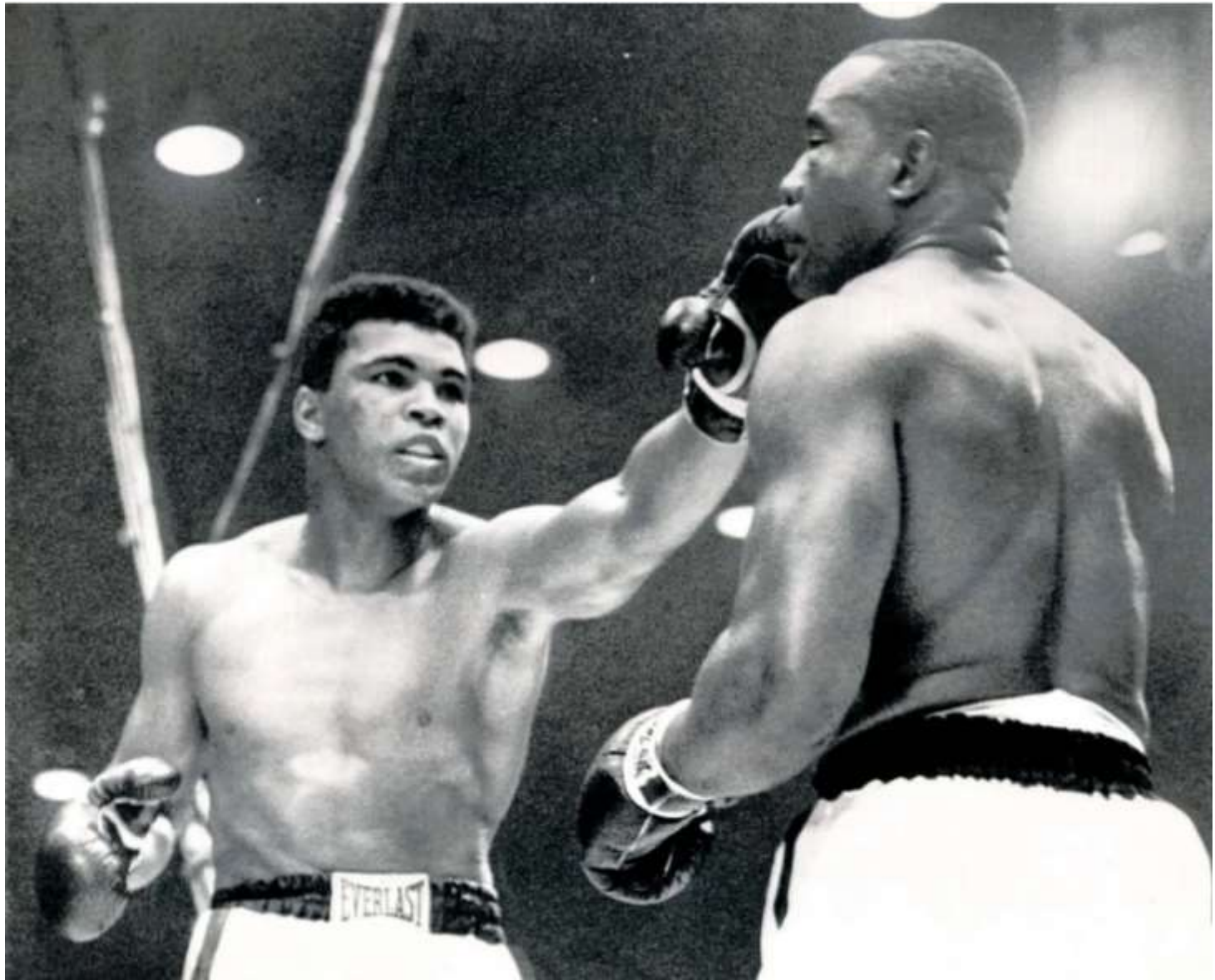
*250 years of EXCELLENCE
in medical education,
research & innovation
and healthcare*

Vascular pathology

Attila Fintha

1st Department of Pathology and Experimental
Cancer Research

04.12.2019



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Attila Fintha MD PhD

Topics

Degenerative vessel diseases

Hypertension

Atherosclerosis

Dissection

Vasculitis

Tumors



Complication of atherosclerosis could be...

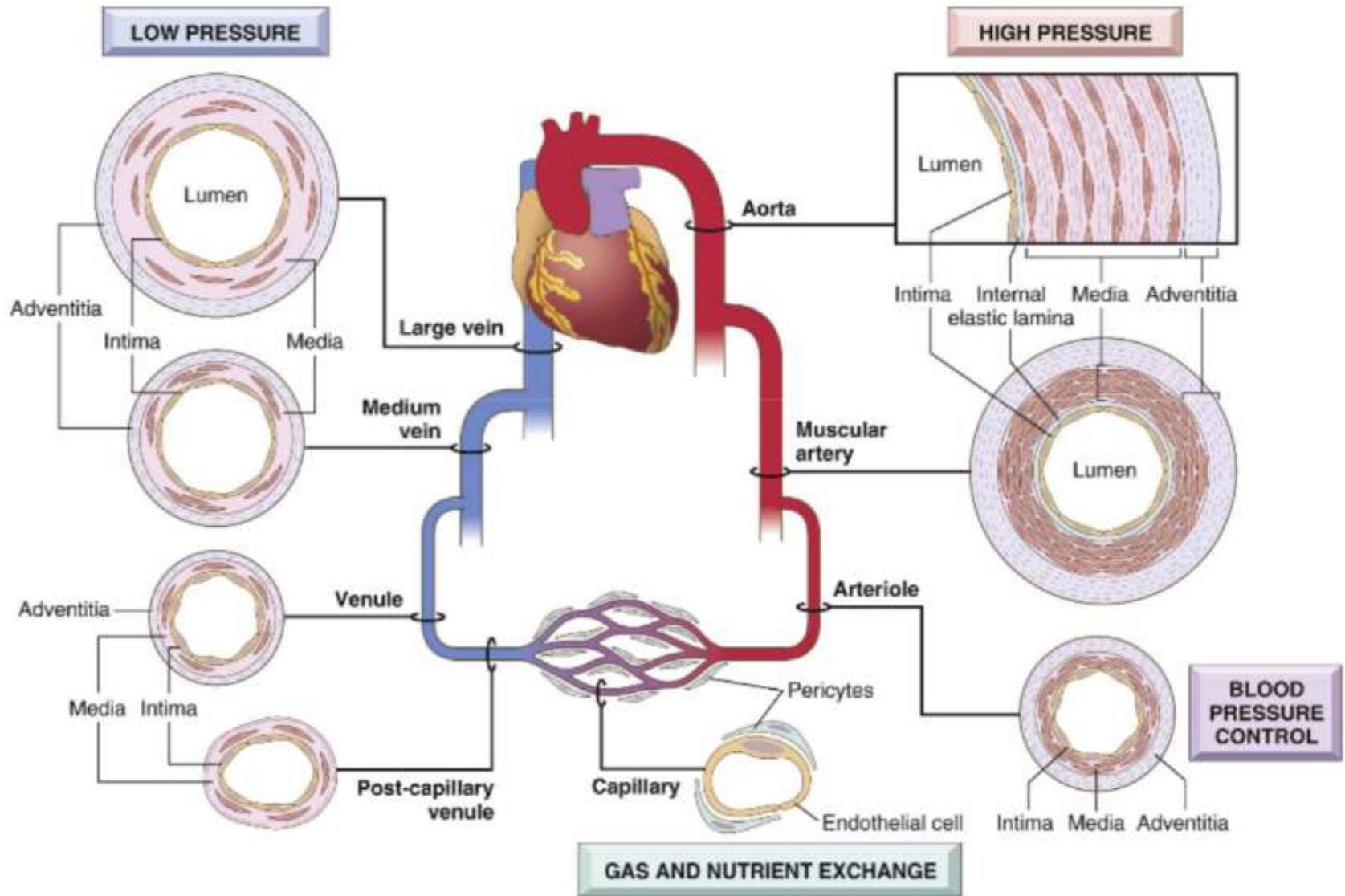
- A. Aneurism
- B. Rupture
- C. Thrombosis
- D. Critical narrowing
- E. All of them.



Which vasculitis contains granulocytes?

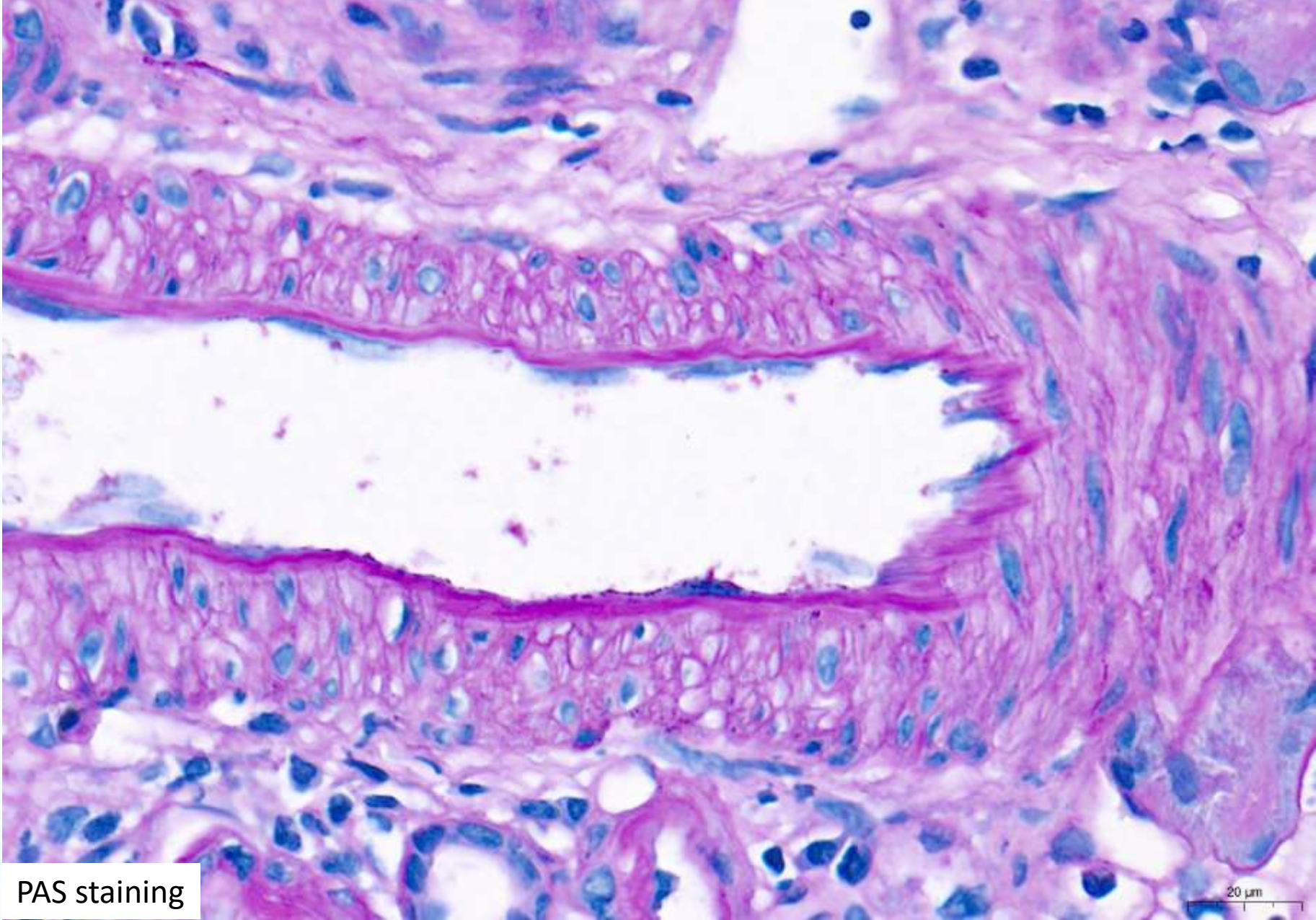
- A. Granulomatosis with polyangiitis
- B. Eosinophylic granulomatosis with polyangiitis.
- C. Lymphocytoclastic vasculitis
- D. None of them





Robbins and Cotran Pathologic Basis of Disease





PAS staining

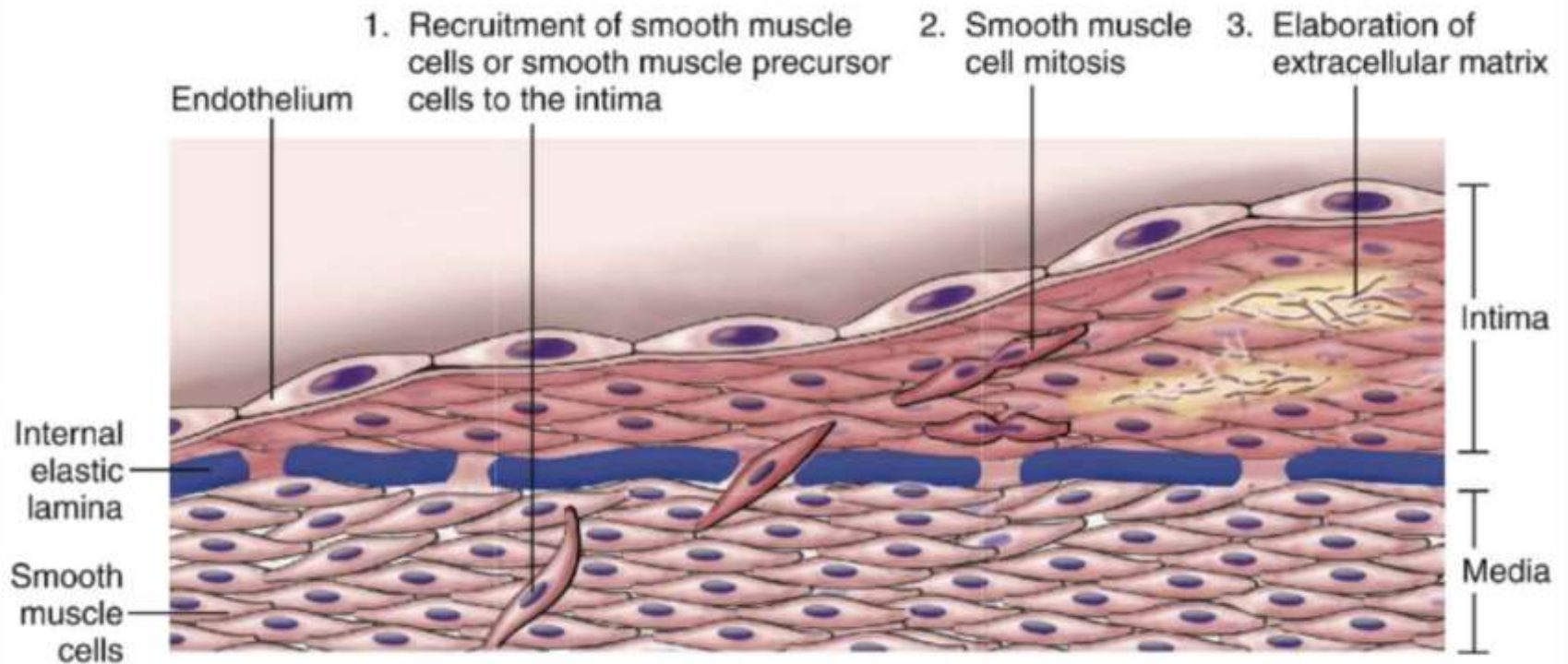
20 μm



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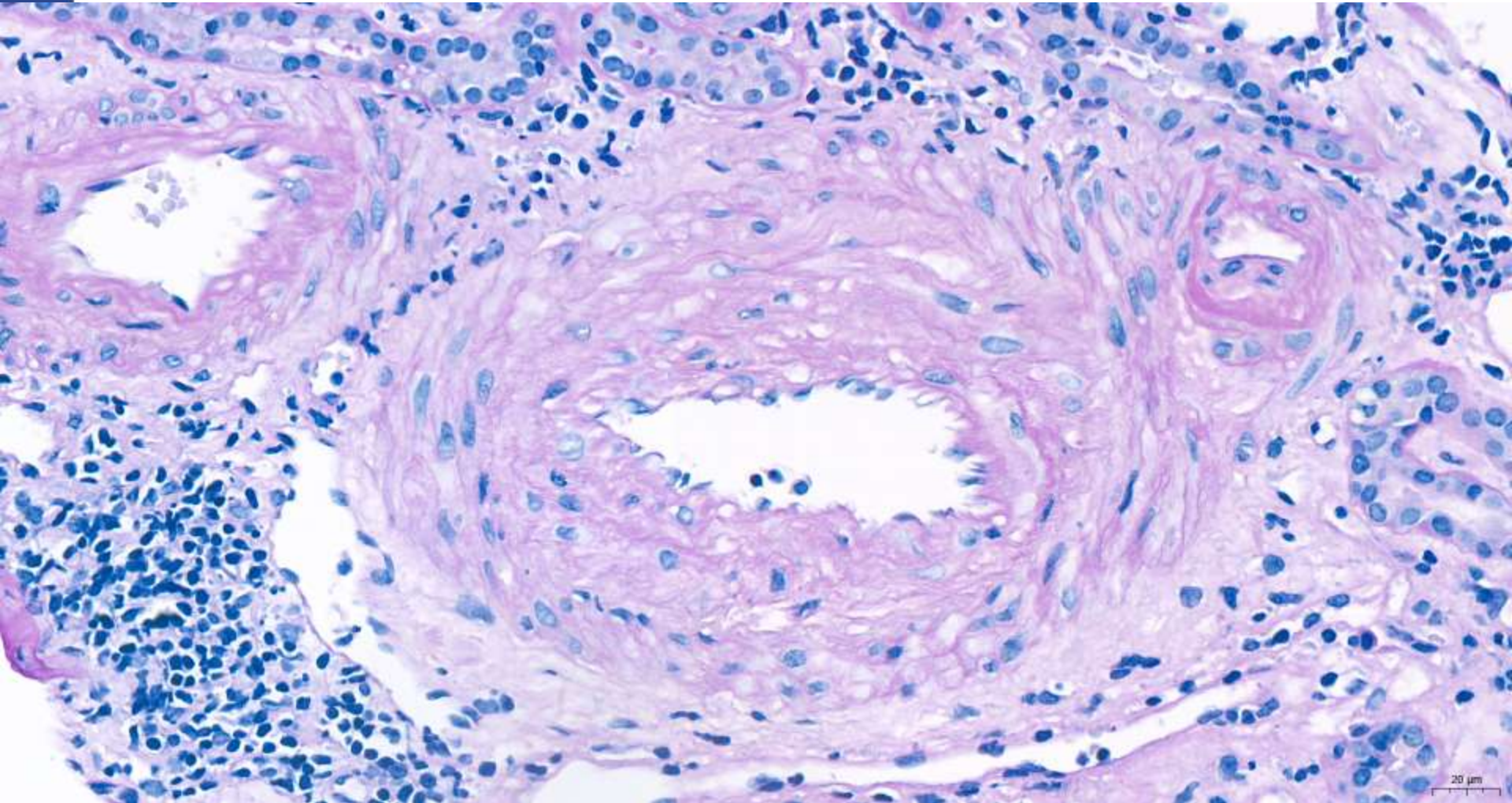
Endothelial injury



Robbins and Cotran Pathologic Basis of Disease



Morphology in hypertension

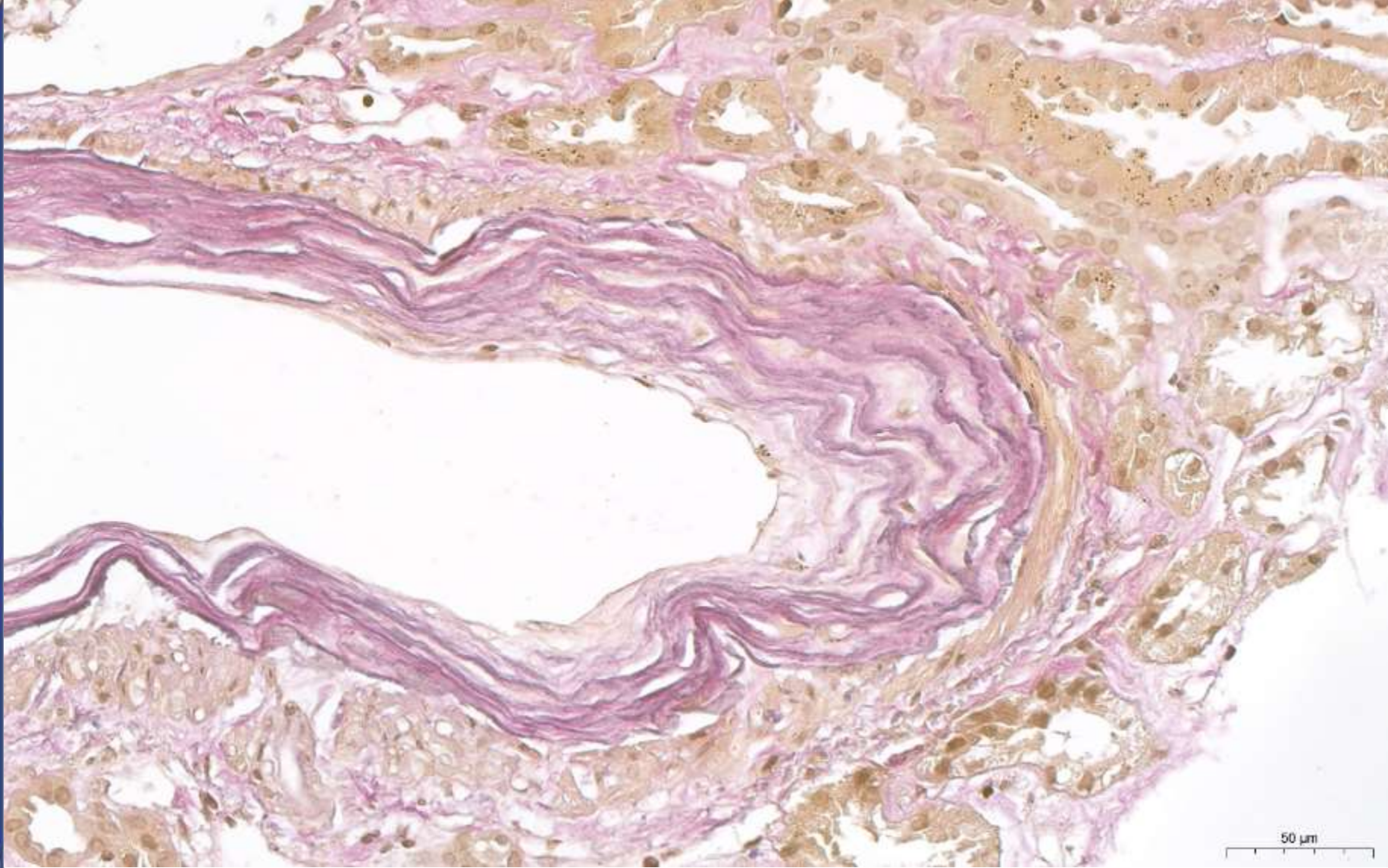


PAS staining



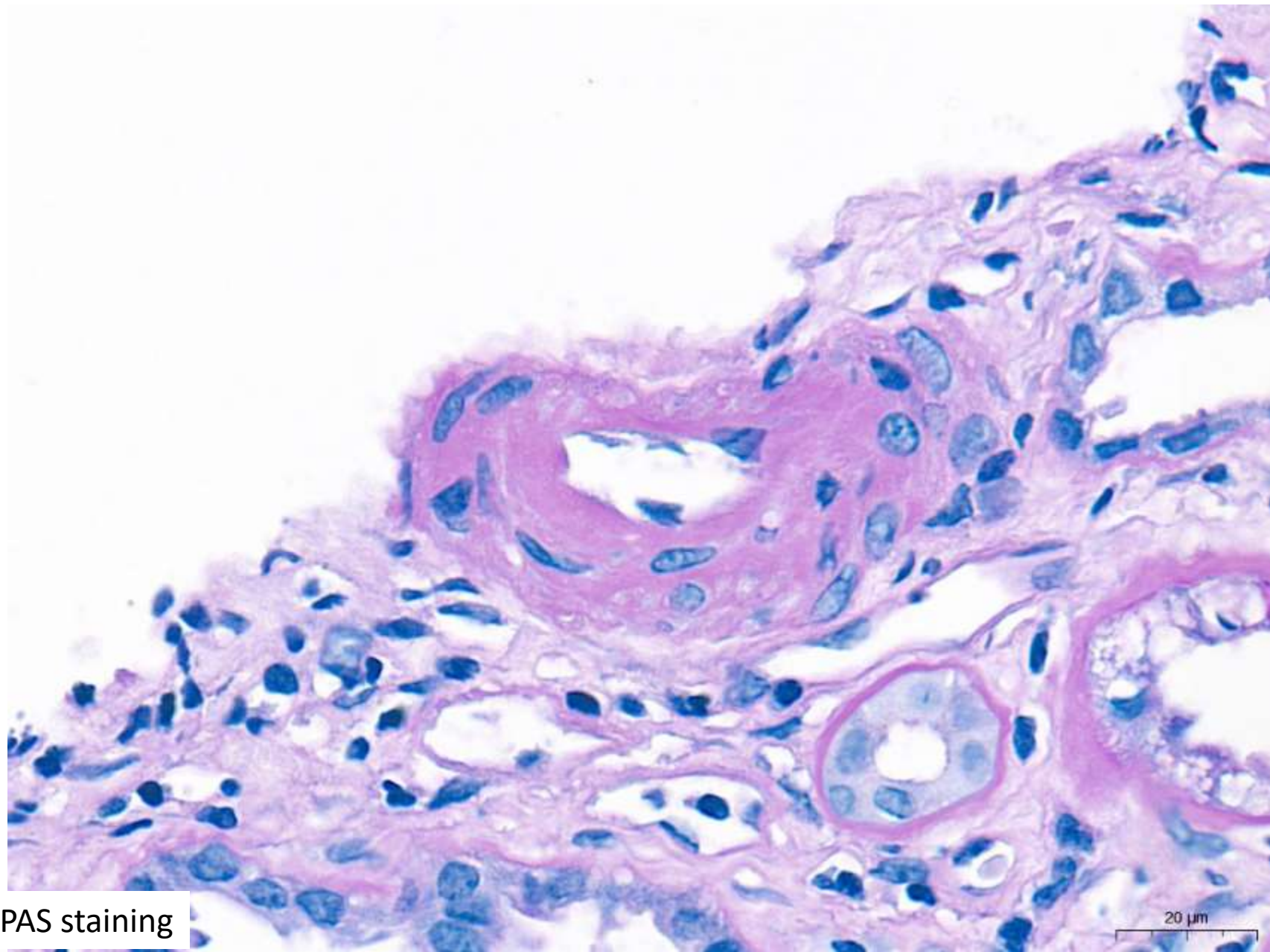
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Elastic staining

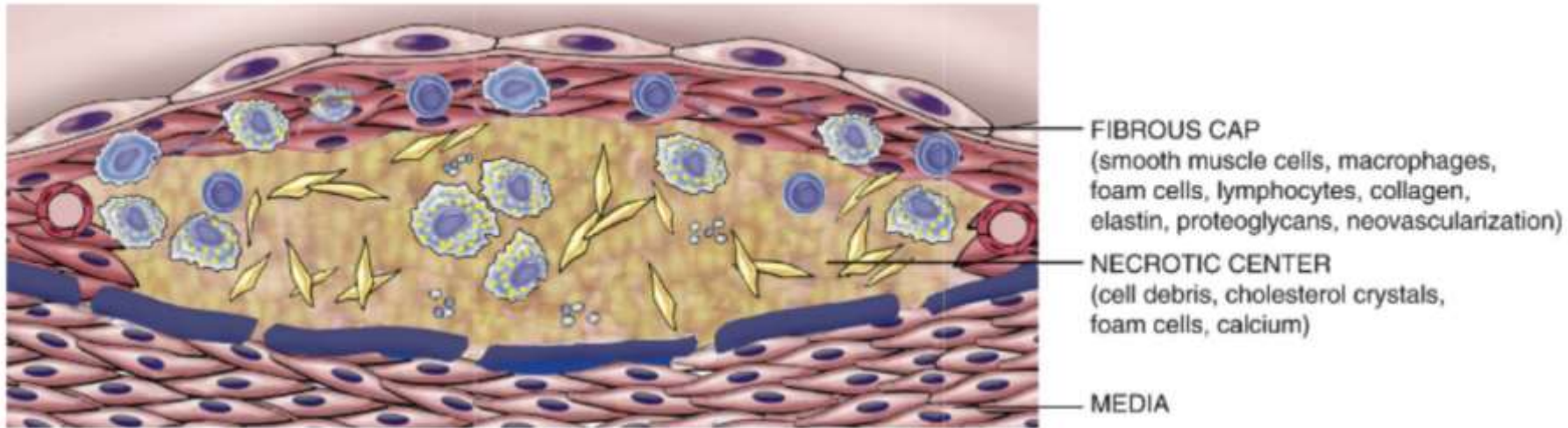




PAS staining

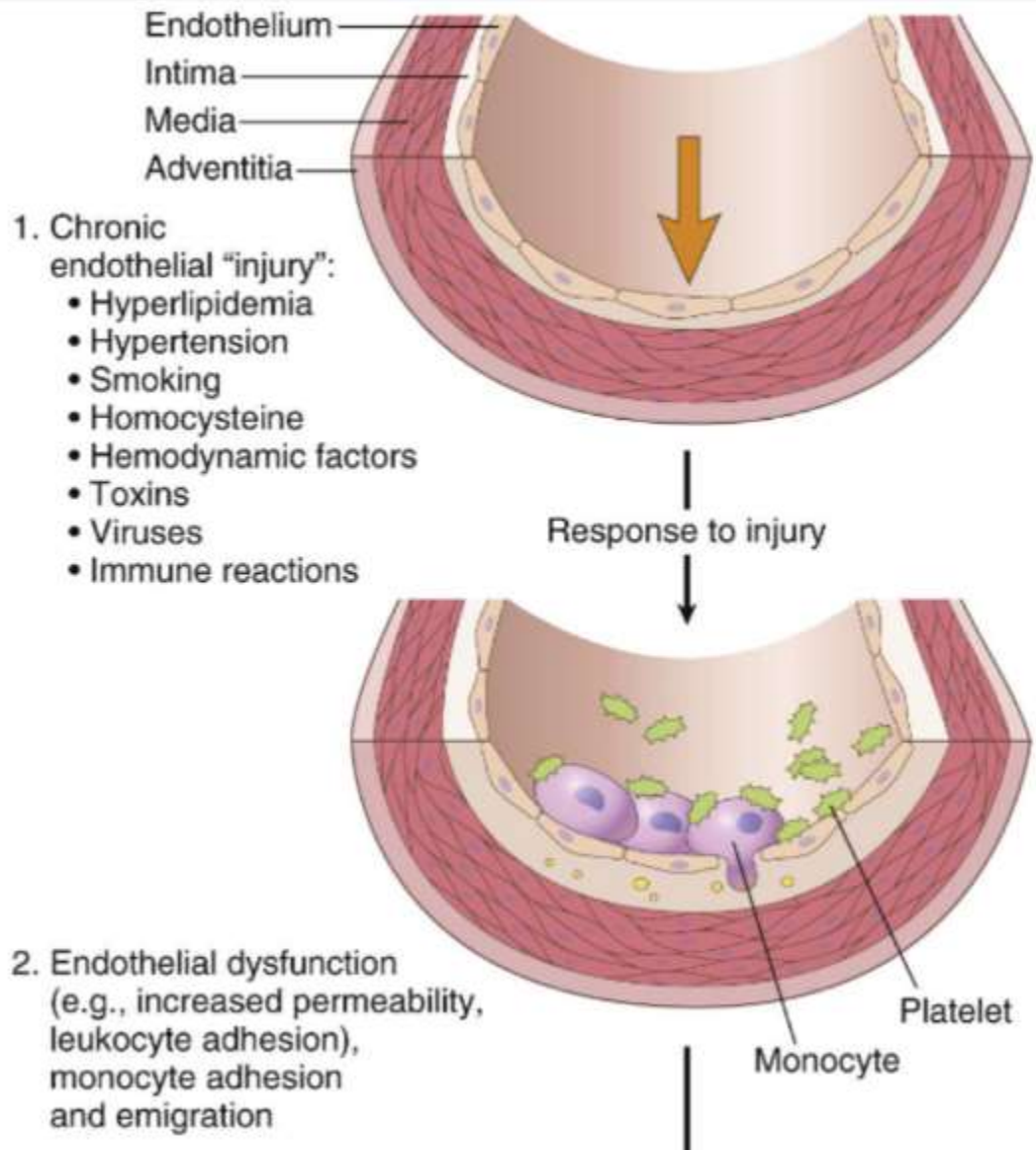


Atherosclerosis



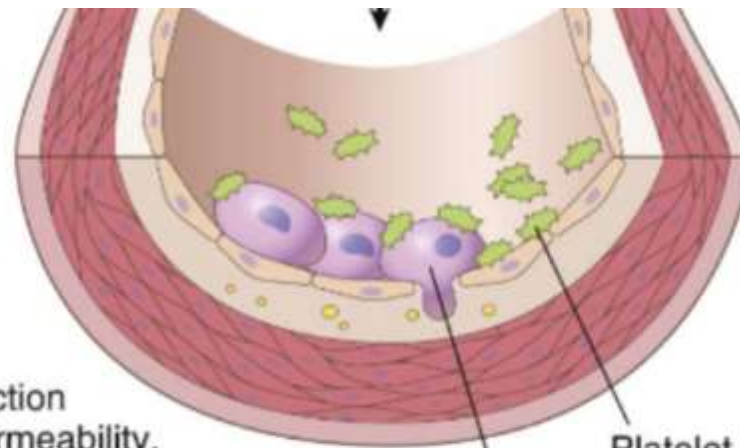
Robbins and Cotran Pathologic Basis of Disease





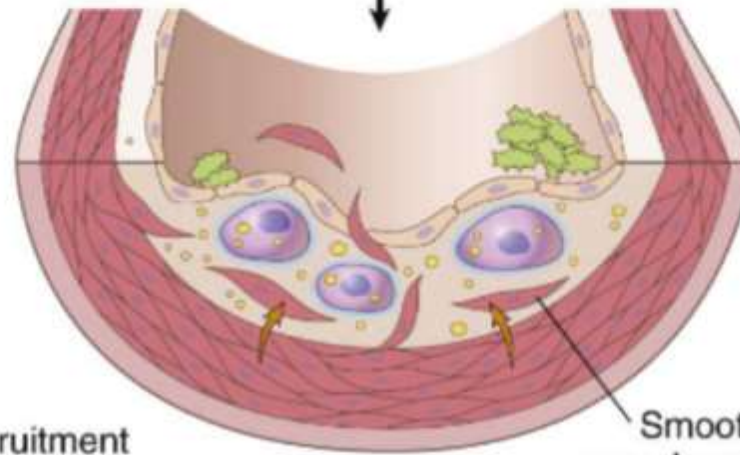
Robbins and Cotran Pathologic Basis of Disease





2. Endothelial dysfunction (e.g., increased permeability, leukocyte adhesion), monocyte adhesion and emigration

Platelet
Monocyte



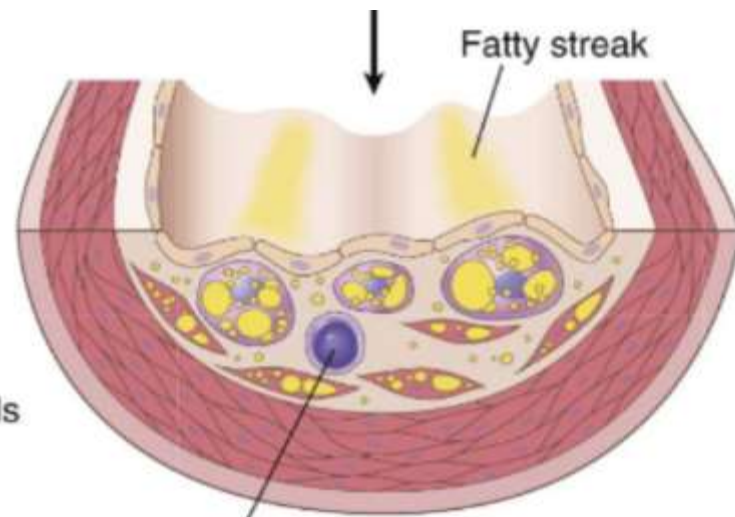
3. Macrophage activation, smooth muscle recruitment

Smooth muscle cell

Robbins and Cotran Pathologic Basis of Disease

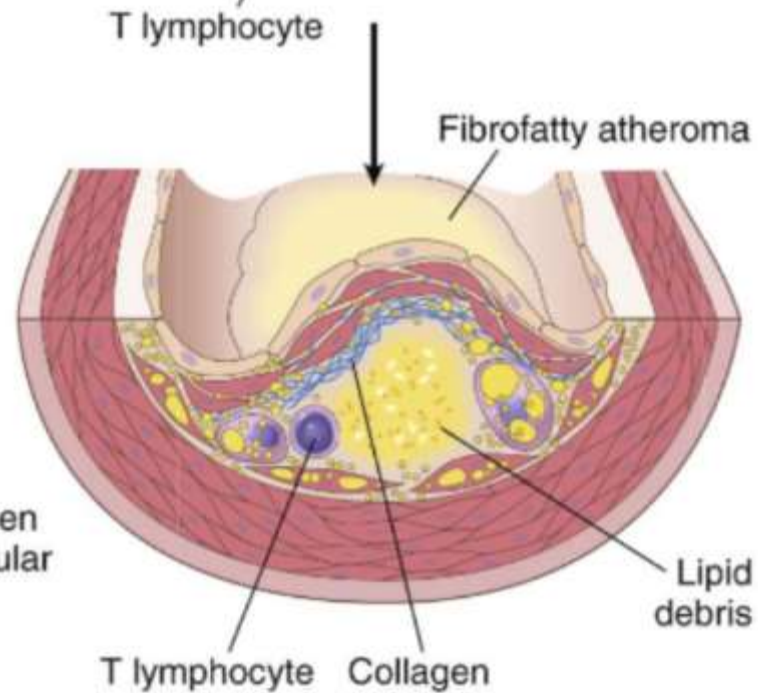


4. Macrophages and smooth muscle cells engulf lipid



T lymphocyte

5. Smooth muscle proliferation, collagen and other extracellular matrix deposition, extracellular lipid



T lymphocyte

Collagen

Lipid debris





Cardiovascular Pathology, 4 ed



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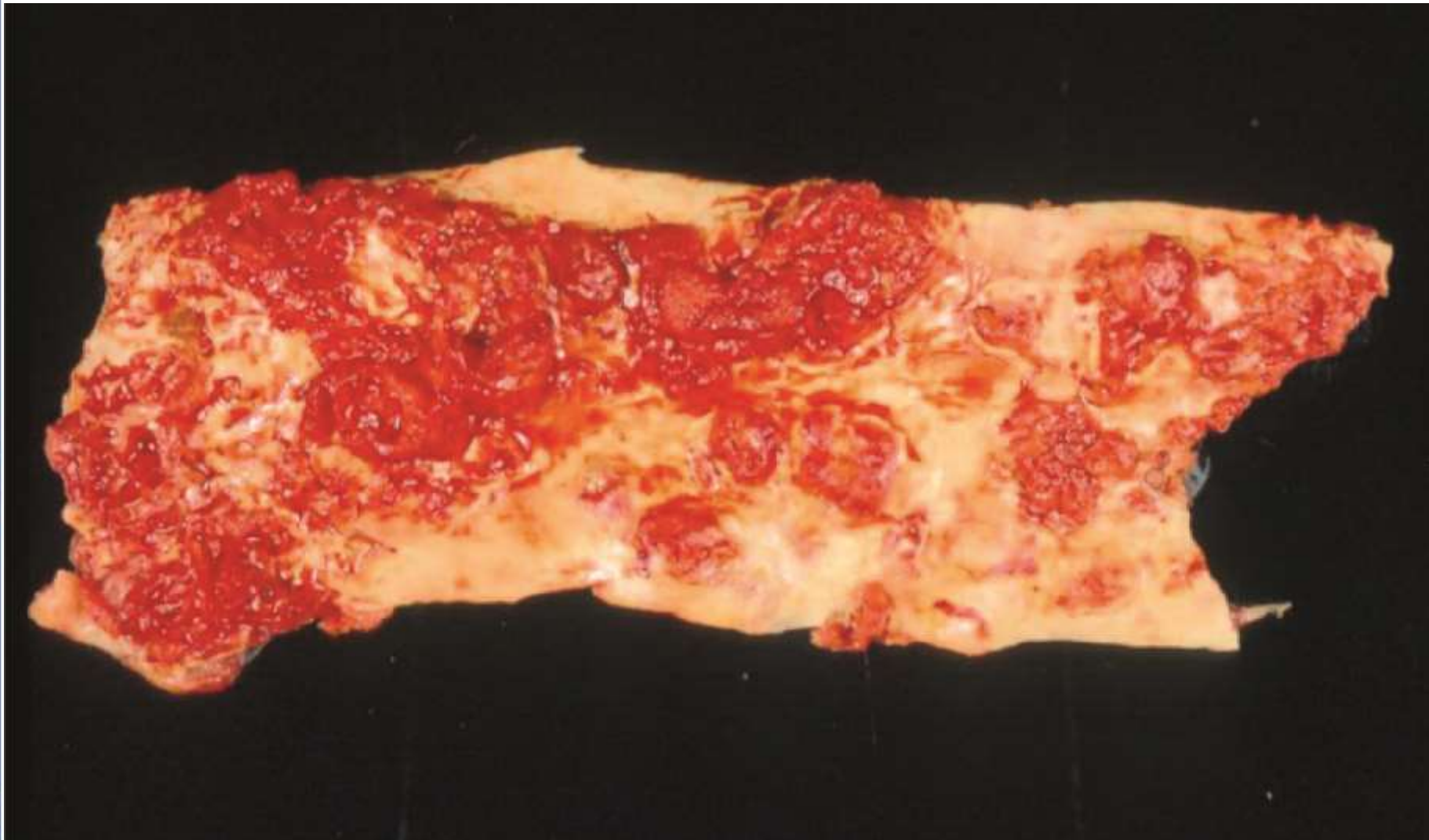


Cardiovascular Pathology, 4 ed



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Cardiovascular Pathology, 4 ed

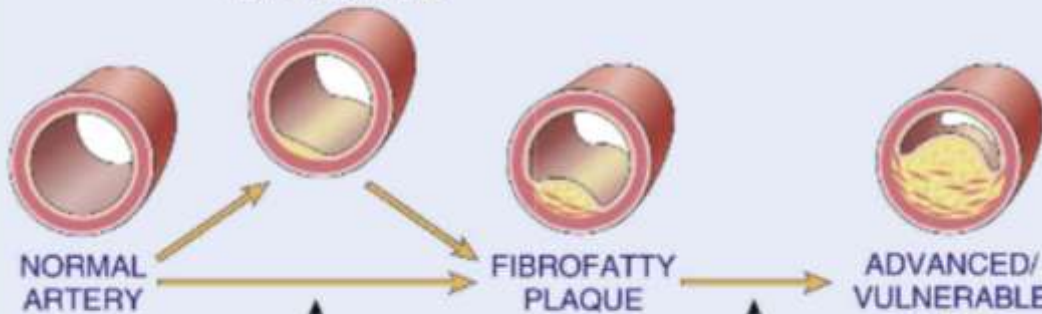


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Pre-Clinical Phase
Usually young age

FATTY STREAK

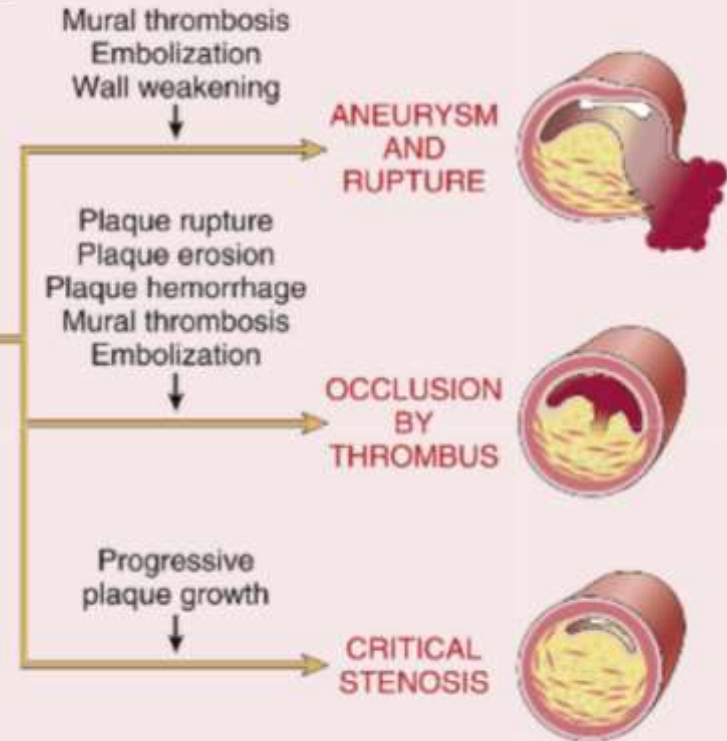


At lesion-prone areas, accelerated by risk factors:
 Endothelial dysfunction
 Monocyte adhesion/emigration
 Smooth muscle cell migration to intima
 Smooth muscle cell proliferation
 extracellular matrix elaboration
 Lipid accumulation

Cell death/degeneration
 Inflammation
 Plaque growth
 Remodeling of plaque and wall extracellular matrix
 Organization of thrombus
 Calcification

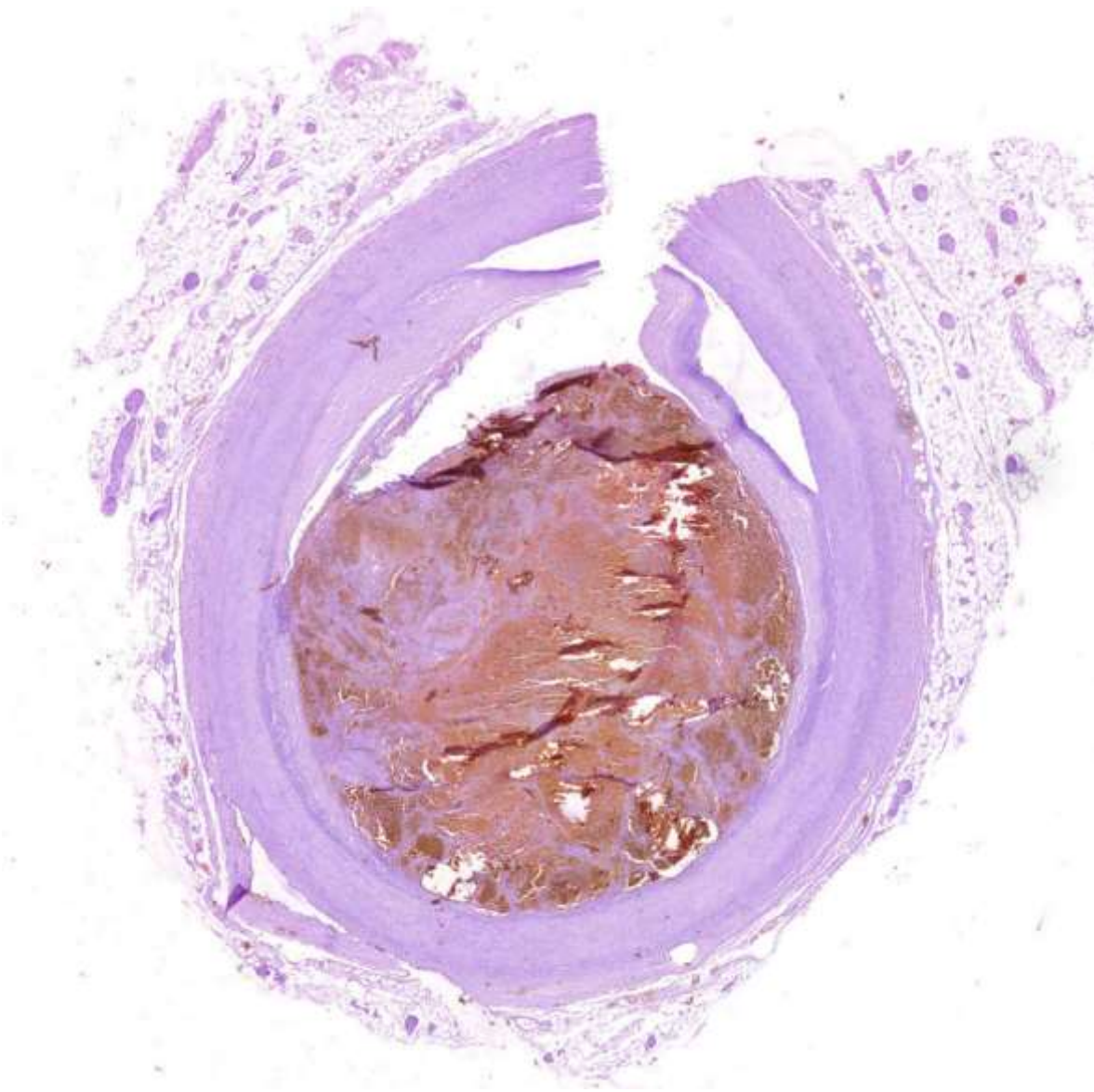
Clinical horizon

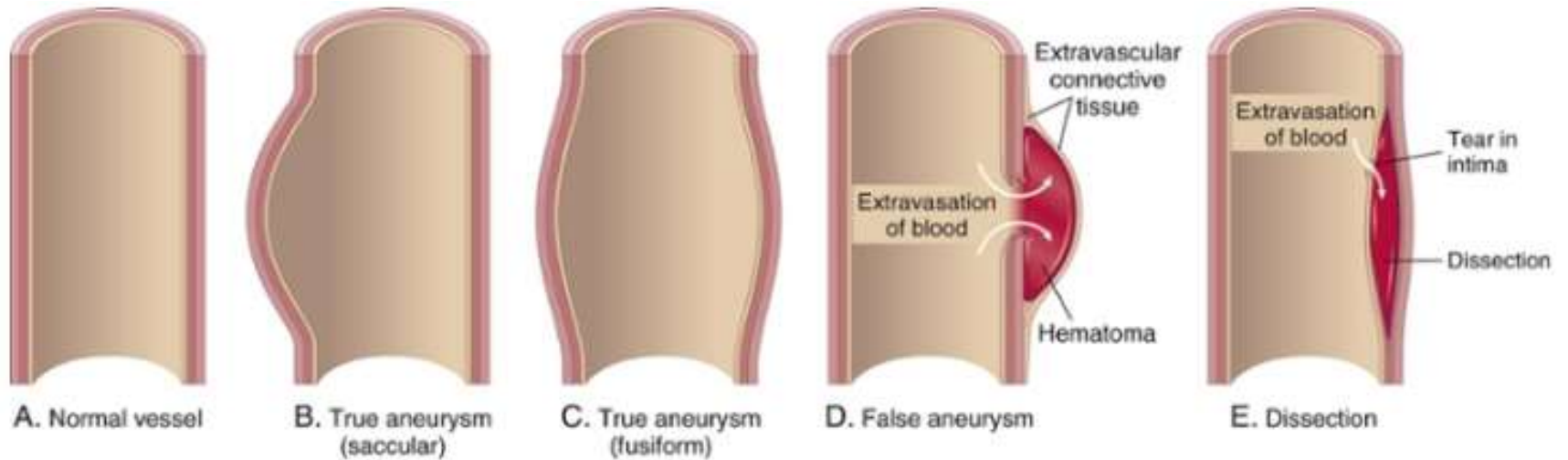
Clinical Phase
Usually middle age to elderly



Robbins and Cotran Pathologic Basis of Disease

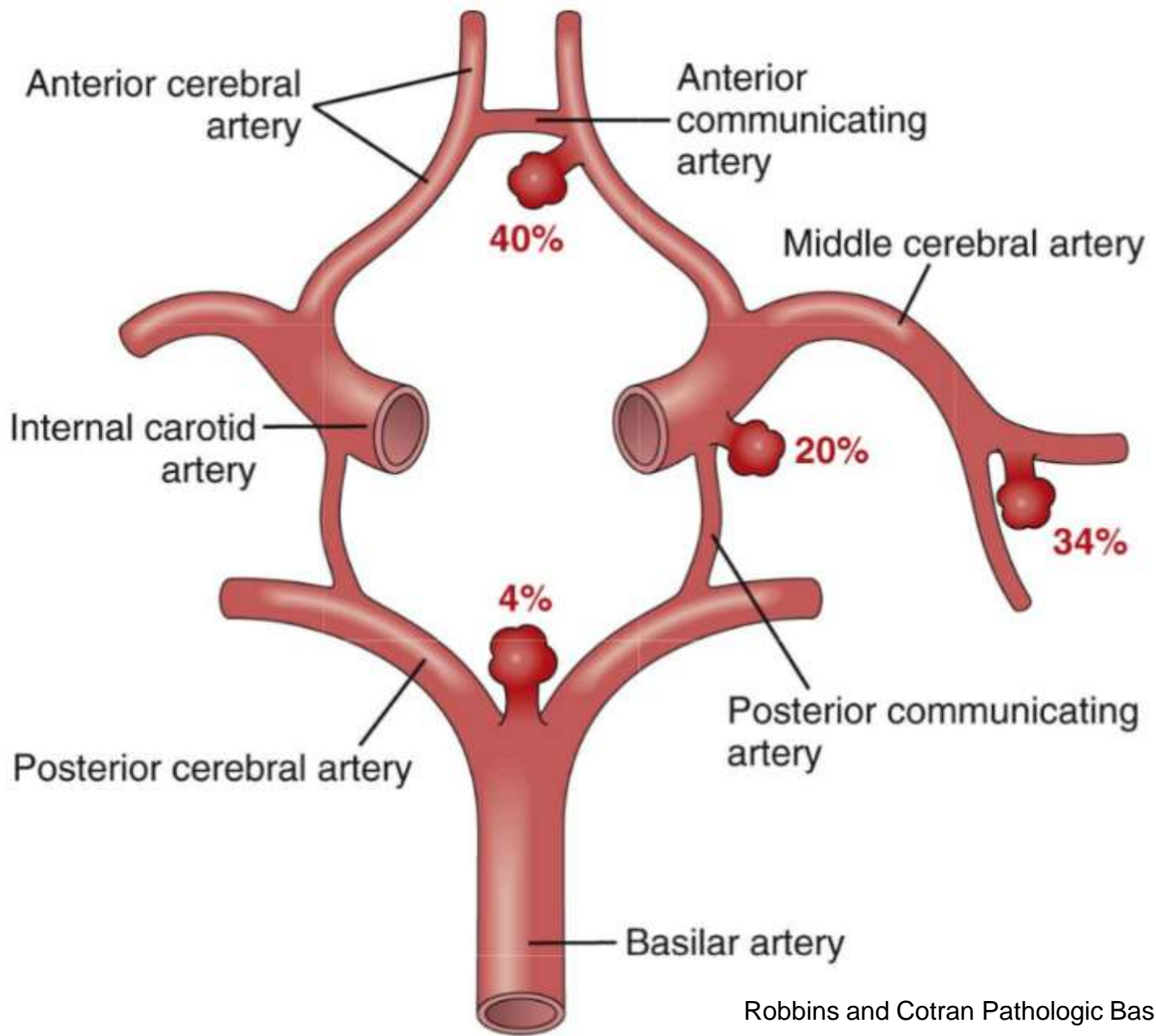






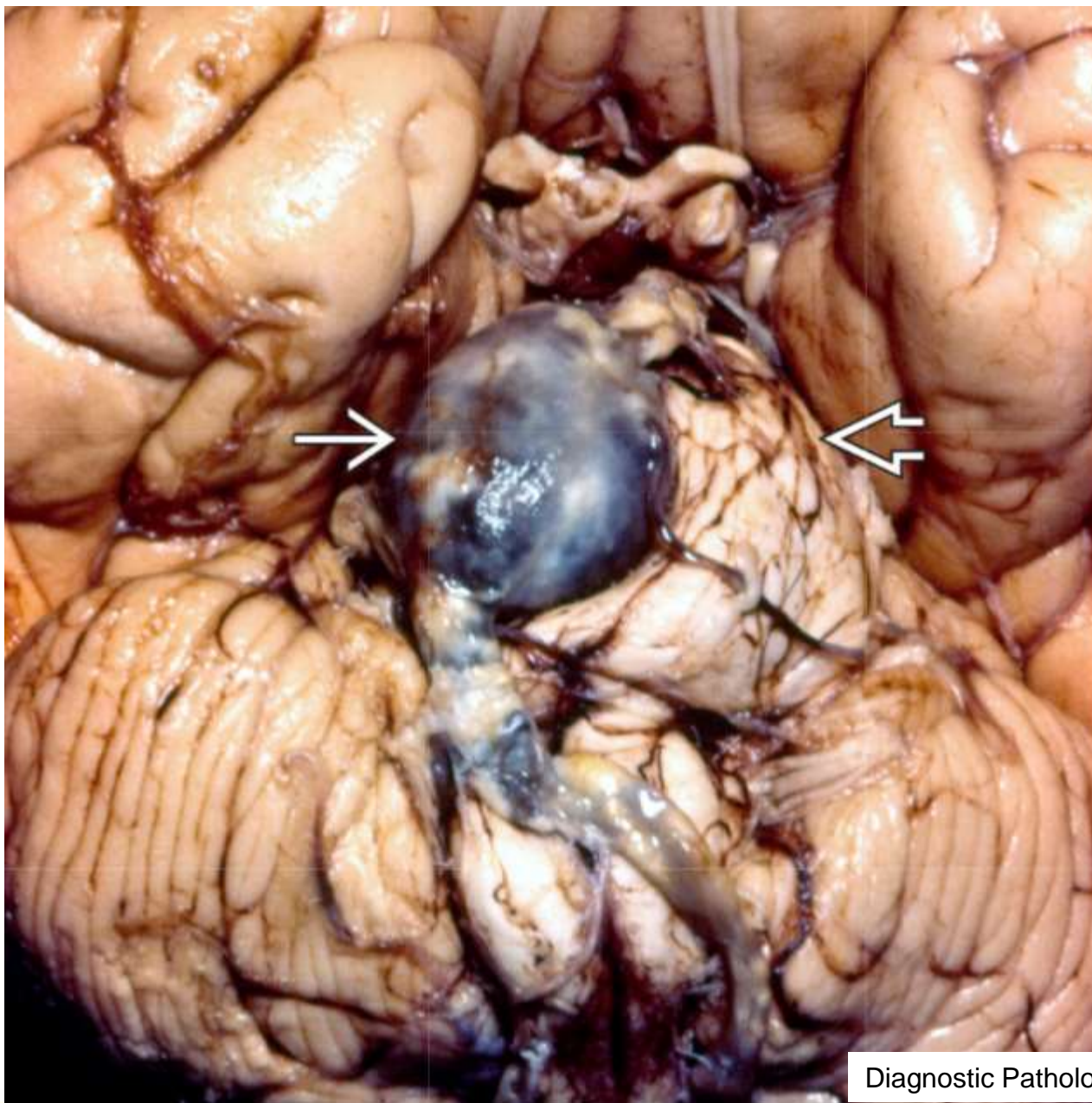
Robbins and Cotran Pathologic Basis of Disease





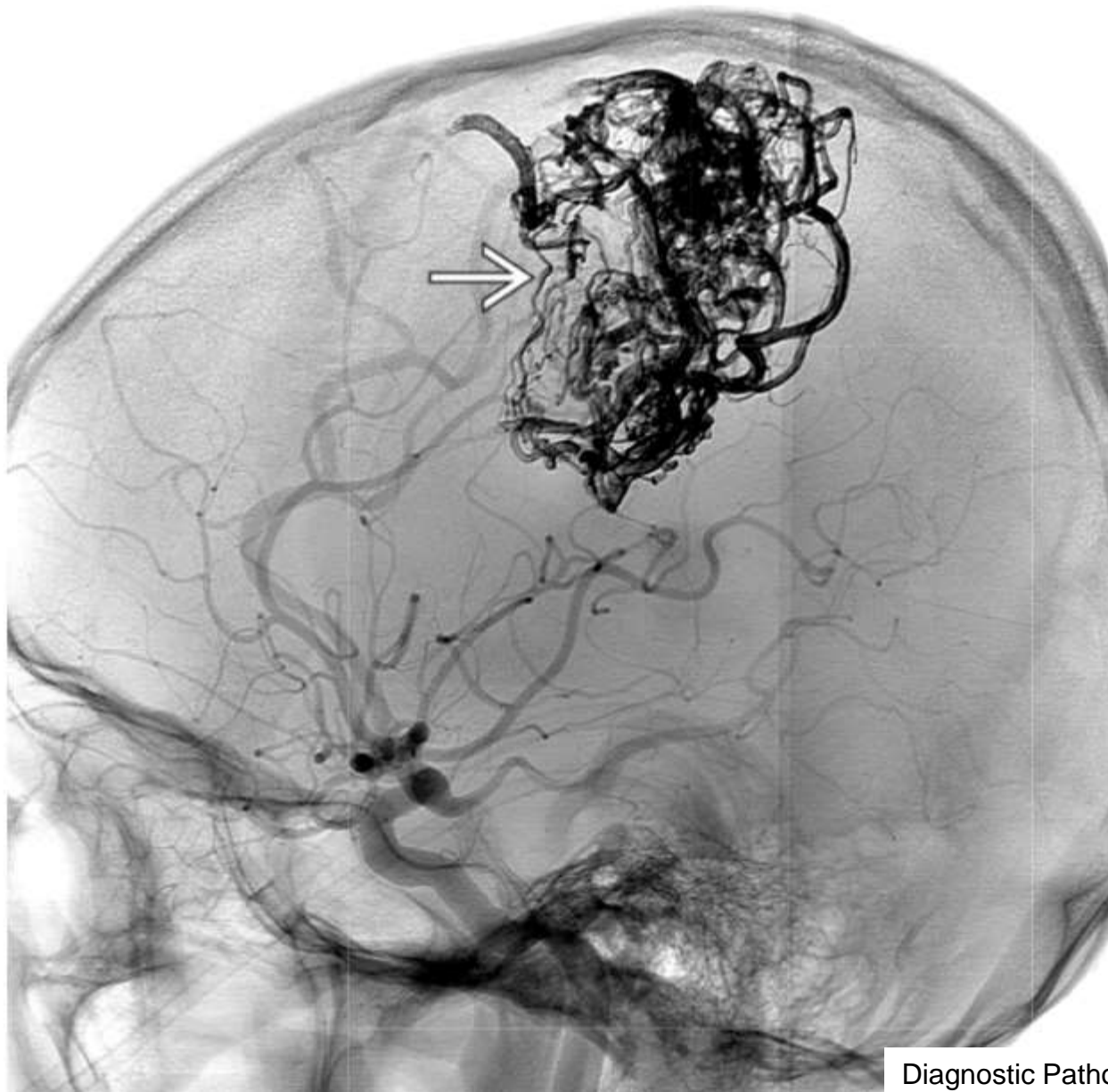
Robbins and Cotran Pathologic Basis of Disease





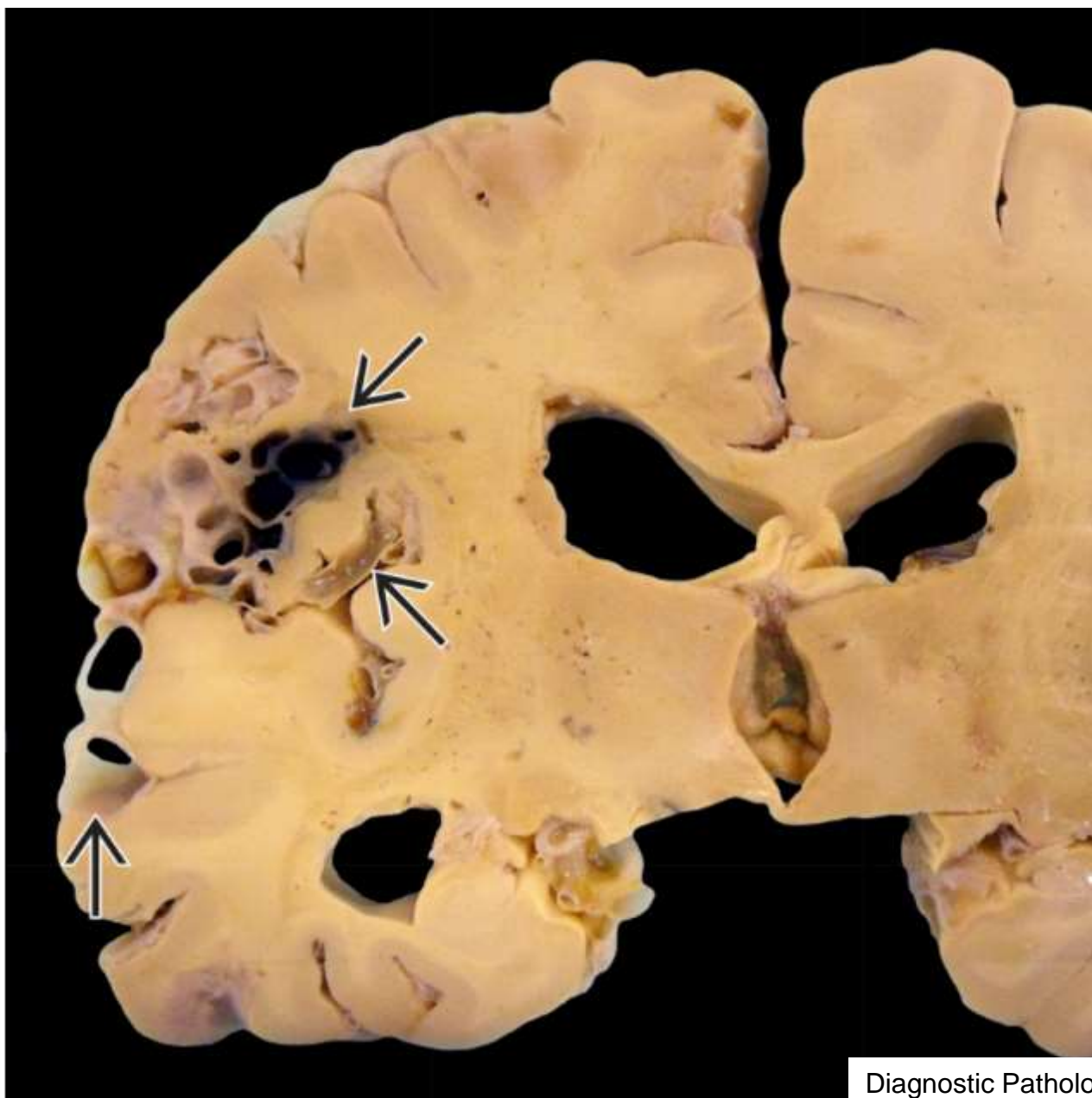
Diagnostic Pathology: Cardiovascular





Diagnostic Pathology: Cardiovascular





Diagnostic Pathology: Cardiovascular



„Groggy state”

THE DENVER POST



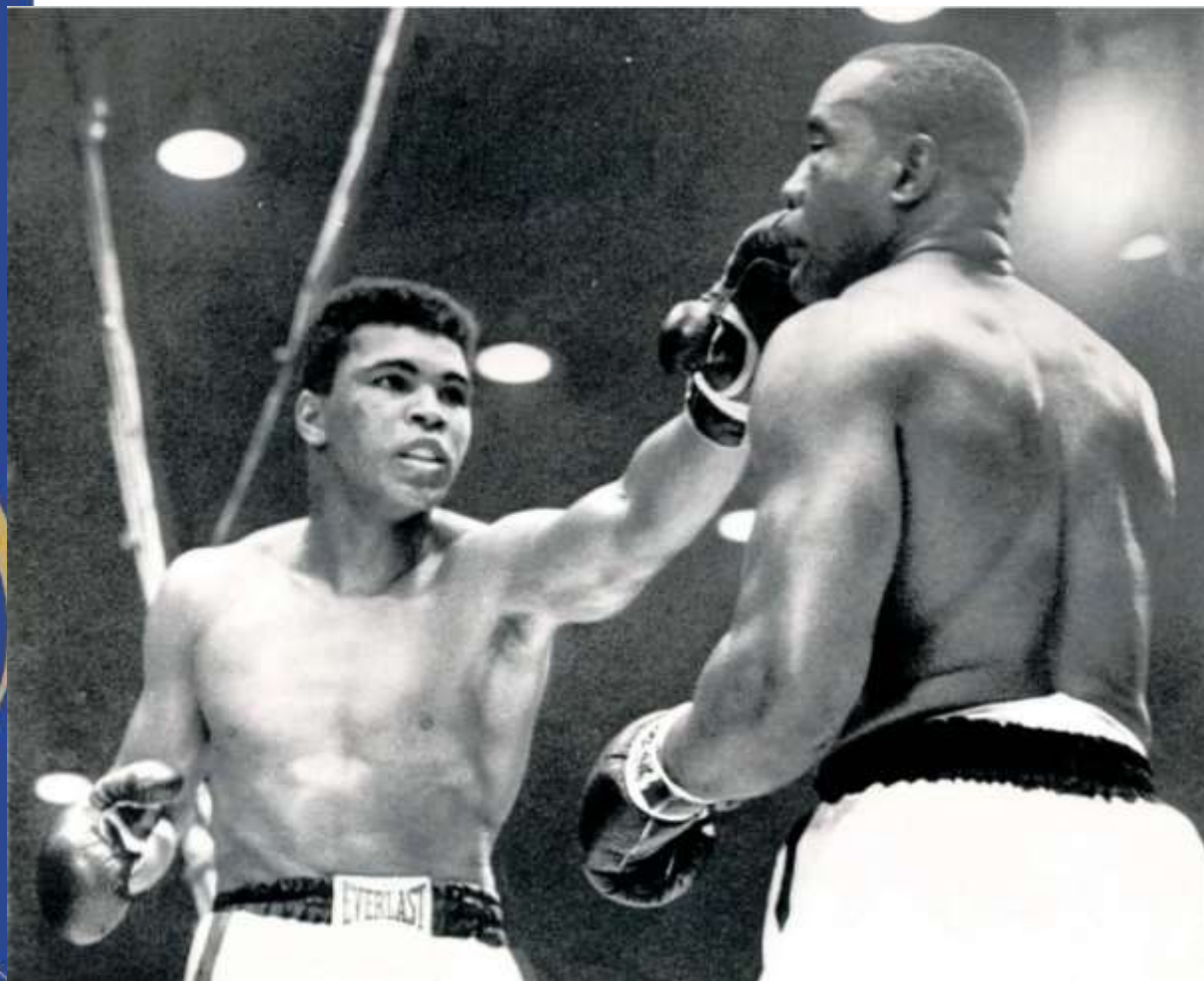
19 of 117

AP Photo



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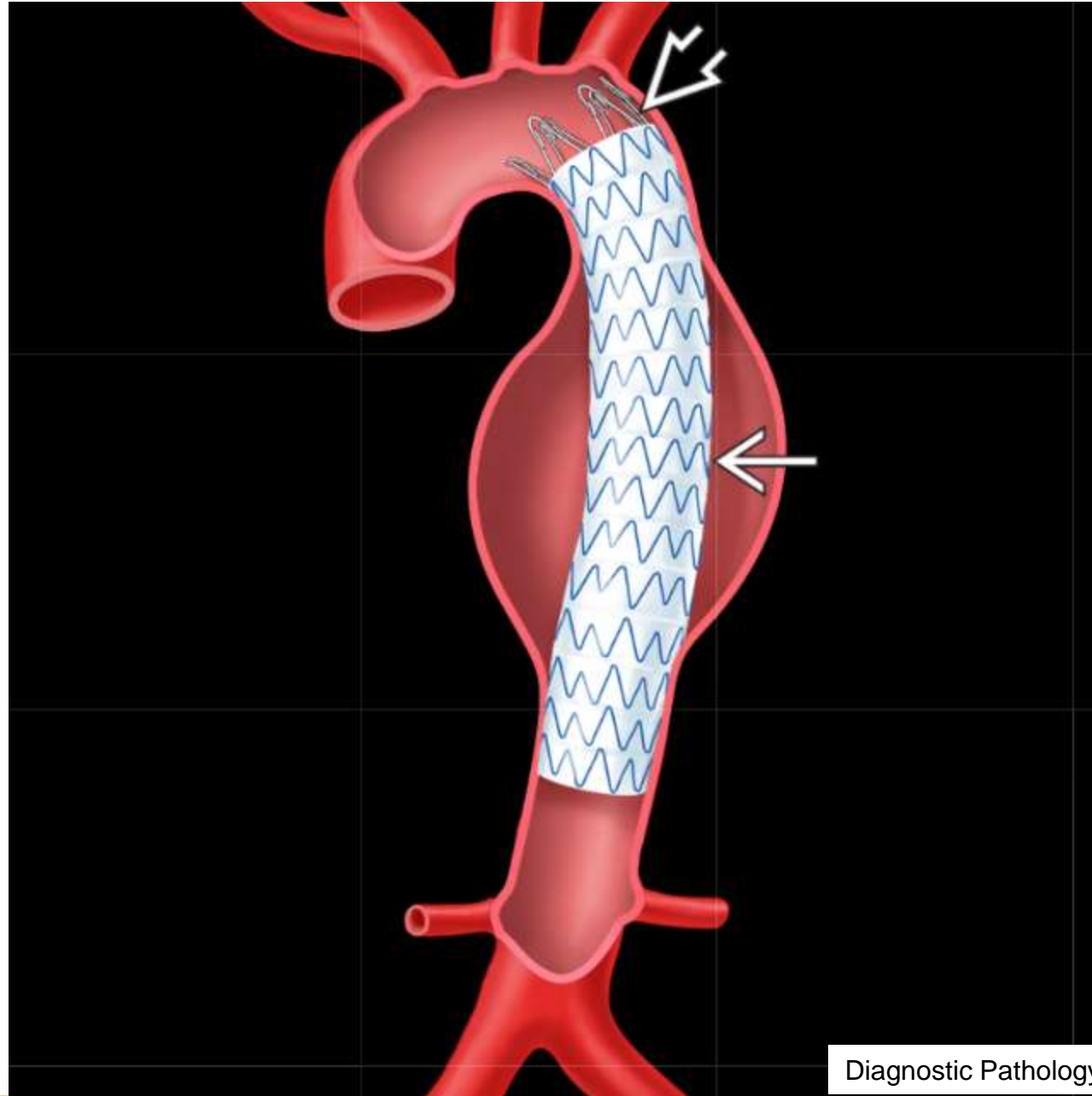


Cassius Marcellus Clay jr. (1942)



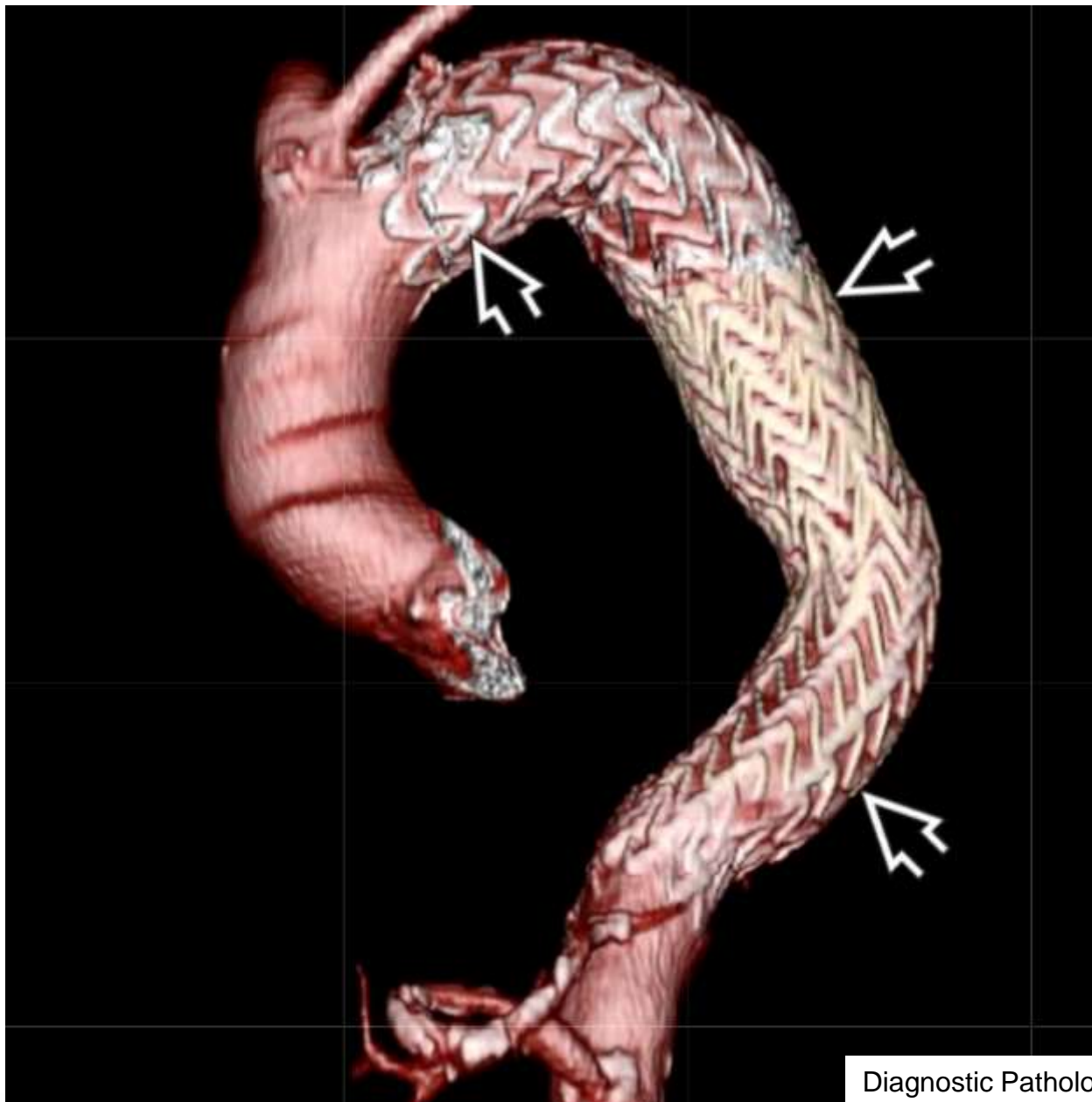
Lance Briggs (1980)





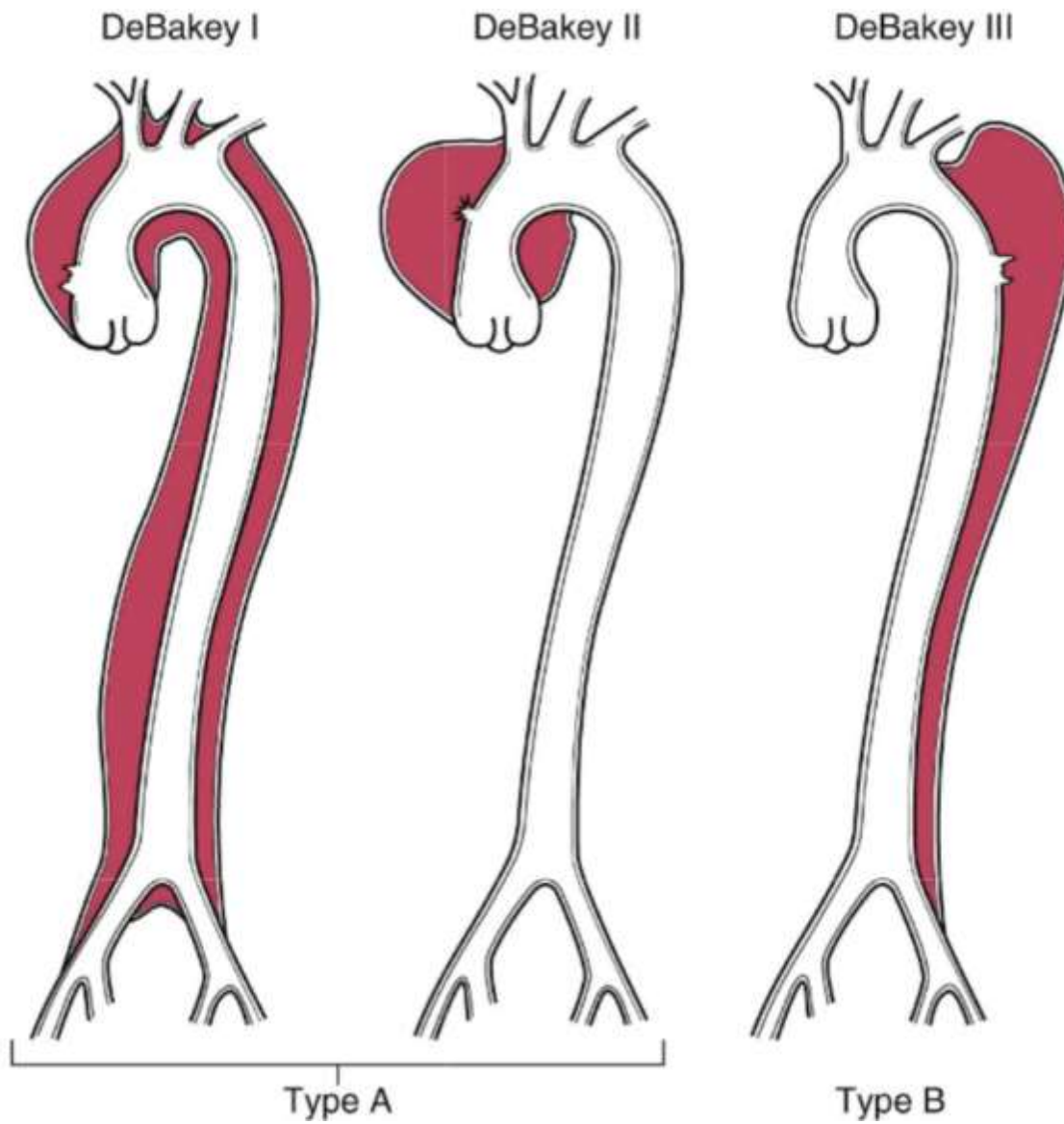
Diagnostic Pathology: Cardiovascular





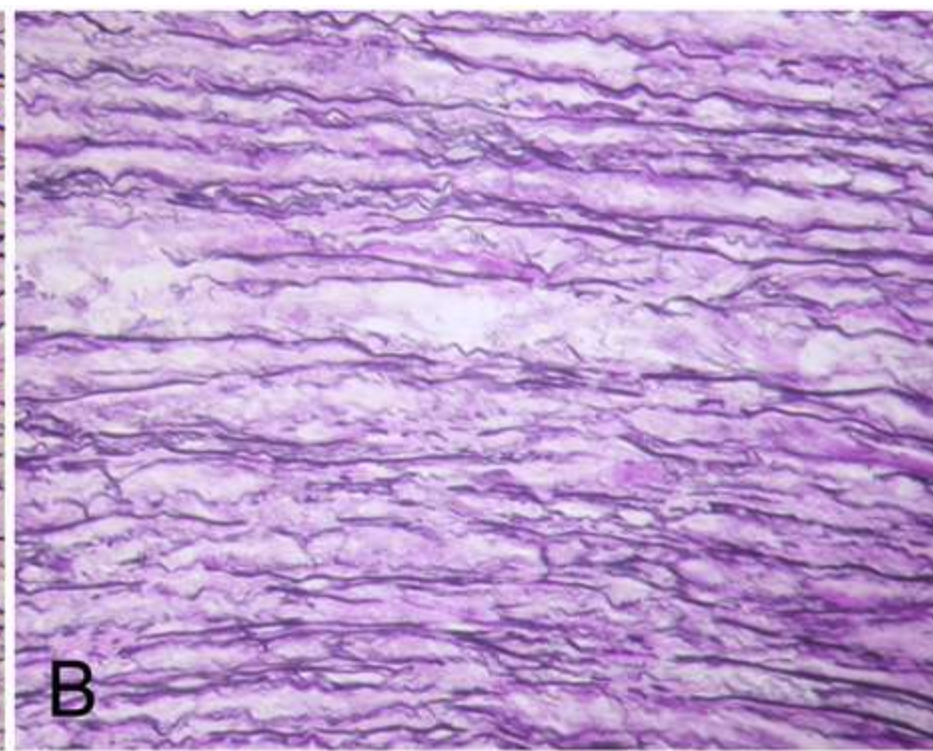
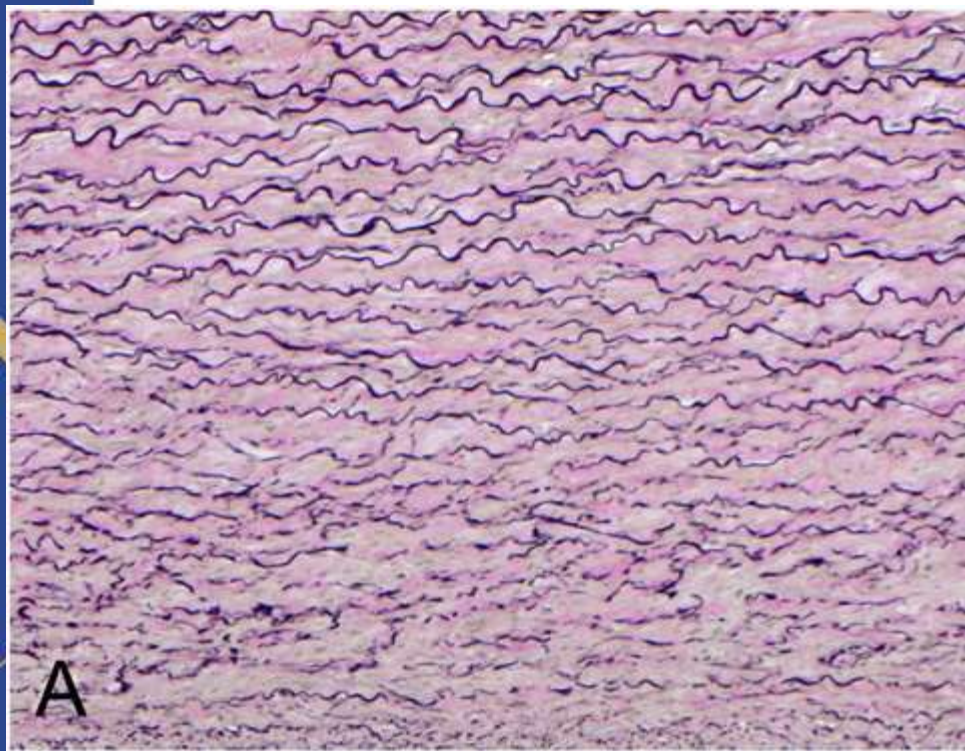
Diagnostic Pathology: Cardiovascular





Robbins and Cotran Pathologic Basis of Disease





Elastic staining

M.K. Halushka et al. / Cardiovascular Pathology 25 (2016) 247–257

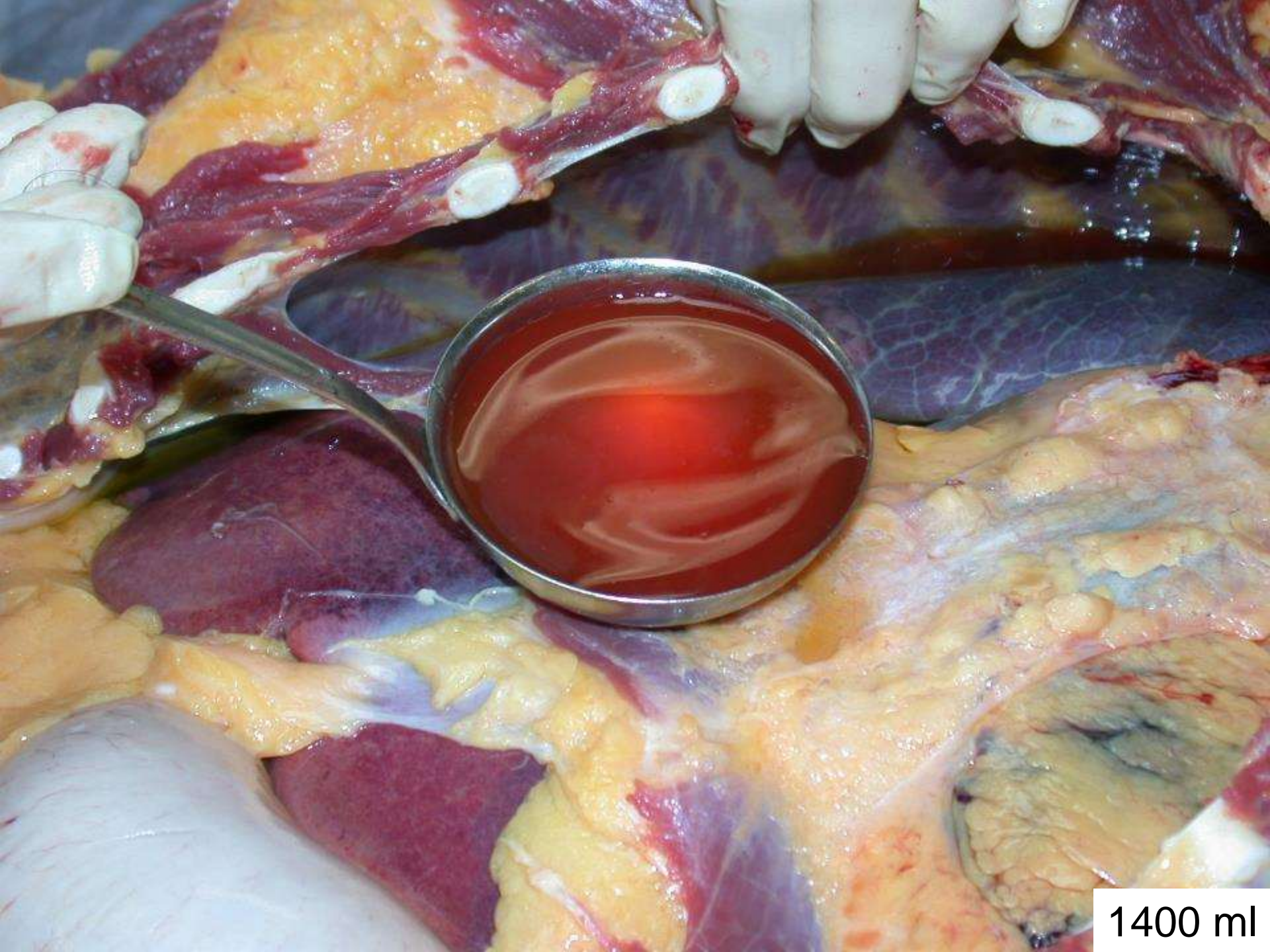


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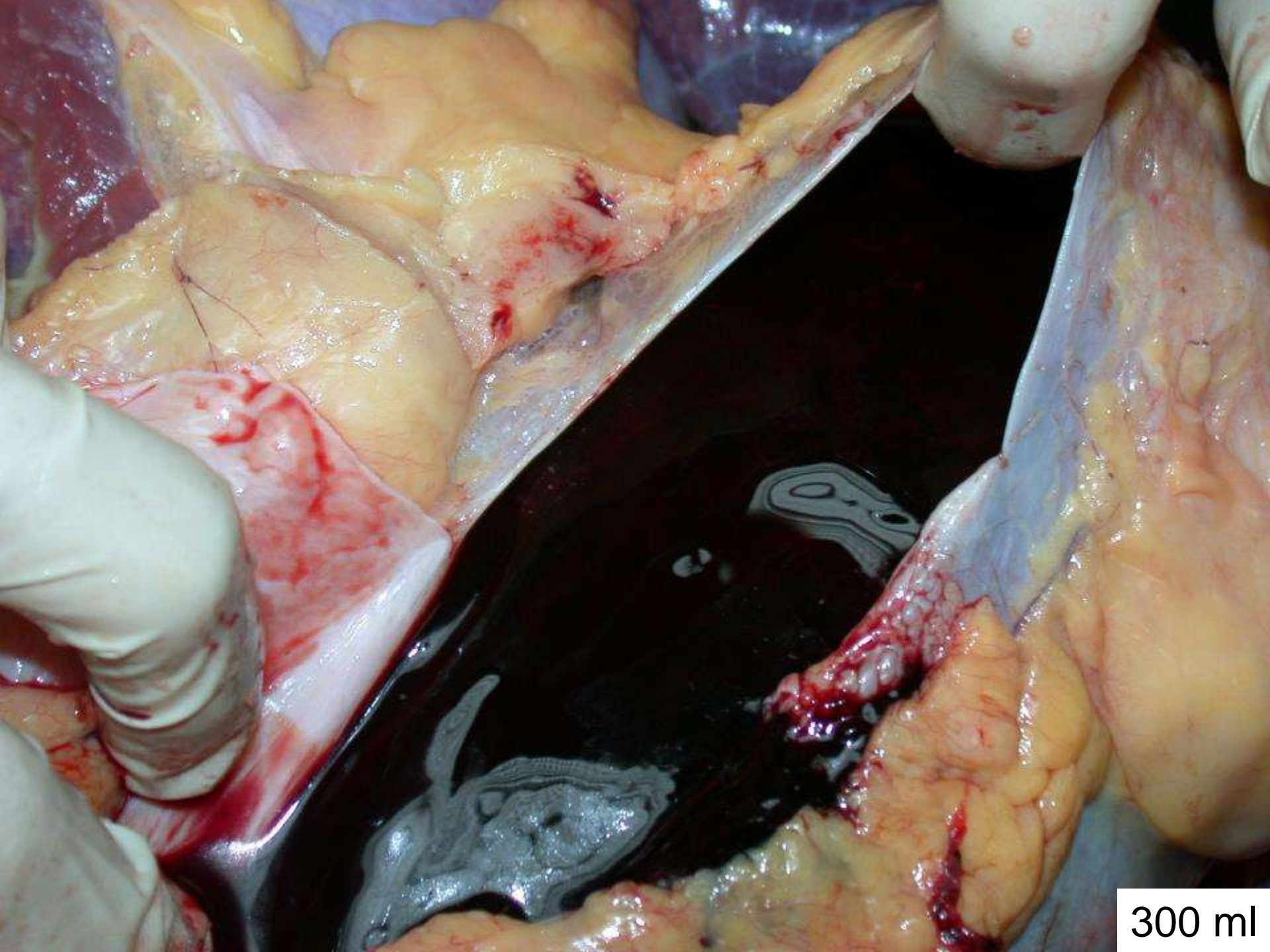
Attila Fintha MD PhD

Case 1.

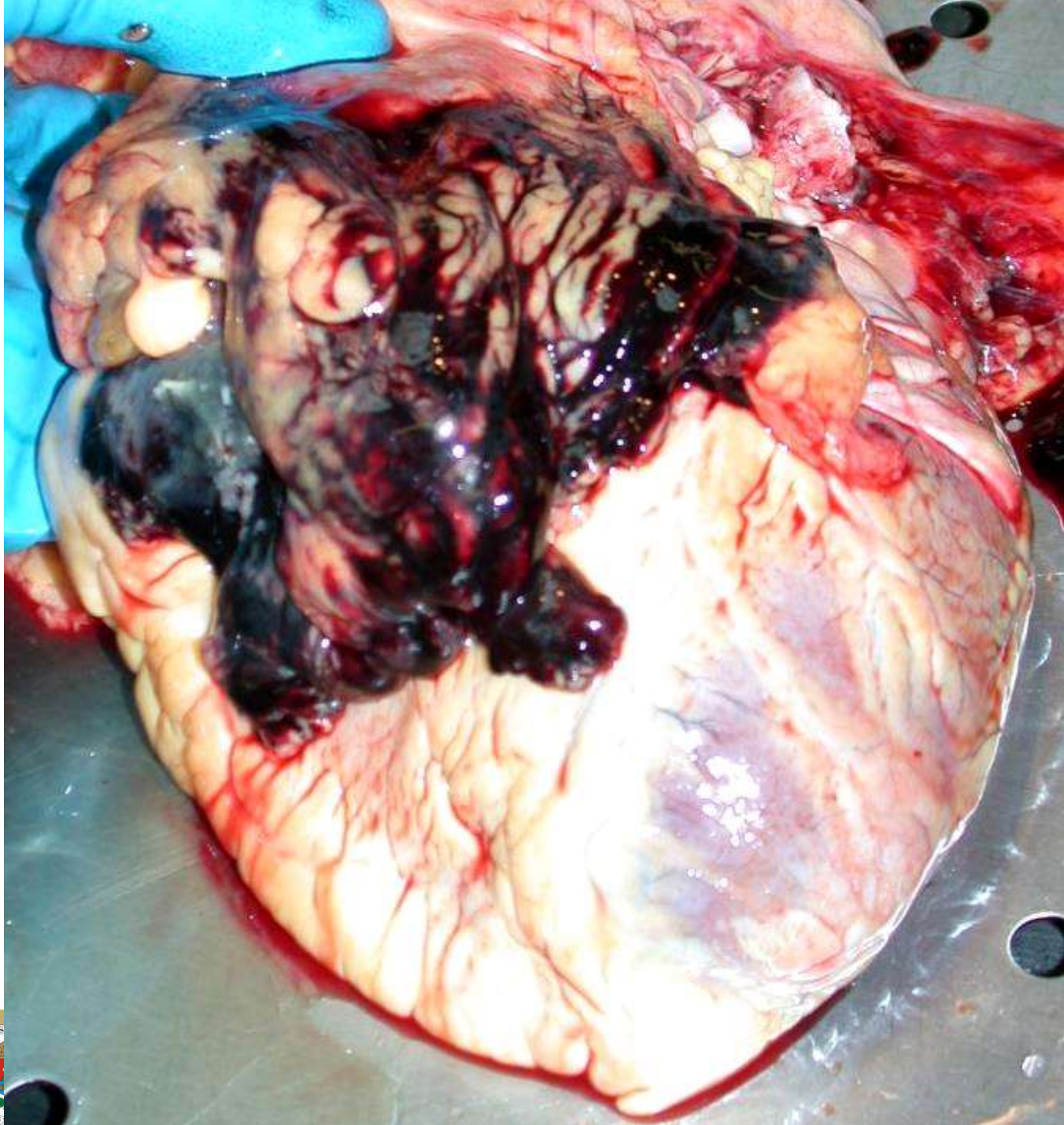




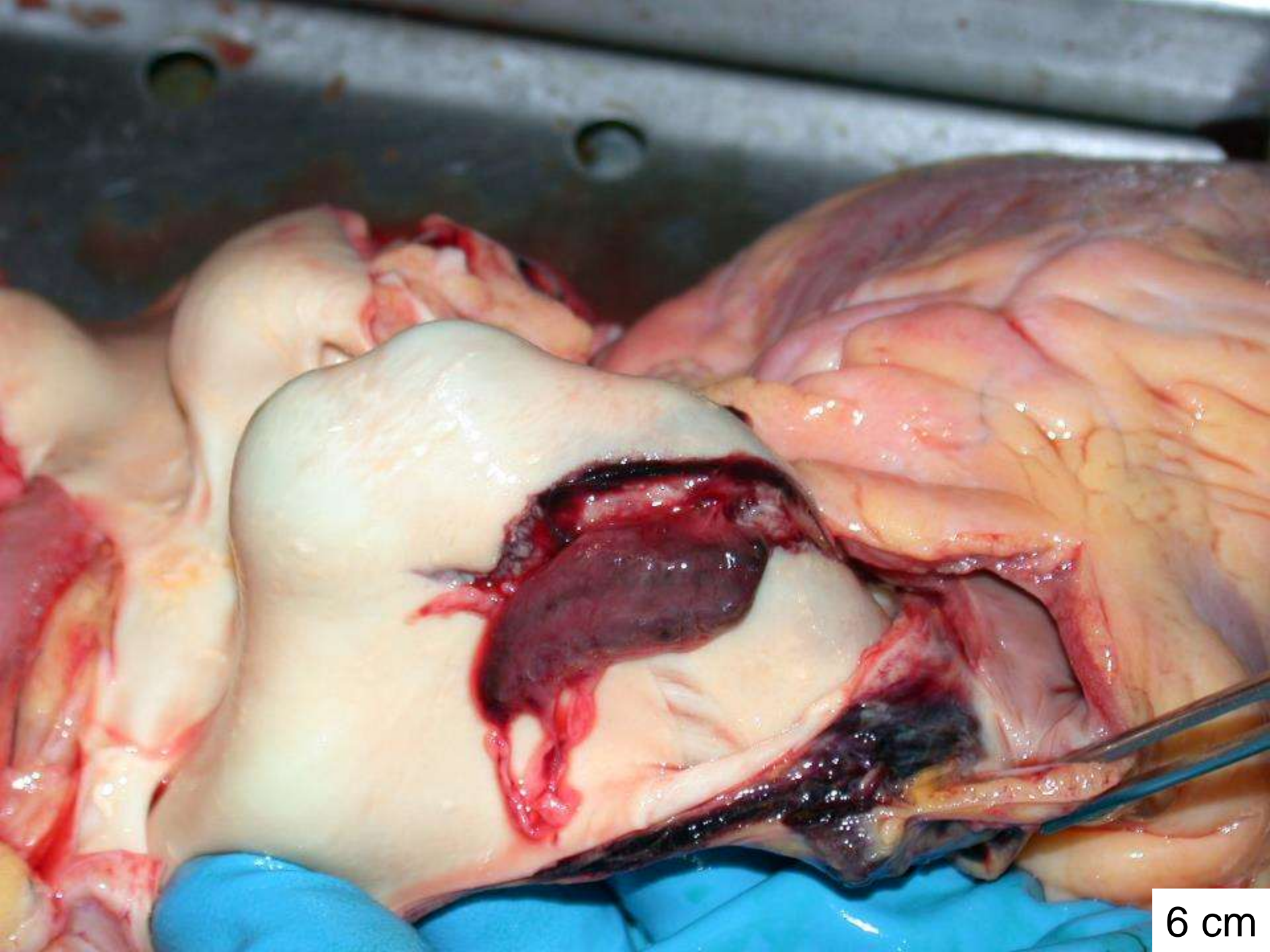
1400 ml



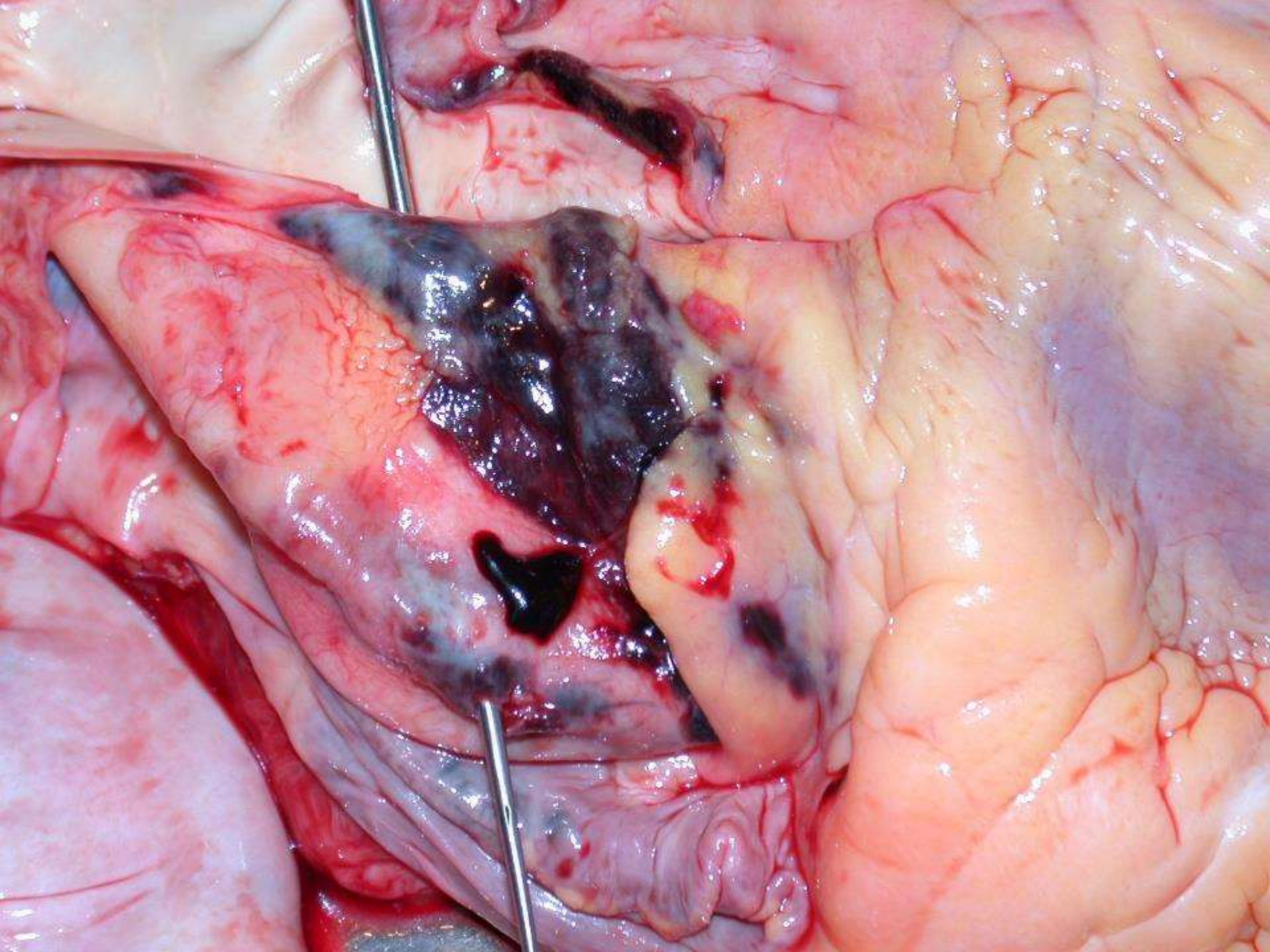
300 ml

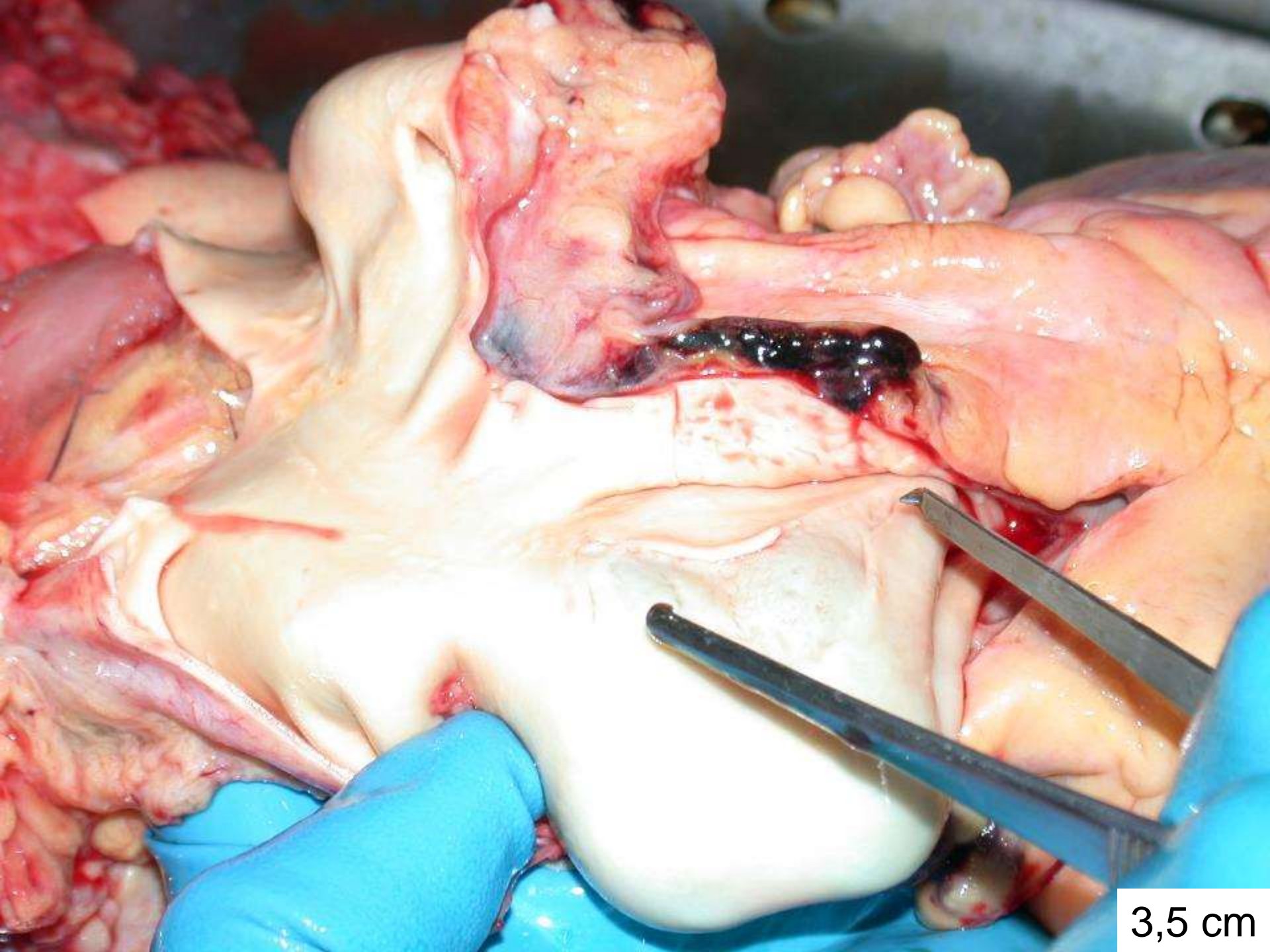


MD PhD
570 g

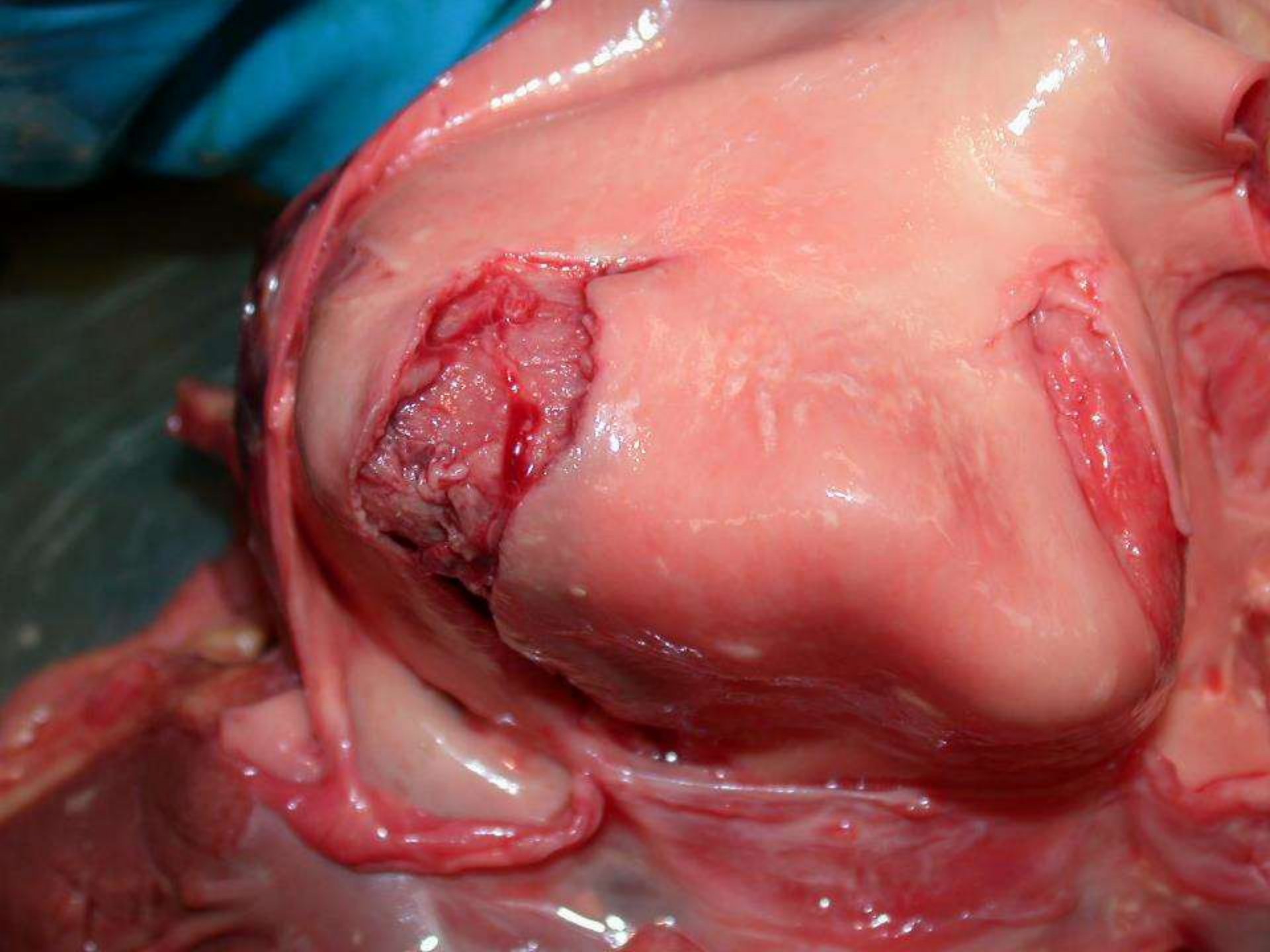


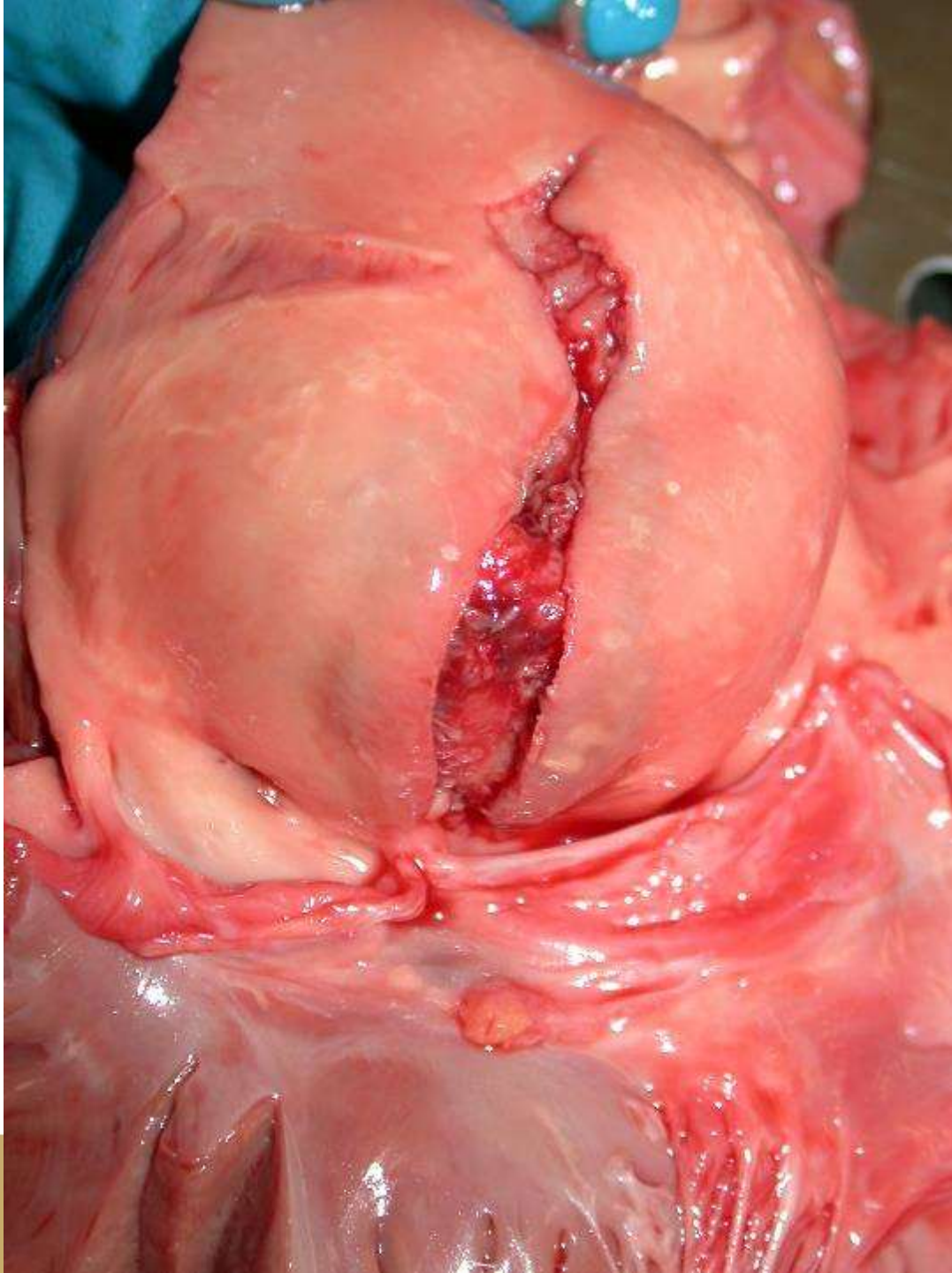
6 cm





3,5 cm





Case 1. summary

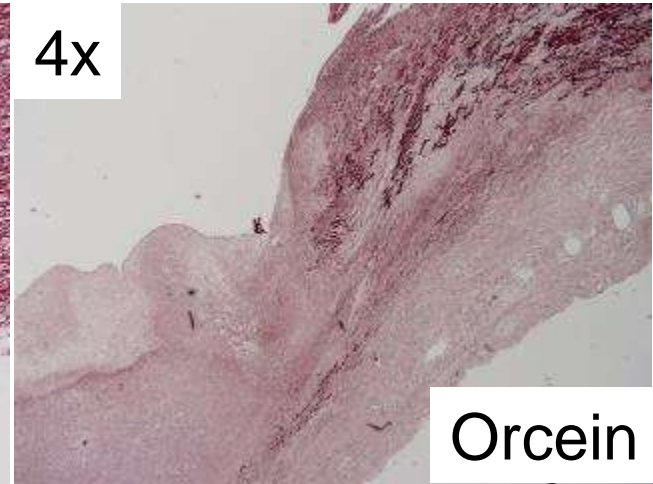
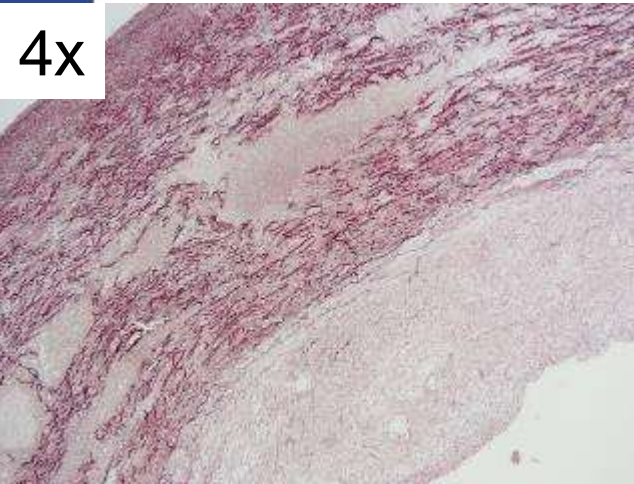
Multiple ascendent aorta and aortic arch dissection



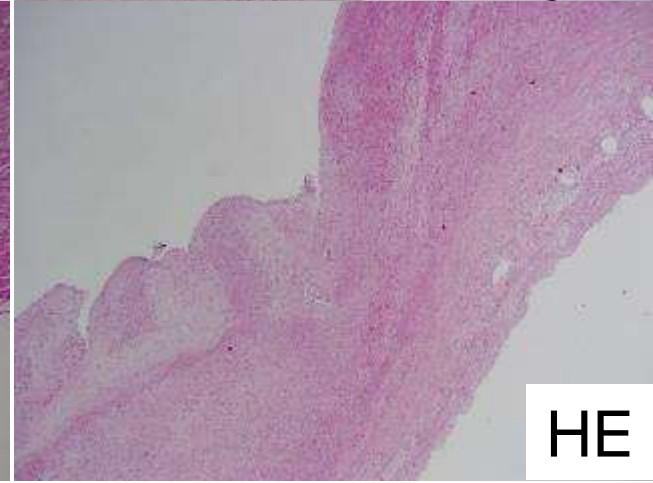
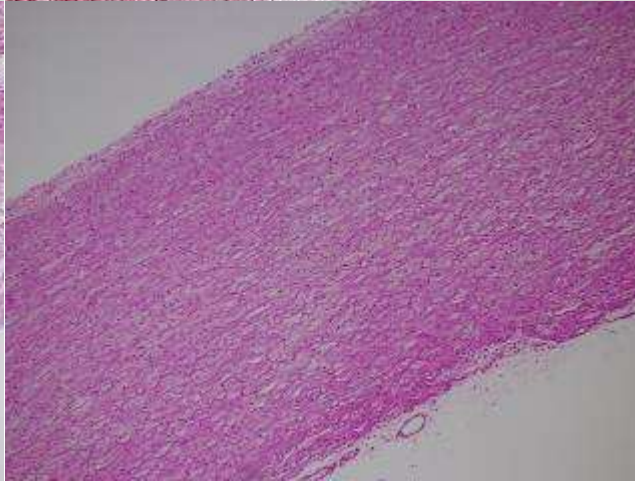
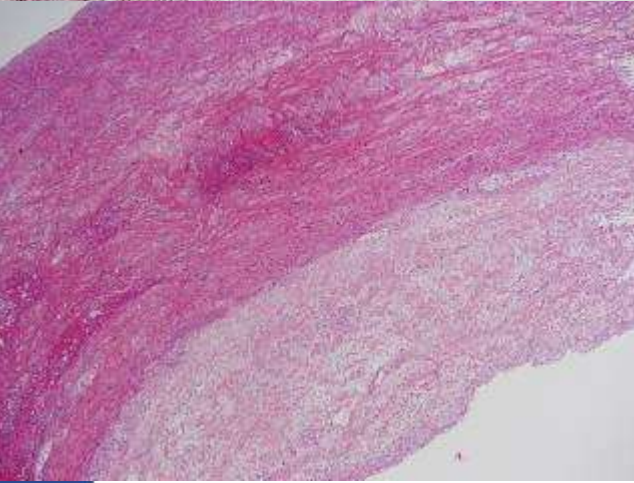
Recent rupture

Normal segment

Old rupture



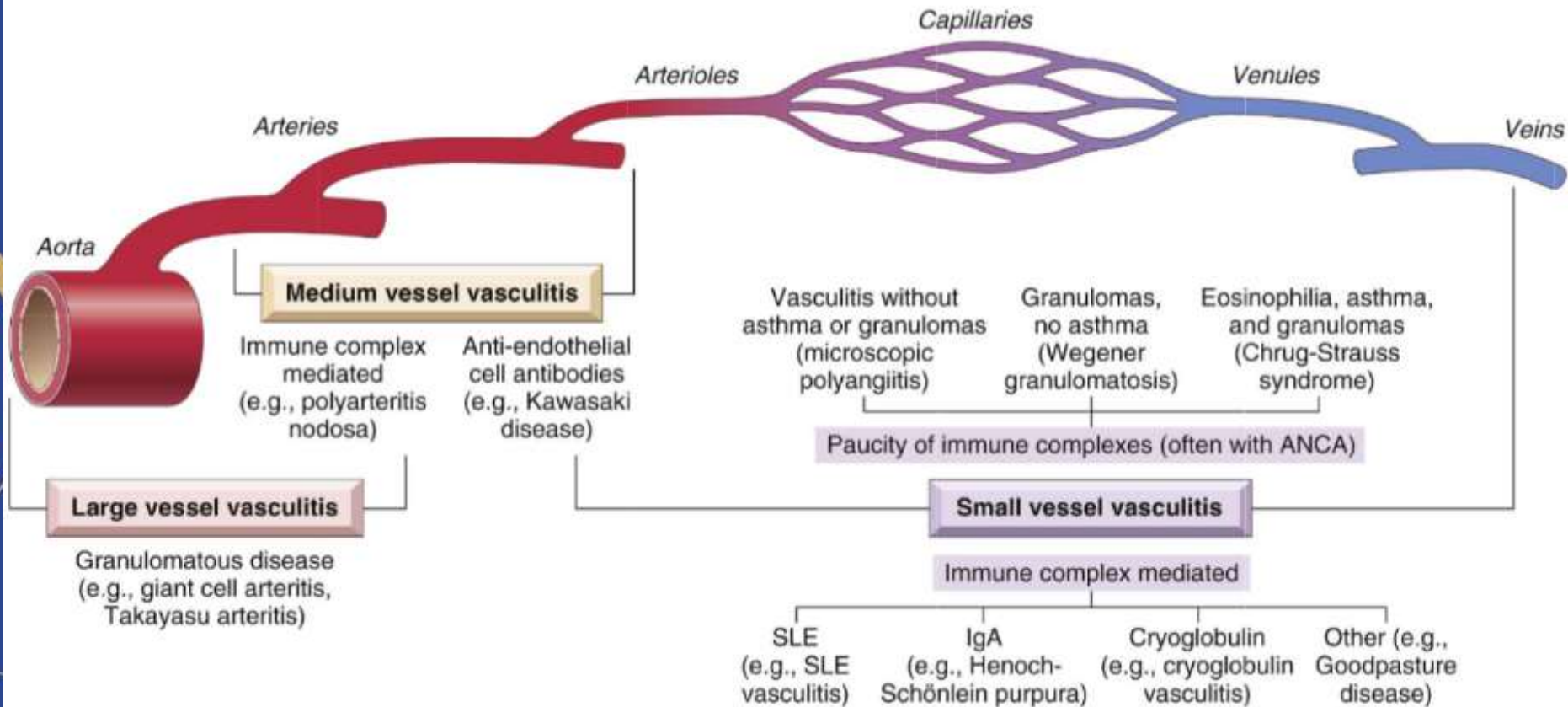
Orcein



HE



Vasculitis (Chapell Hill 2012)



Robbins and Cotran Pathologic Basis of Disease





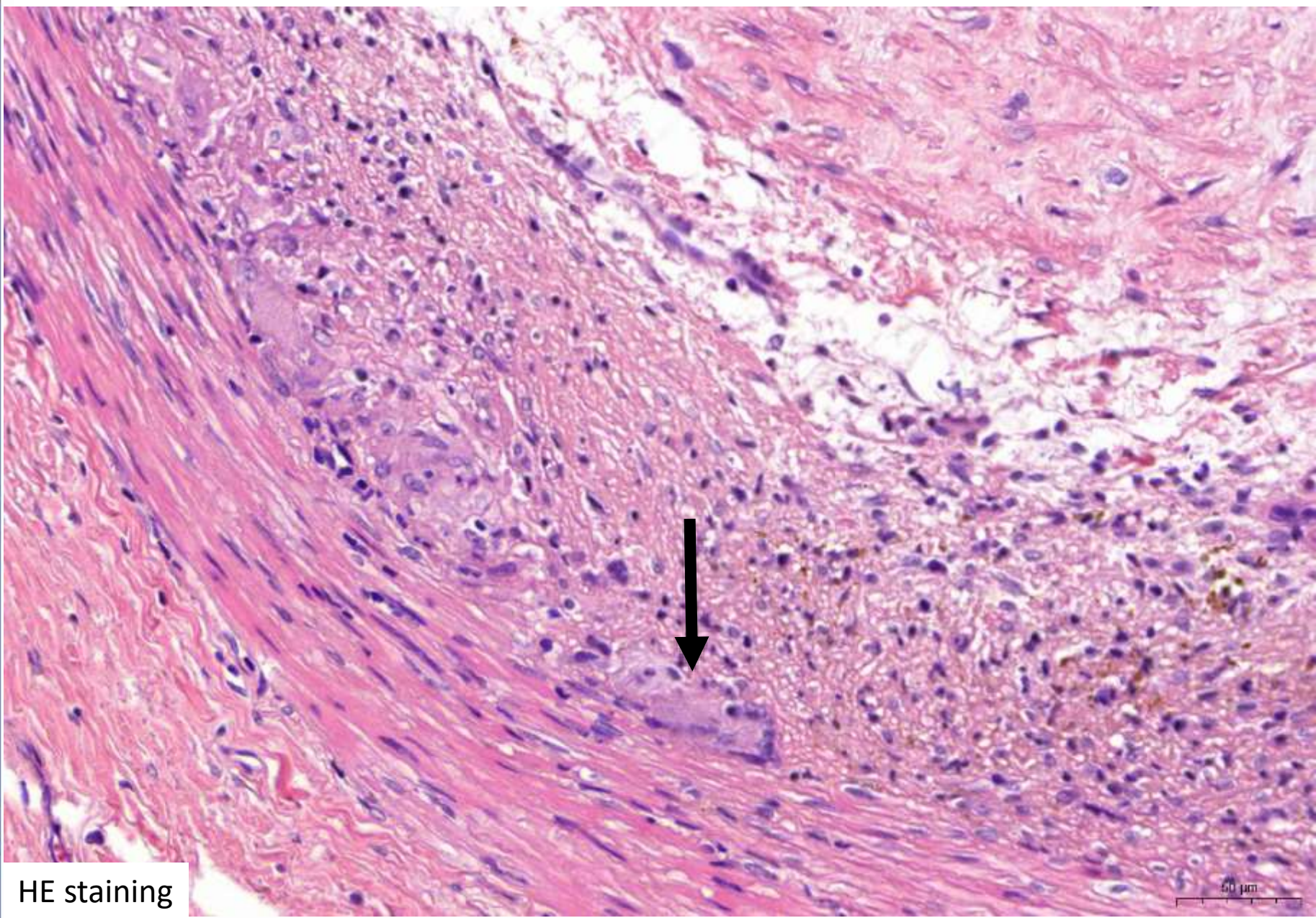
HE staining

500 μ m



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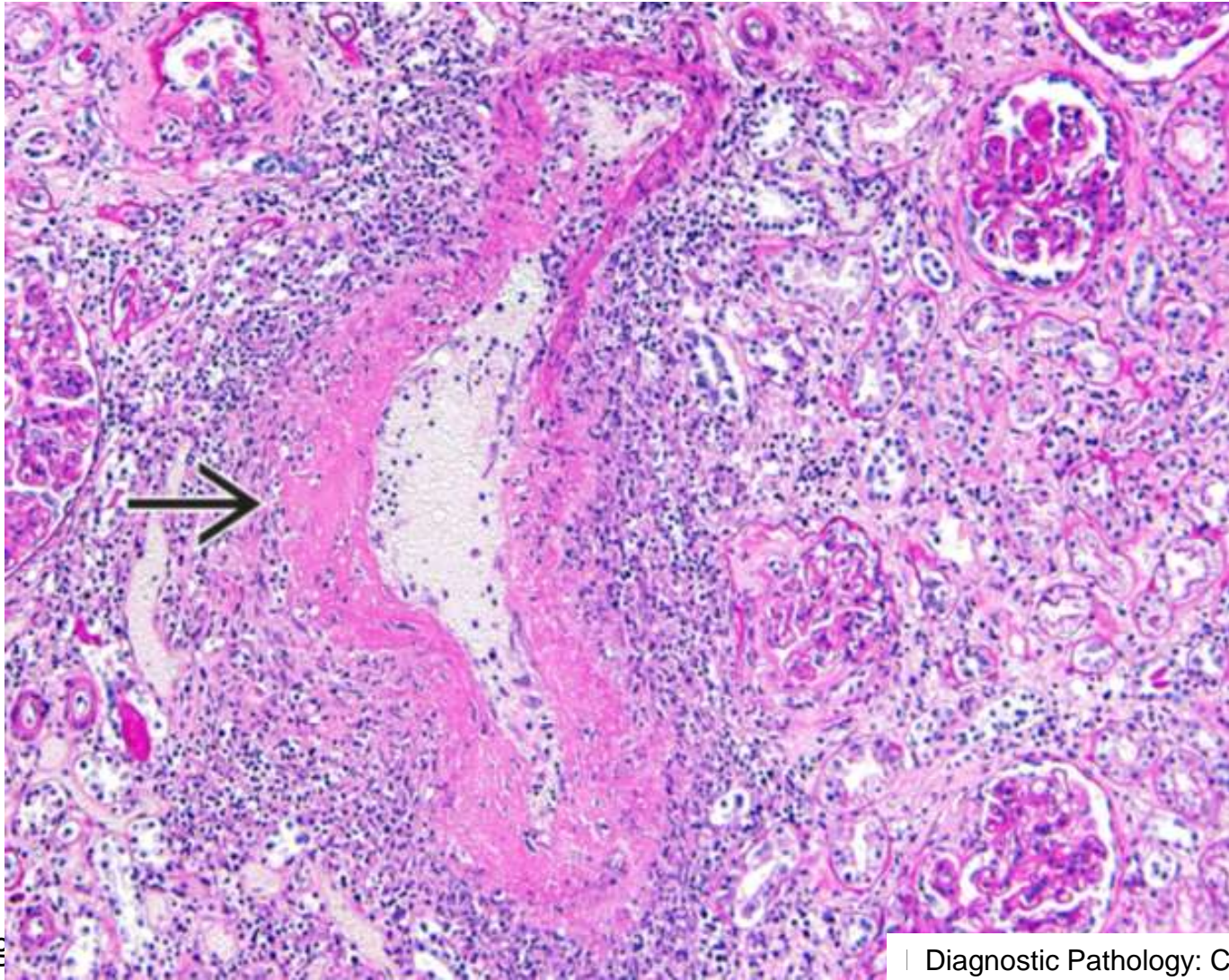
HE staining



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Necrotizing vasculitis



HE staining

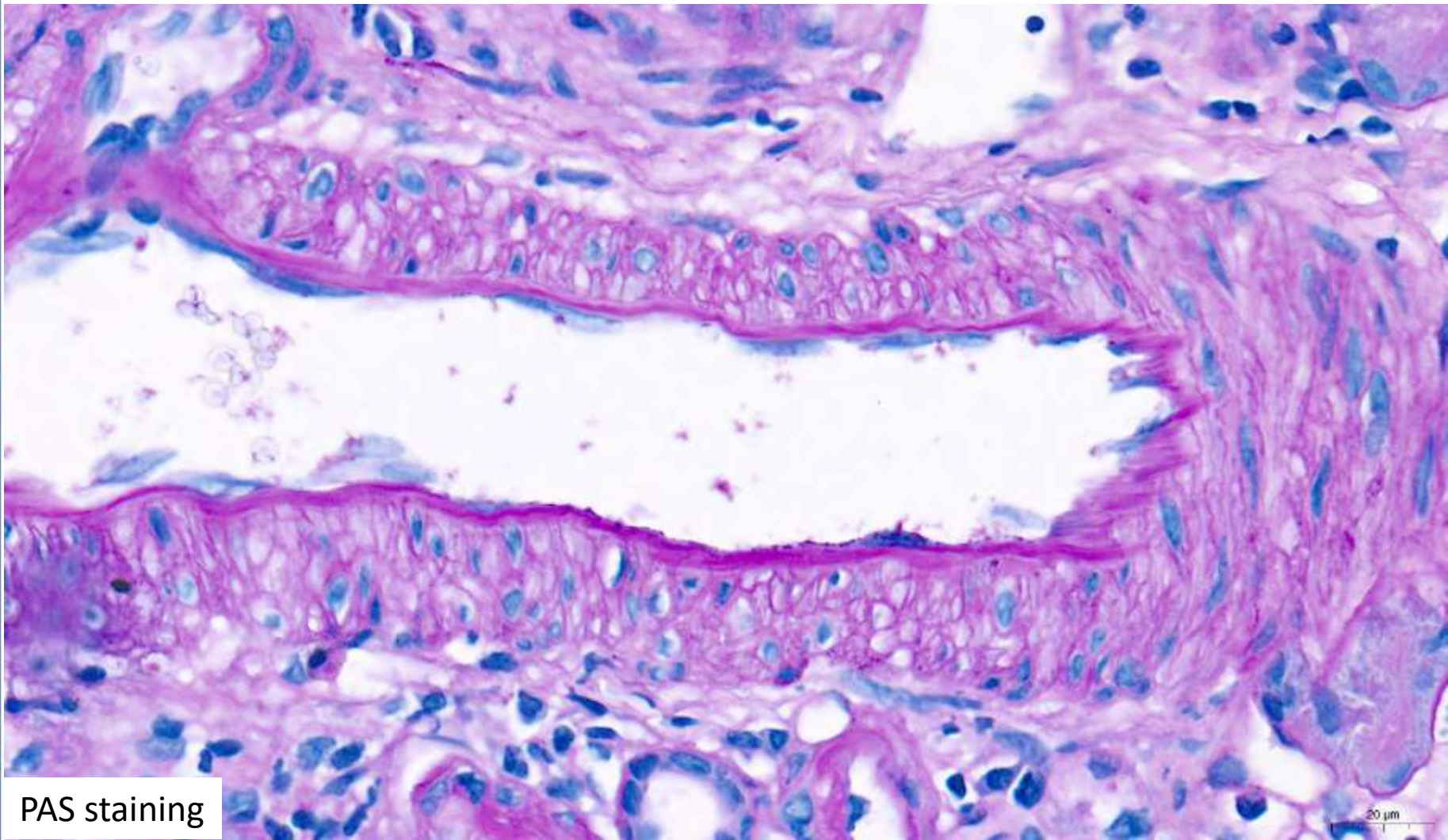
| Diagnostic Pathology: Cardiovascular



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Normal artery



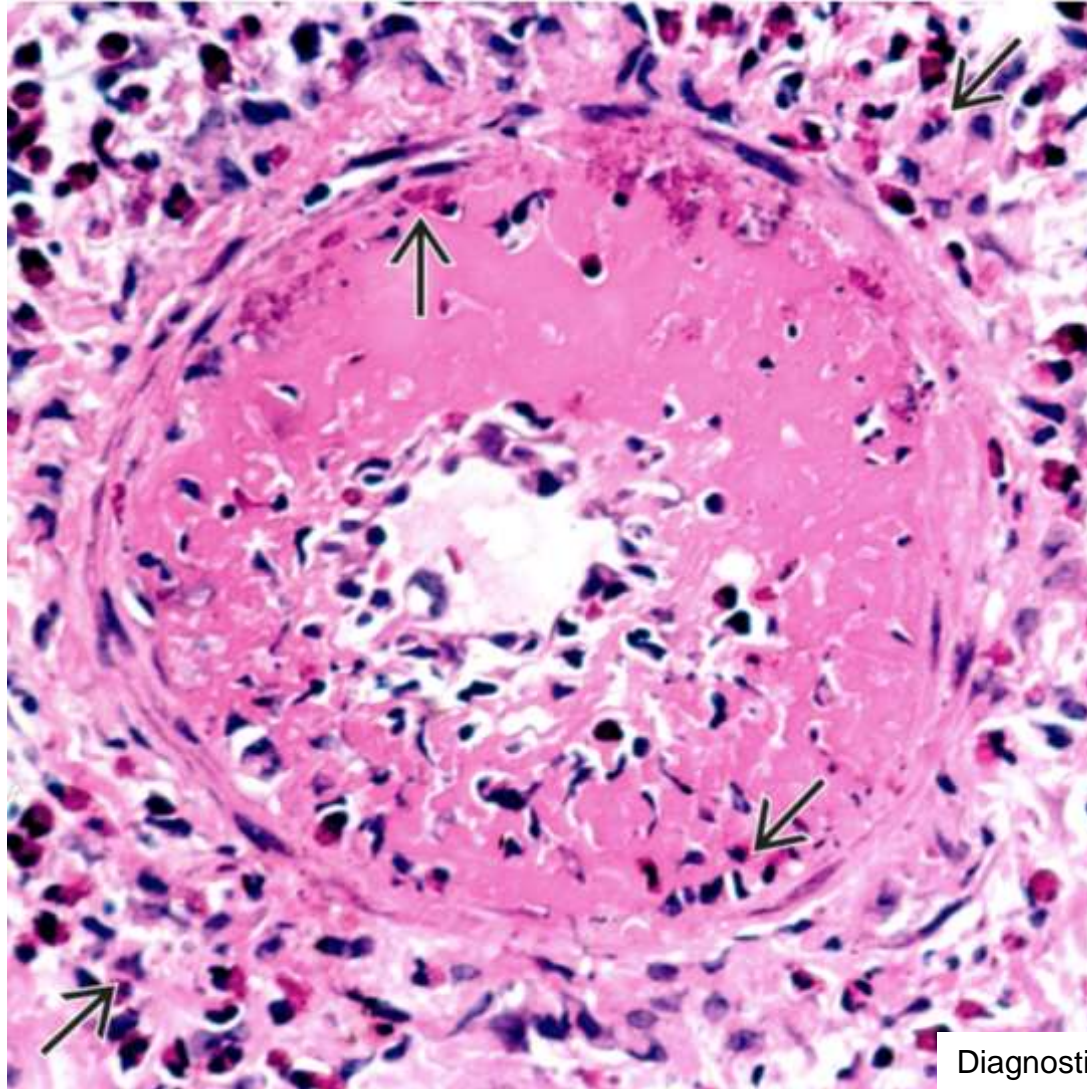
PAS staining



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Necrotizing vasculitis with eosinophils

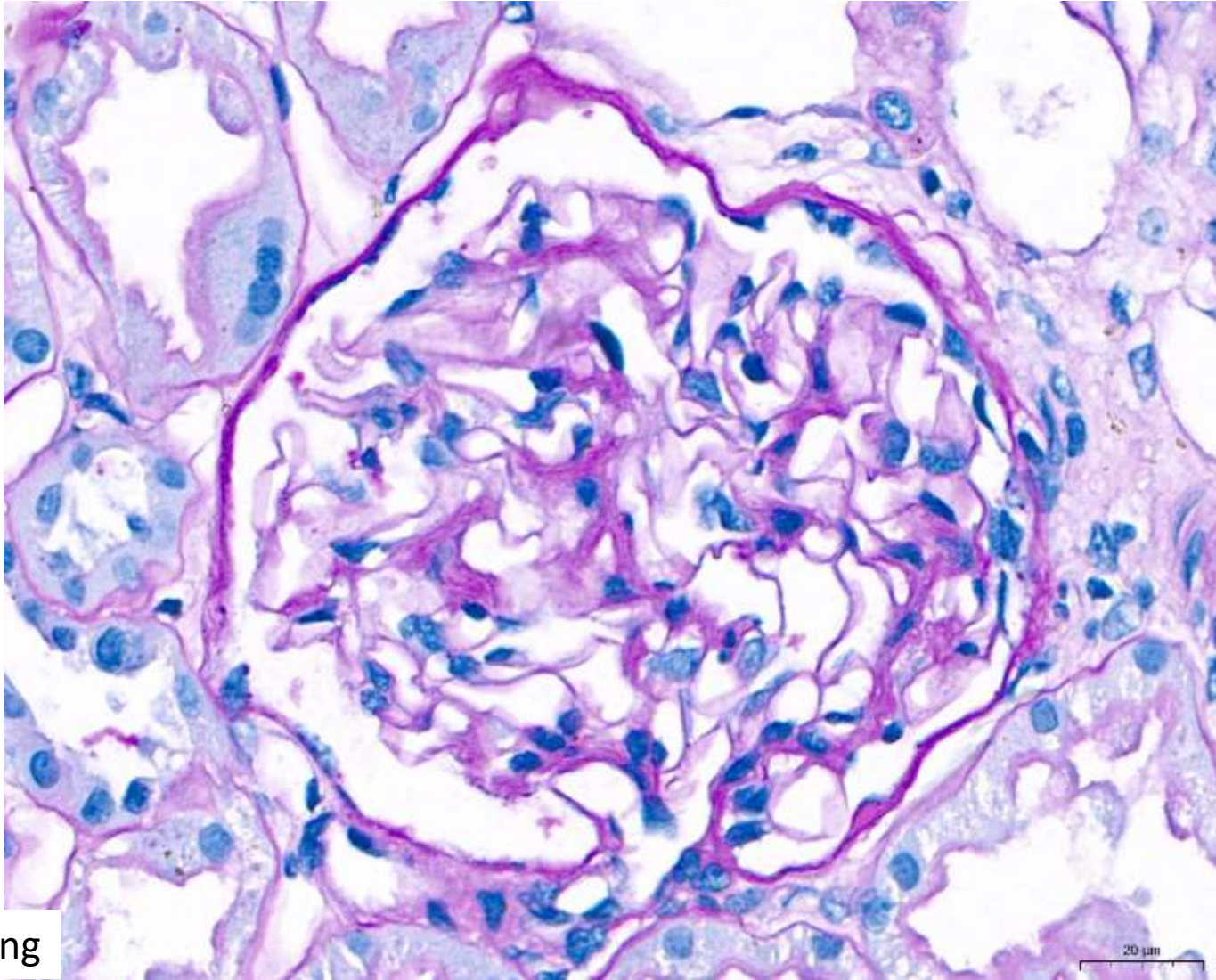


HE staining

Diagnostic Pathology: Cardiovascular



Normal glomerulus



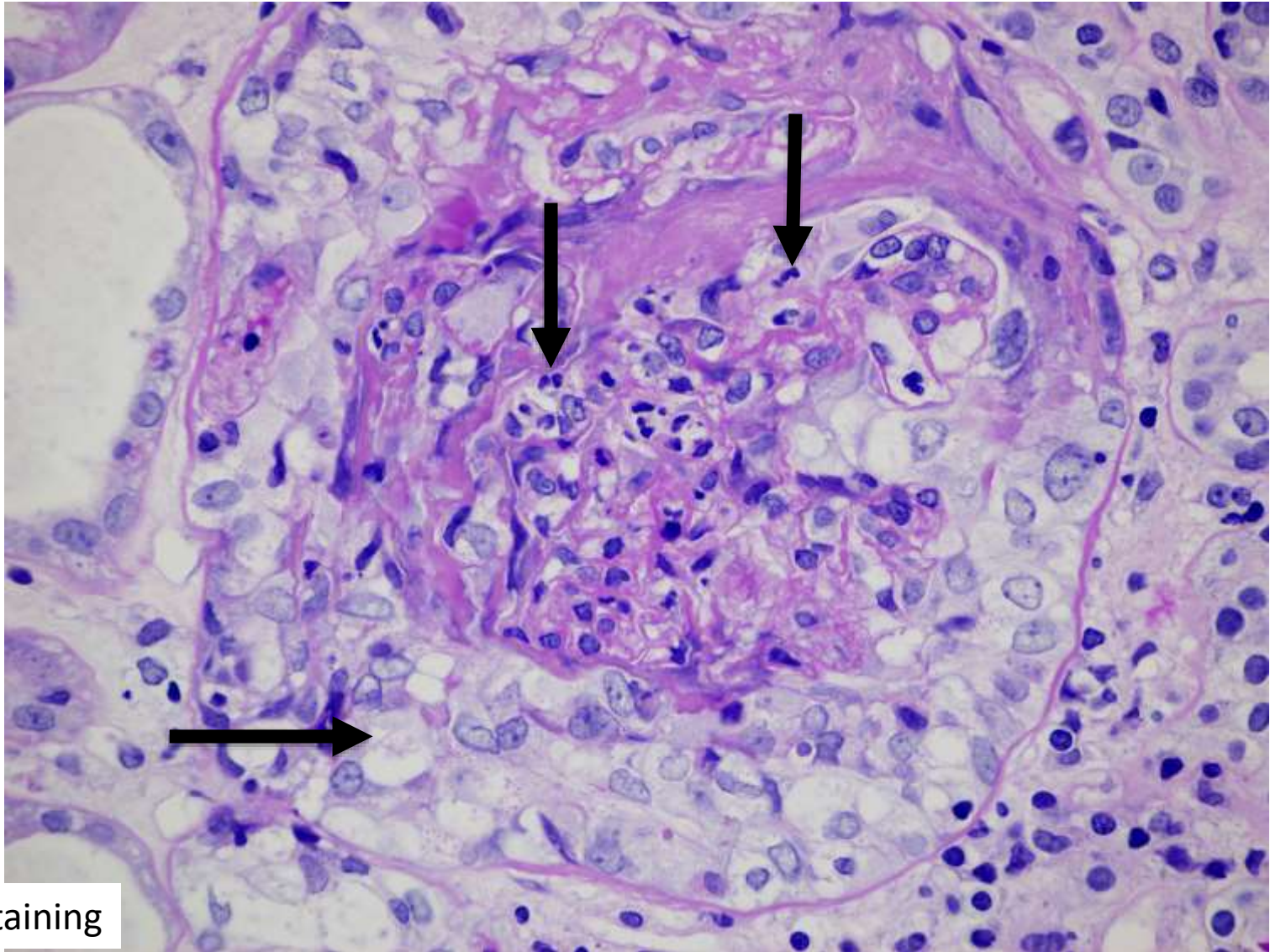
PAS staining



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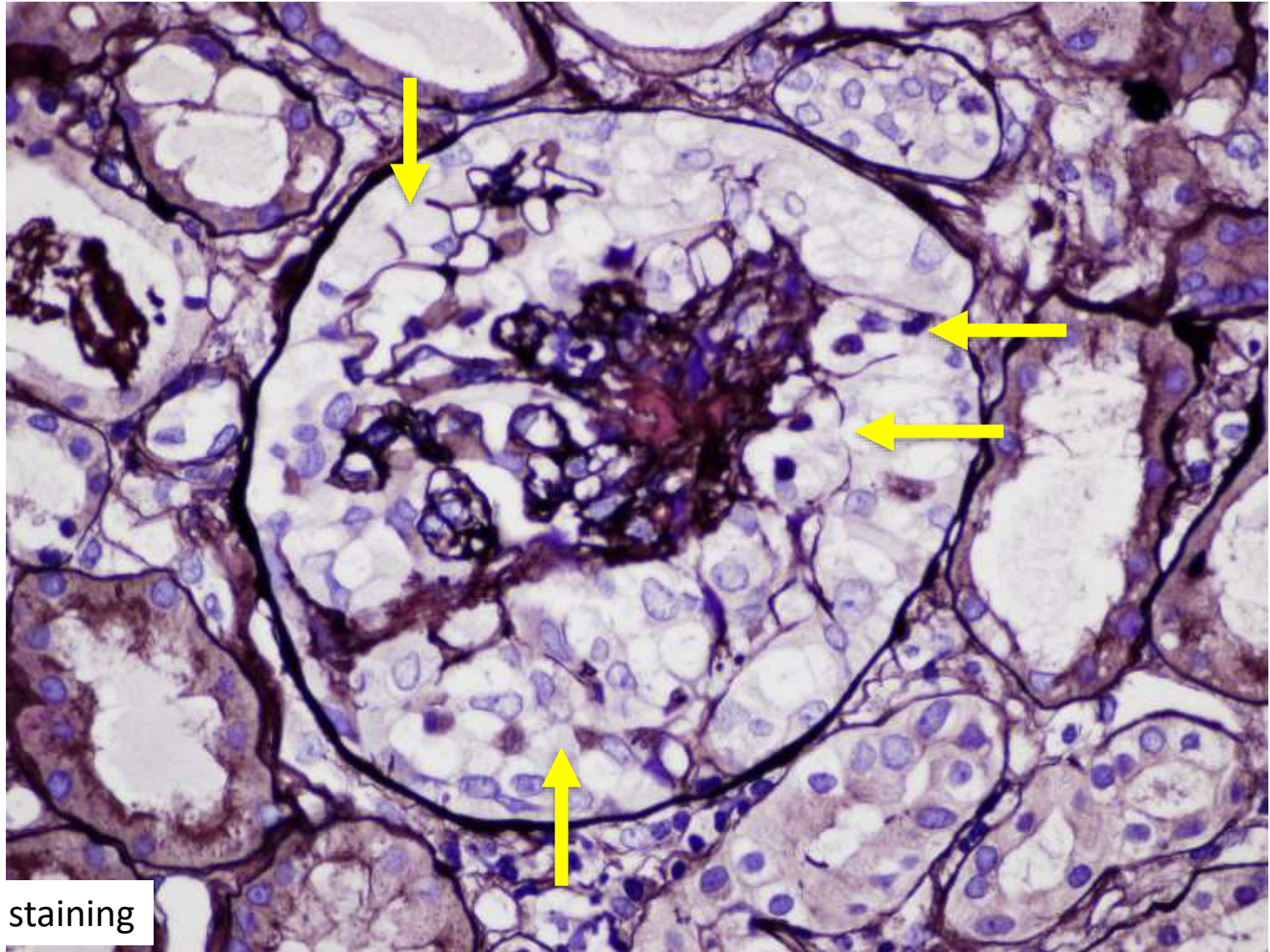
Microscopic polyangiitis



PAS staining



Microscopic polyangiitis

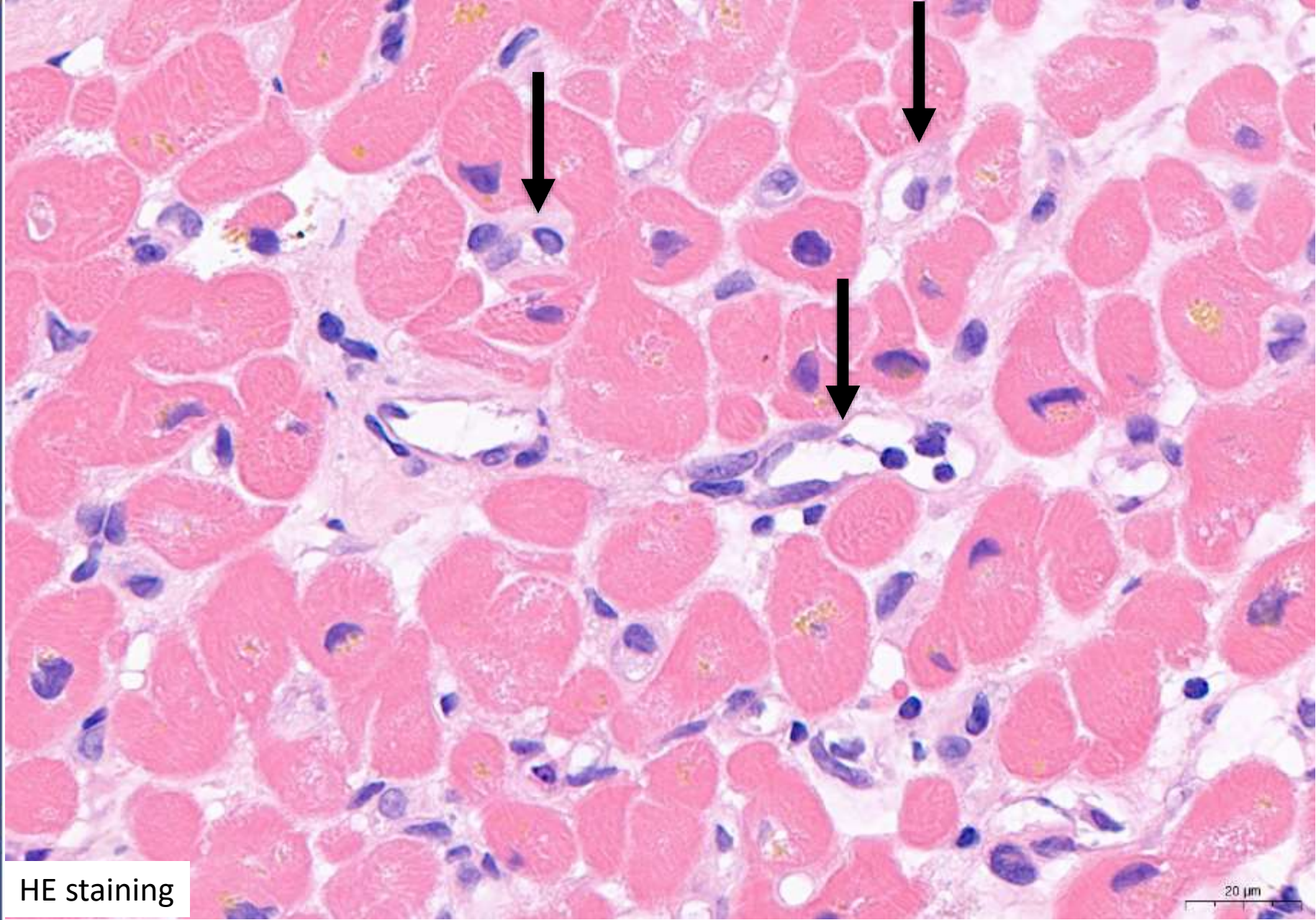


Jones staining



Case 2.





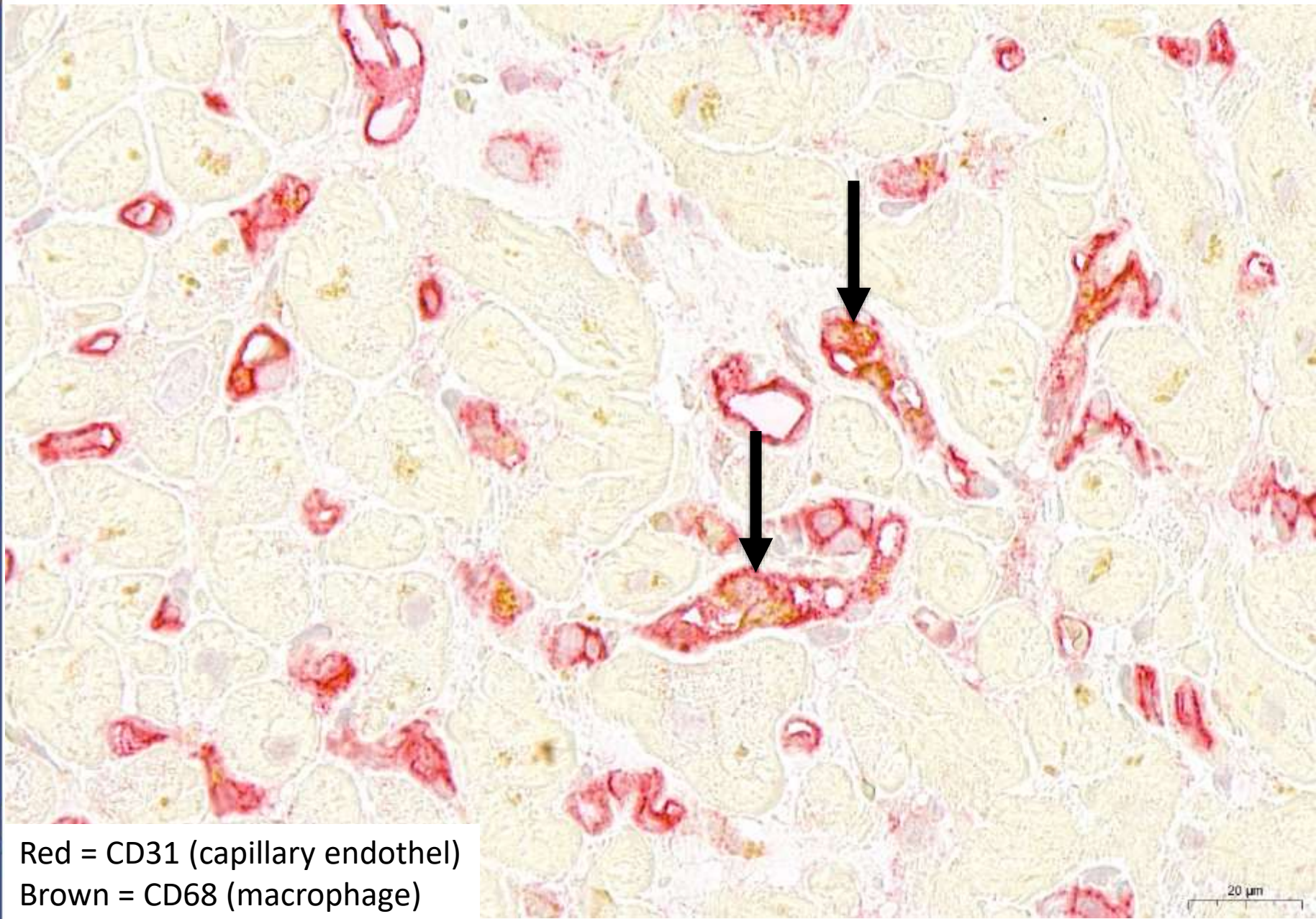
HE staining

20 μ m



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Red = CD31 (capillary endothel)
Brown = CD68 (macrophage)



Case 2. summary

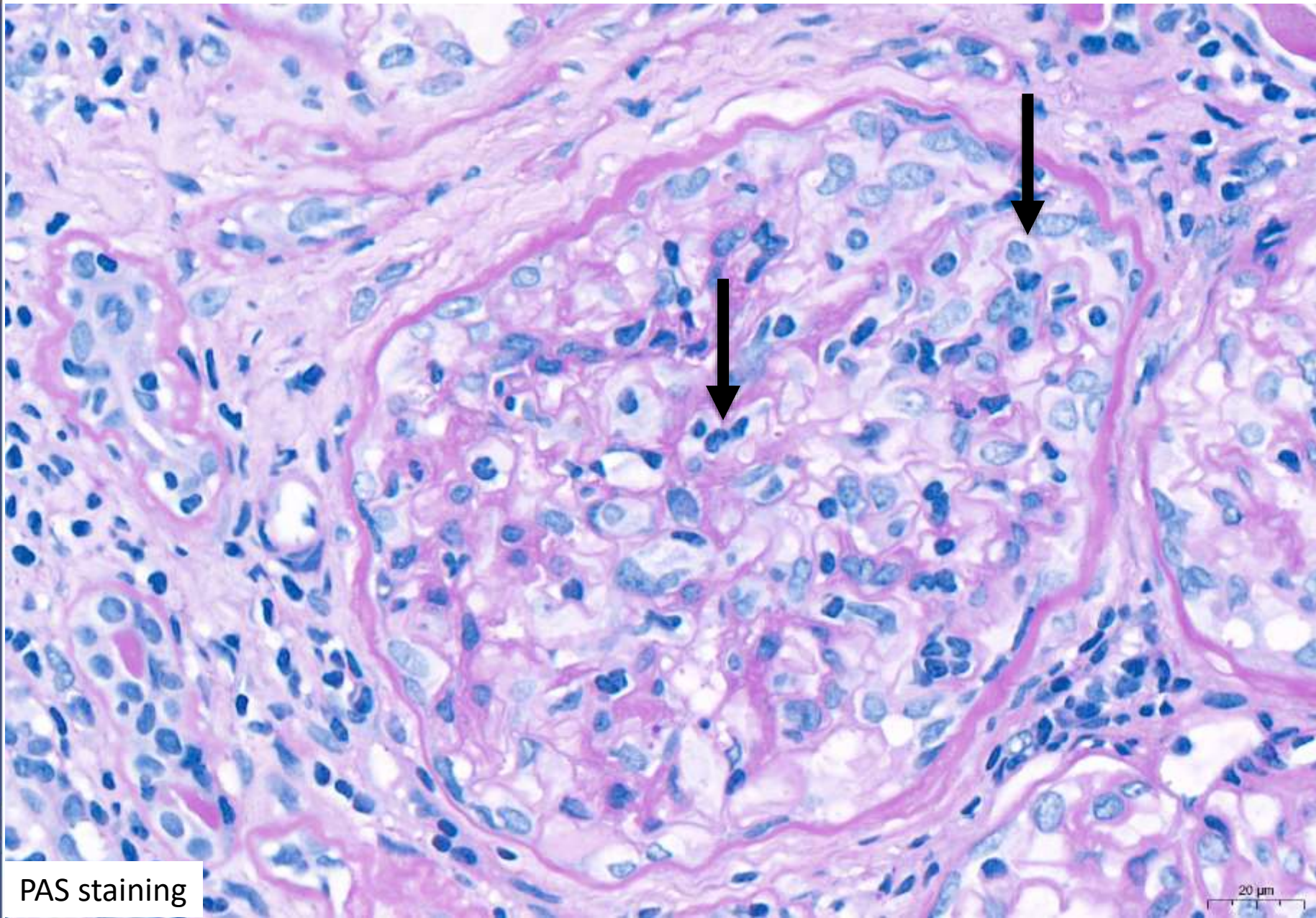
Rejection of transplanted heart

Microvascular inflammation (capillaritis)



Case 3.



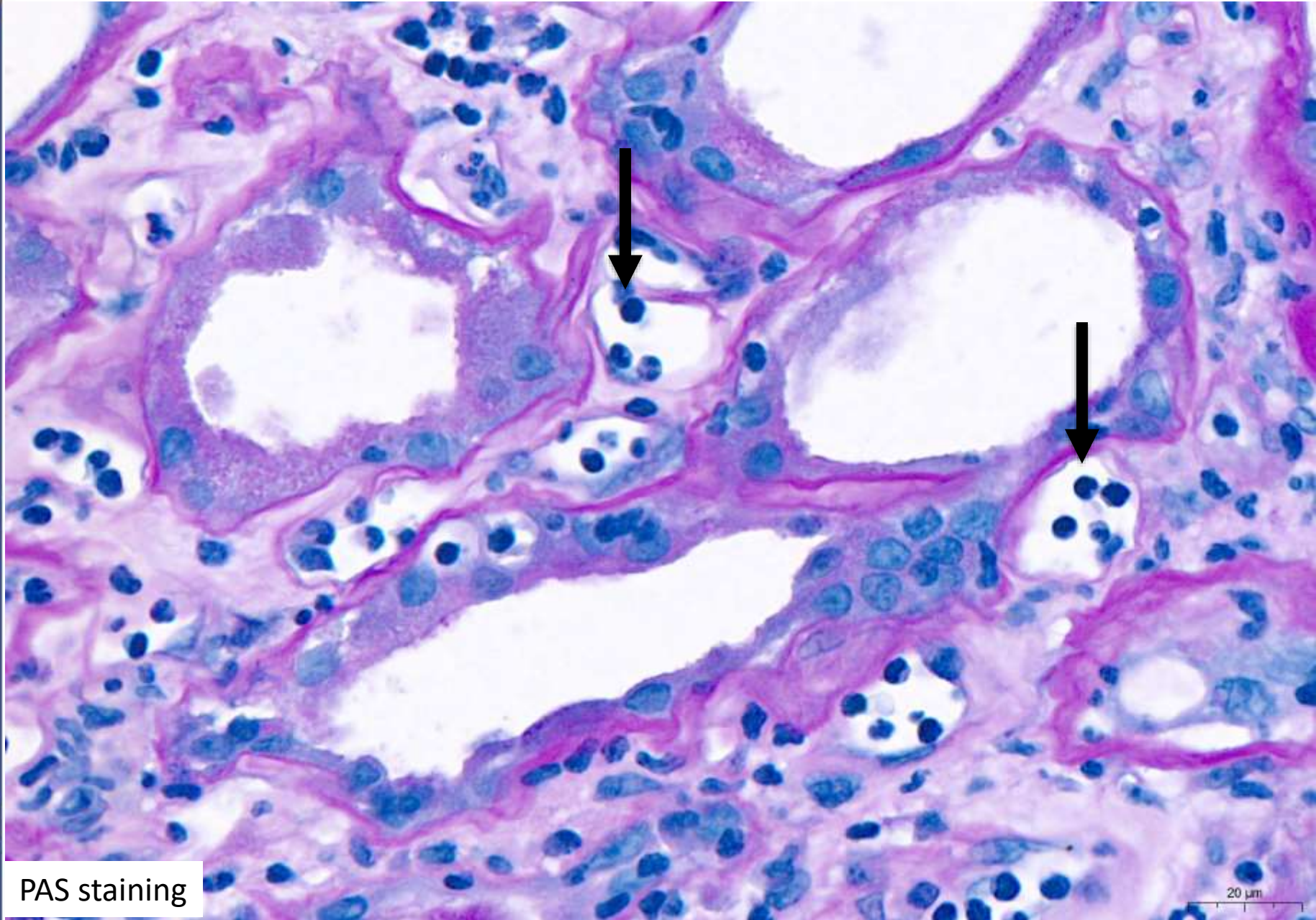


PAS staining



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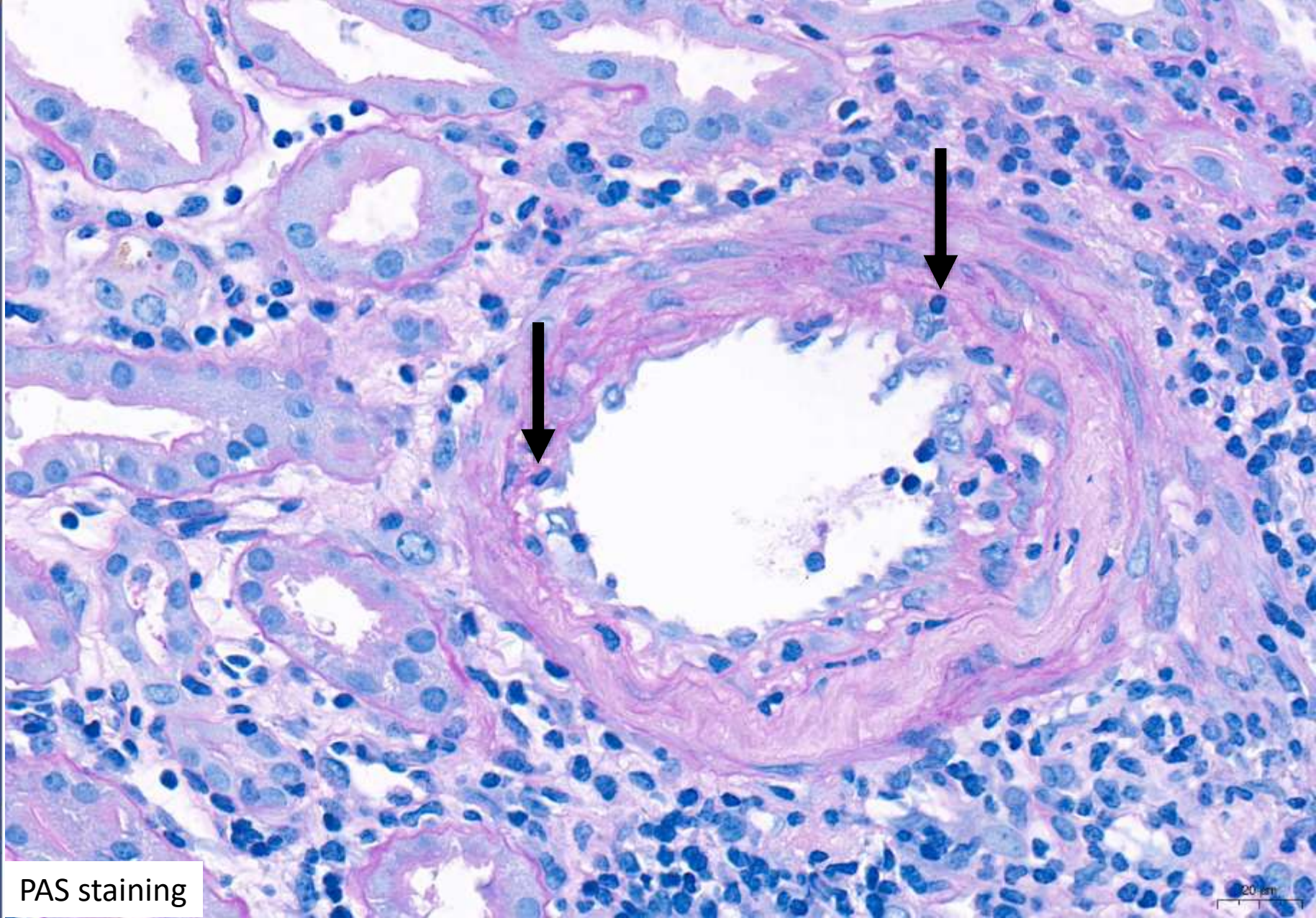
PAS staining

20 µm



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PAS staining



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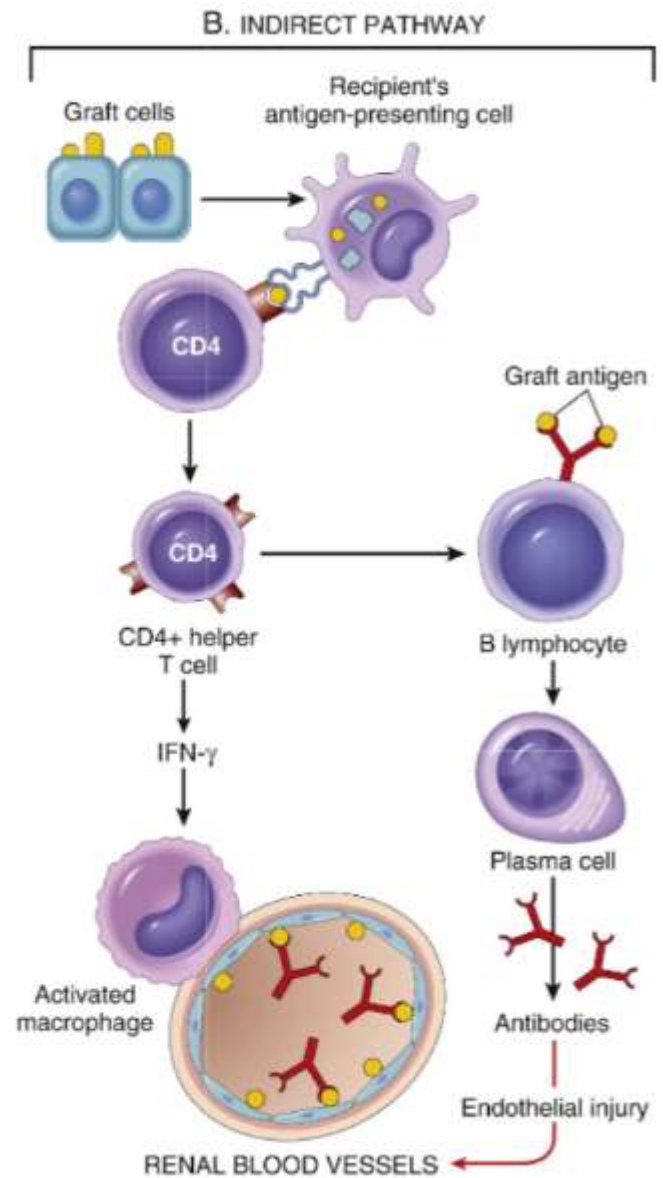
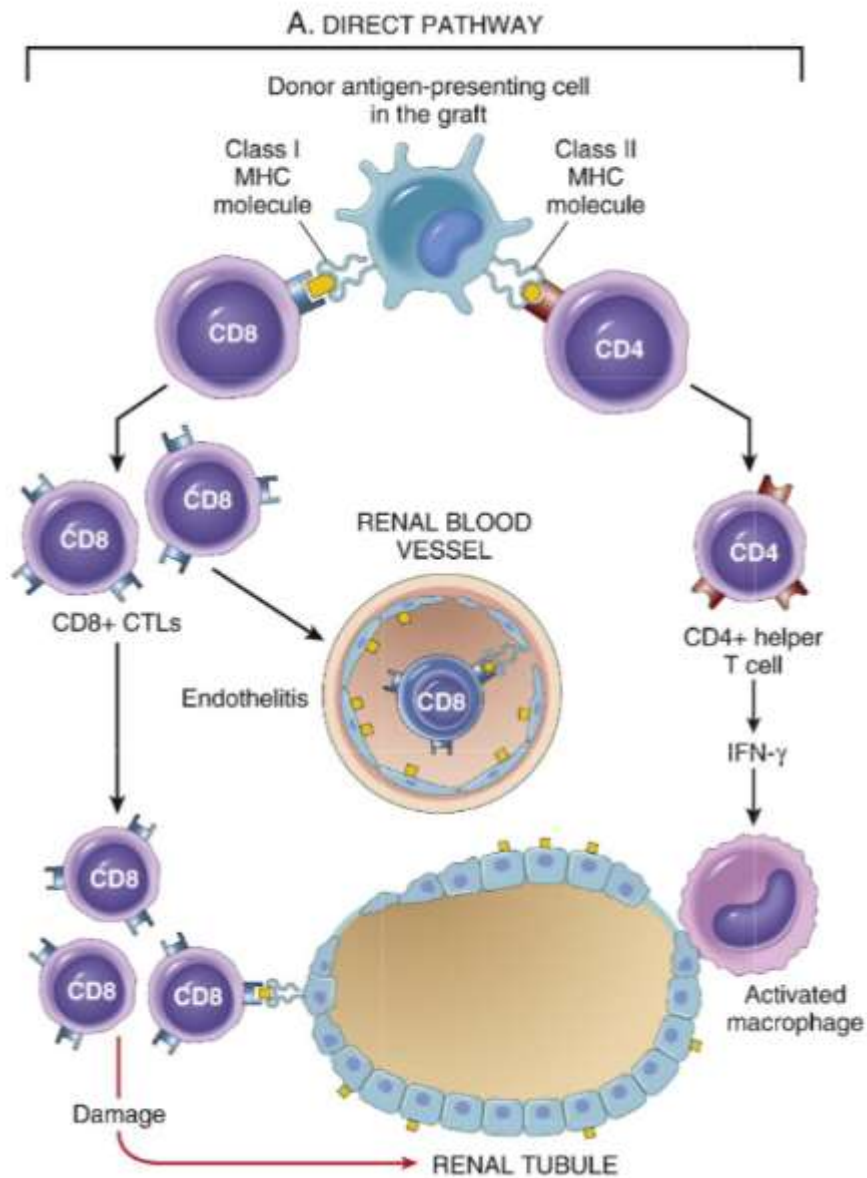
Case 3. summary

Rejection of transplanted kidney

Vasculitis

Microvascular inflammation (capillaritis)

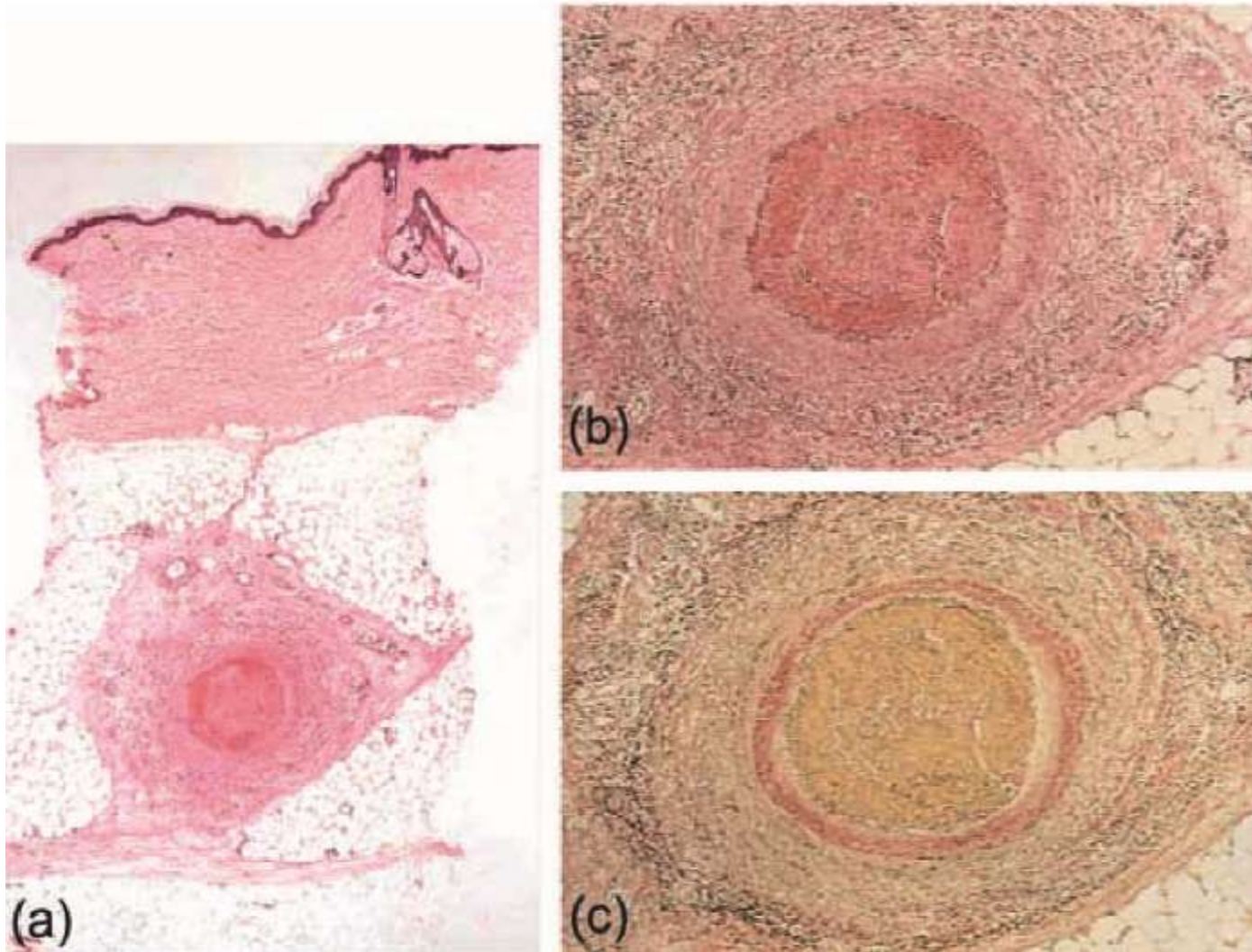




Robbins and Cotran Pathologic Basis of Disease



Inflammation of veins (thromboplebitis)



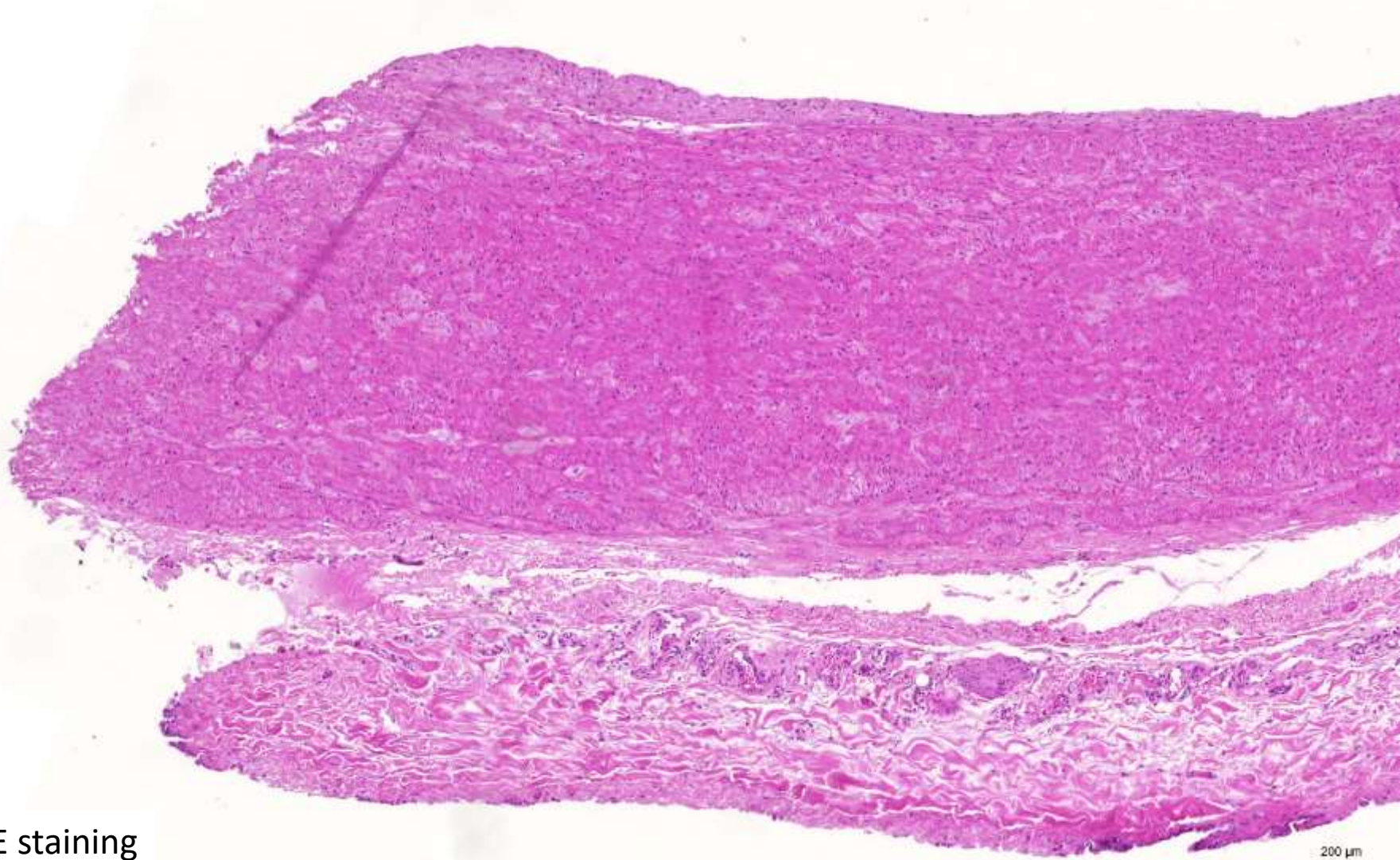
Cardiovascular Pathology, 4 ed



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Inflammation of „vessel of vessels”



HE staining

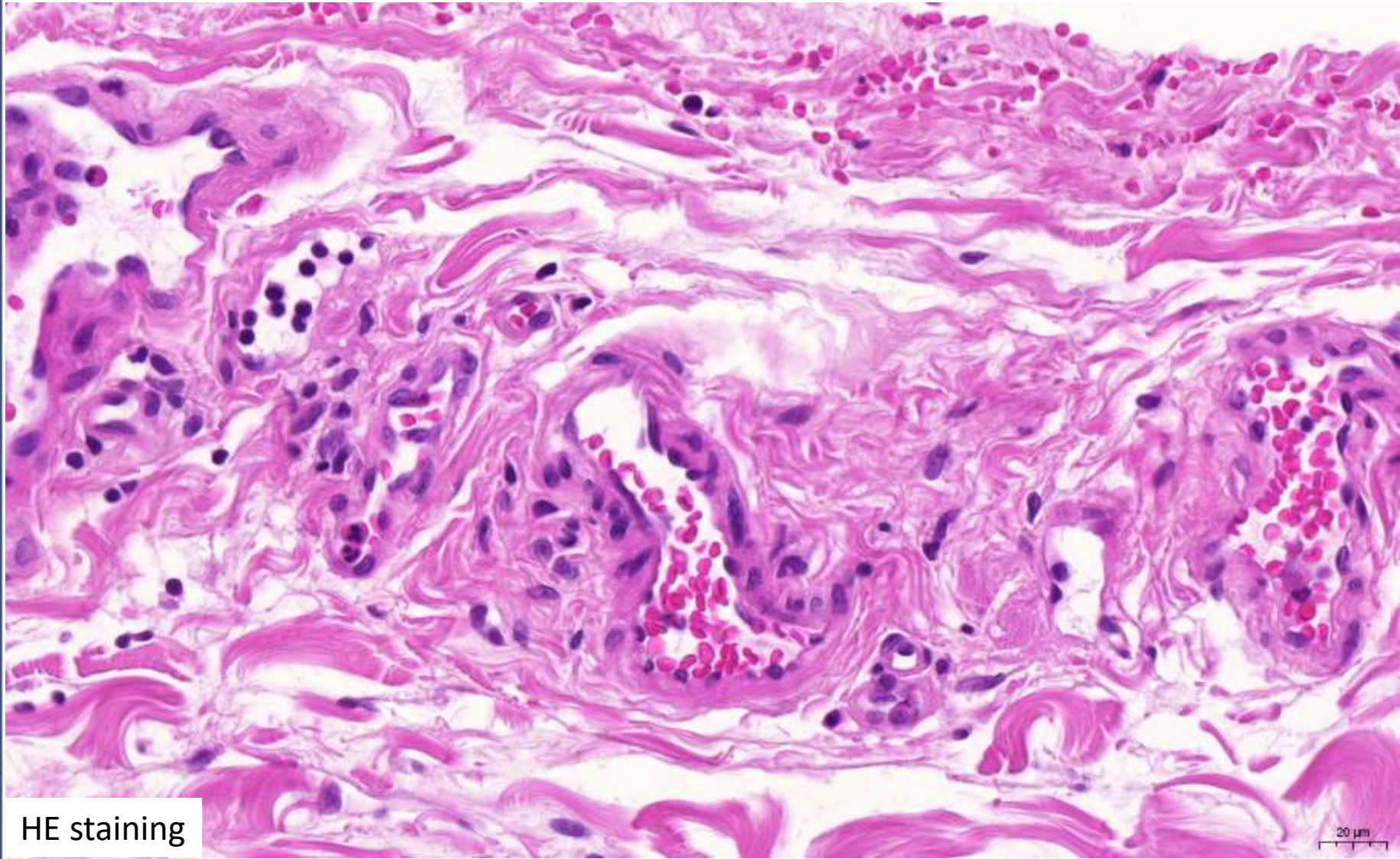
200 μ m



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Inflammation of „vessel of vessels”



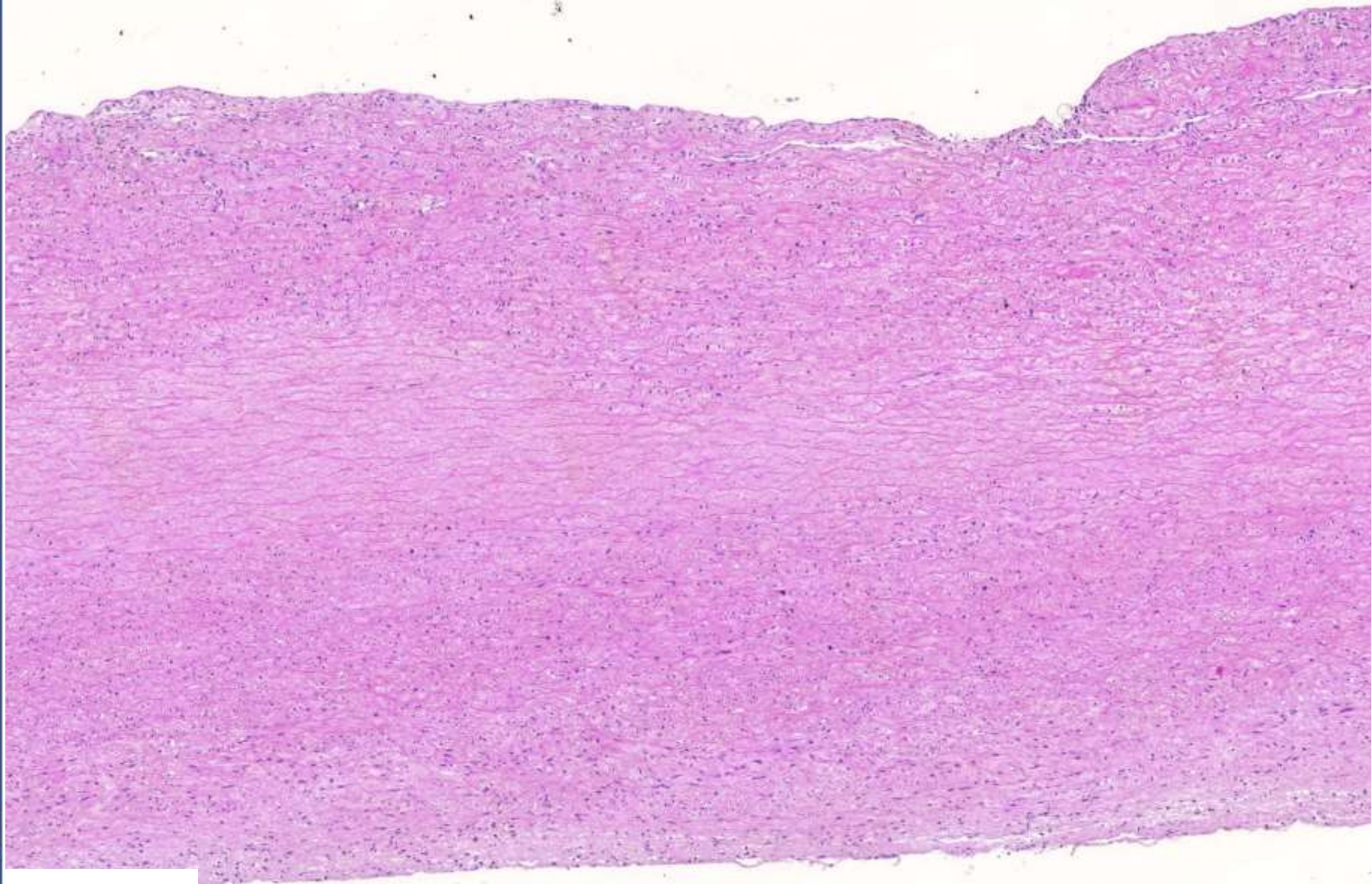
HE staining

20 µm



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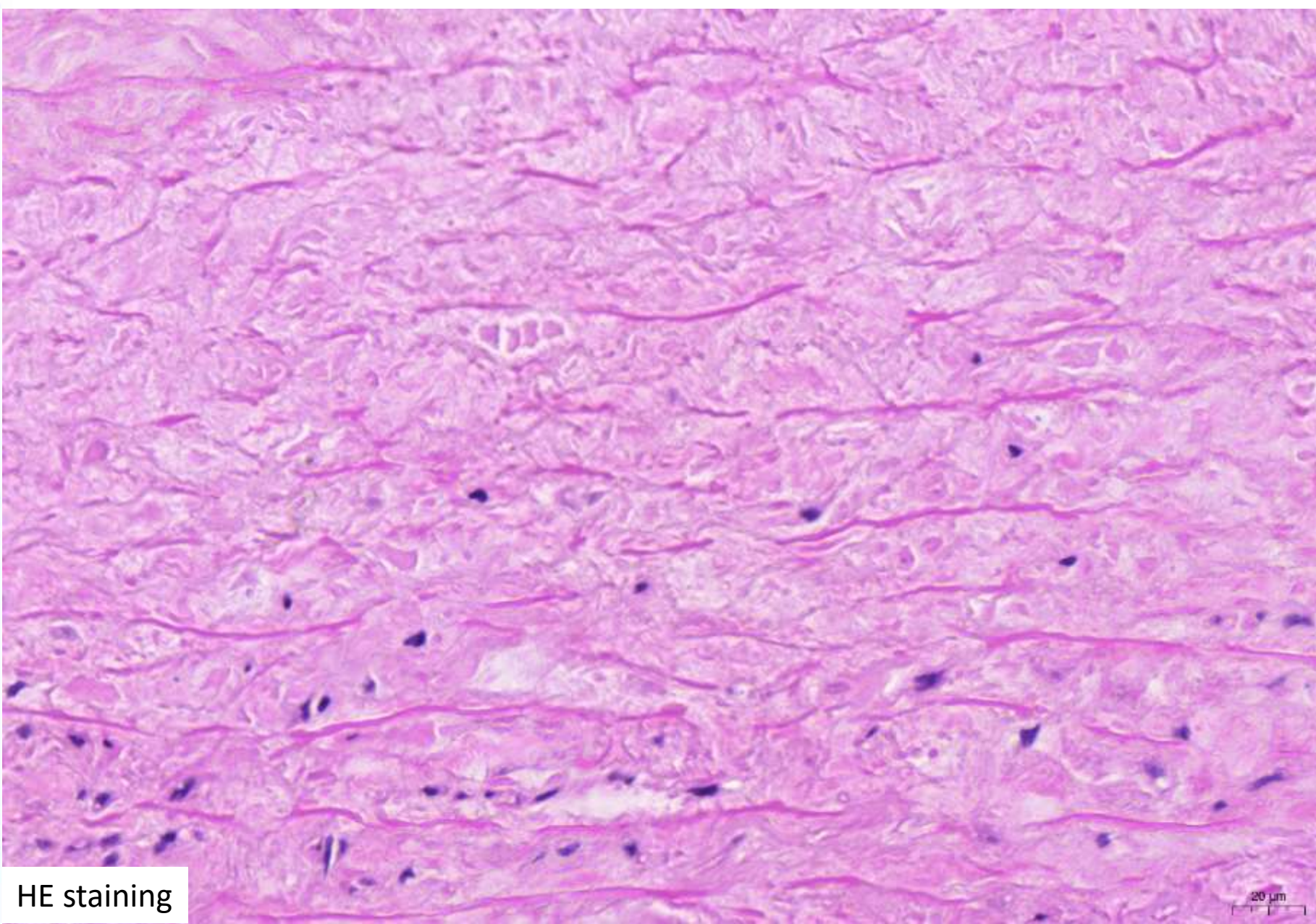
HE staining

200 μ m



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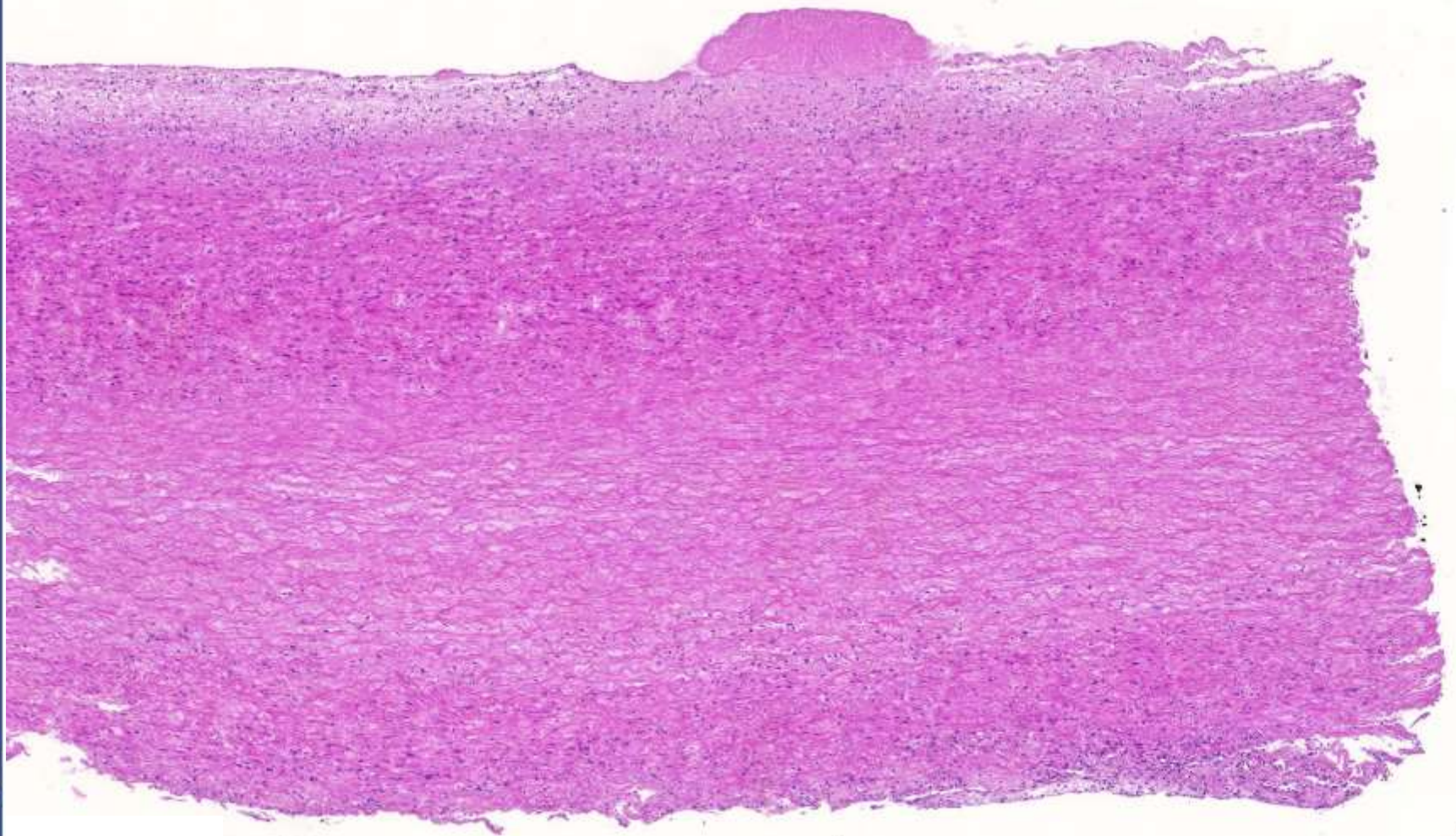


HE staining



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HE staining

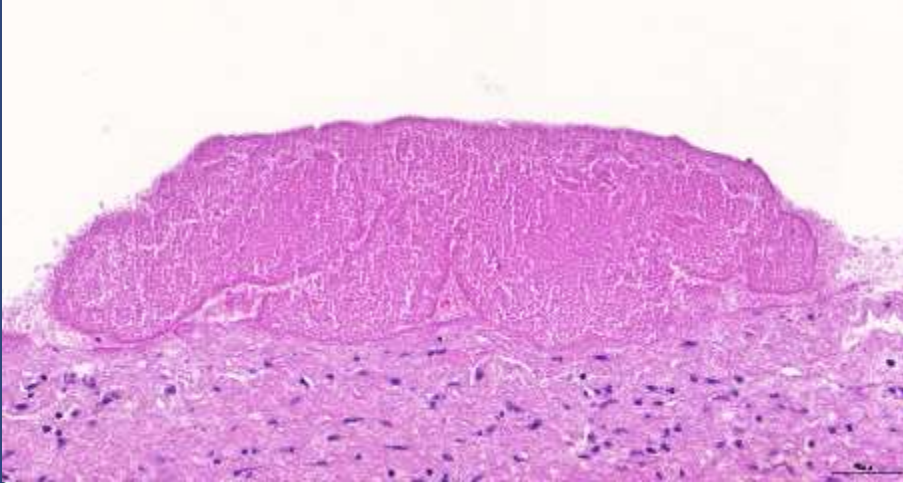
200 μ m



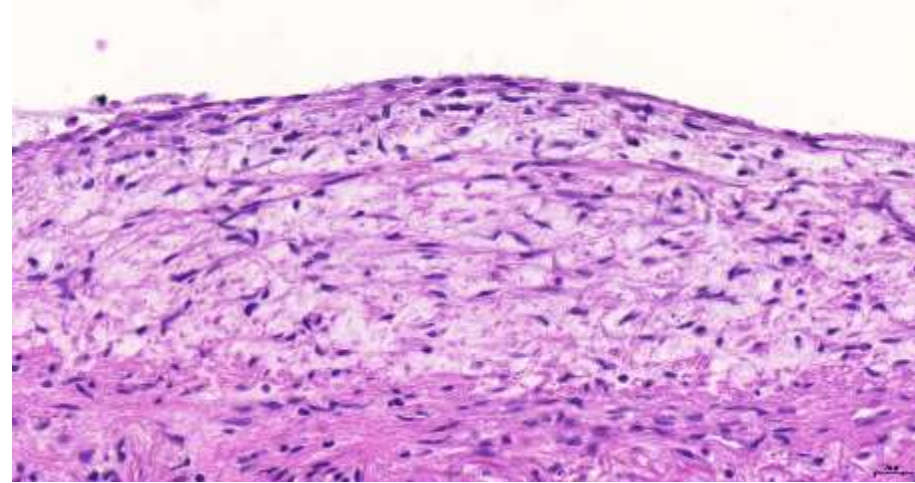
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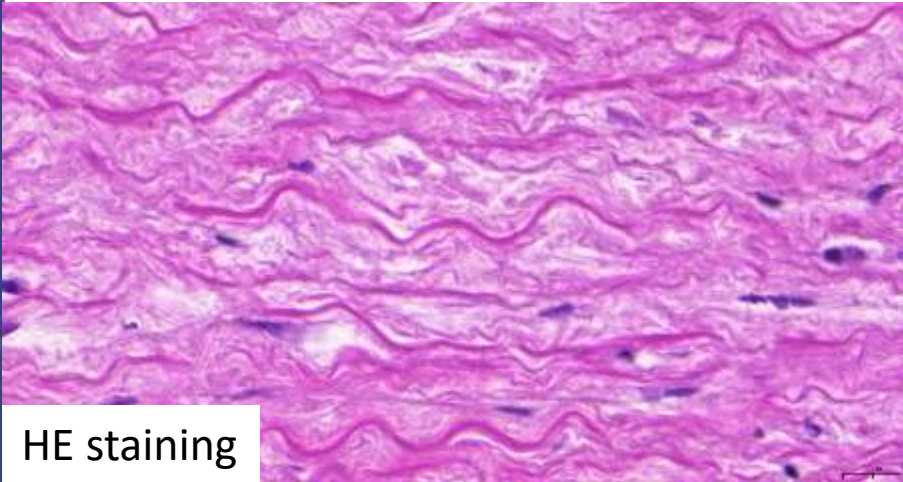
Thrombus



Early atheroma

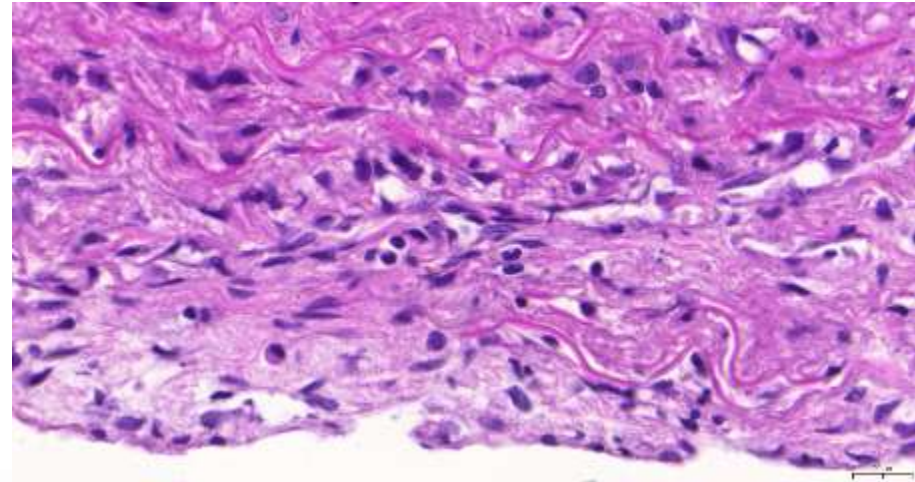


Necrosis



HE staining

Inflammation



Tumors



Benign Neoplasms, Developmental and Acquired Conditions

Hemangioma

Capillary hemangioma

Cavernous hemangioma

Pyogenic granuloma

Lymphangioma

Simple (capillary) lymphangioma

Cavernous lymphangioma (cystic hygroma)

Glomus tumor

Vascular ectasias

Nevus flammeus

Spider telangiectasia (arterial spider)

Hereditary hemorrhagic telangiectasis (Osler-Weber-Rendu disease)

Reactive vascular proliferations

Bacillary angiomatosis

Intermediate-Grade Neoplasms

Kaposi sarcoma

Hemangioendothelioma

Malignant Neoplasm

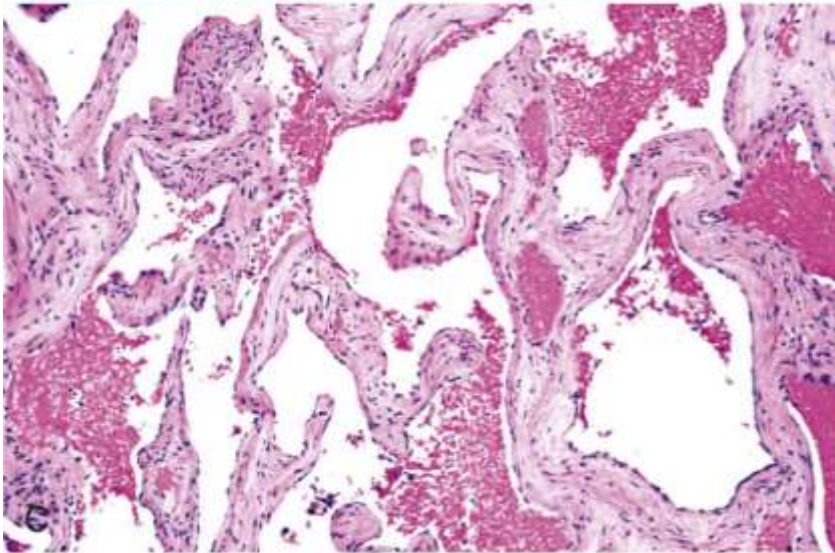
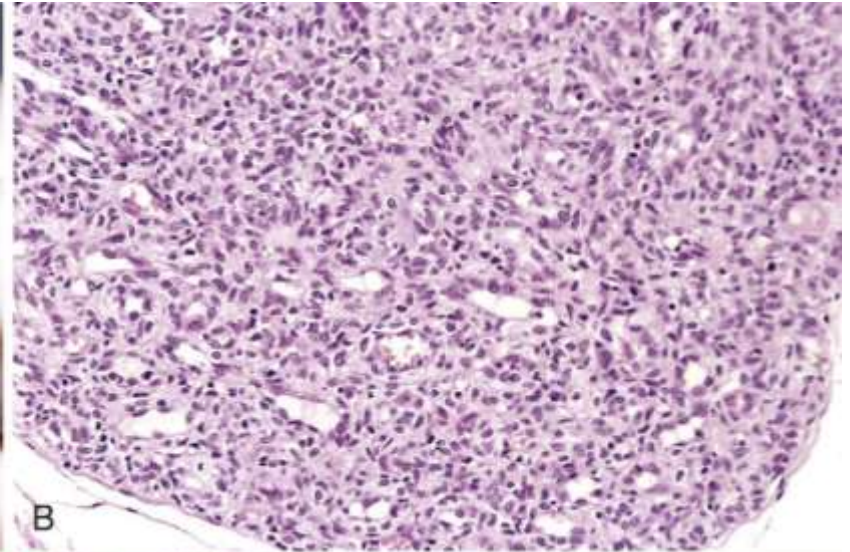
Angiosarcoma

Hemangiopericytoma

Robbins and Cotran Pathologic Basis of Disease



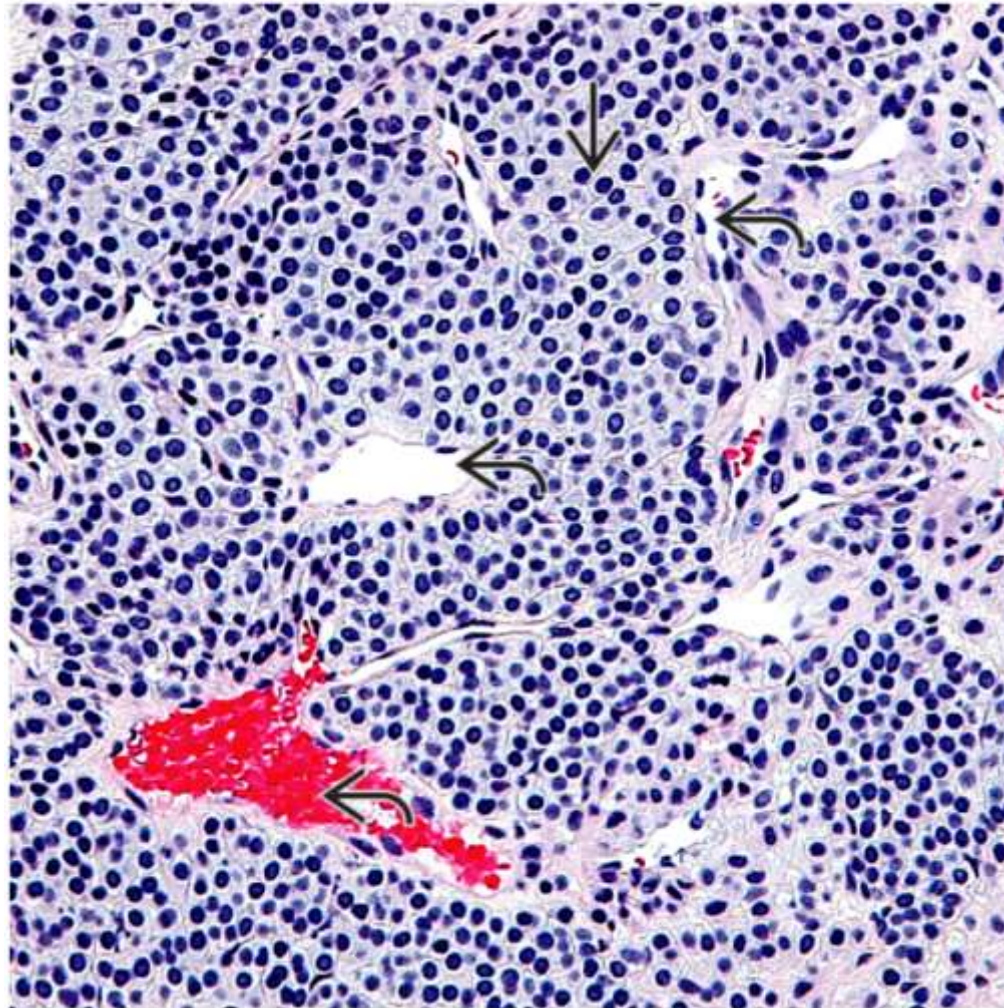
Haemangioma



Robbins and Cotran Pathologic Basis of Disease



Glomus tumor



Diagnostic Pathology: Cardiovascular



Kaposi sarcoma



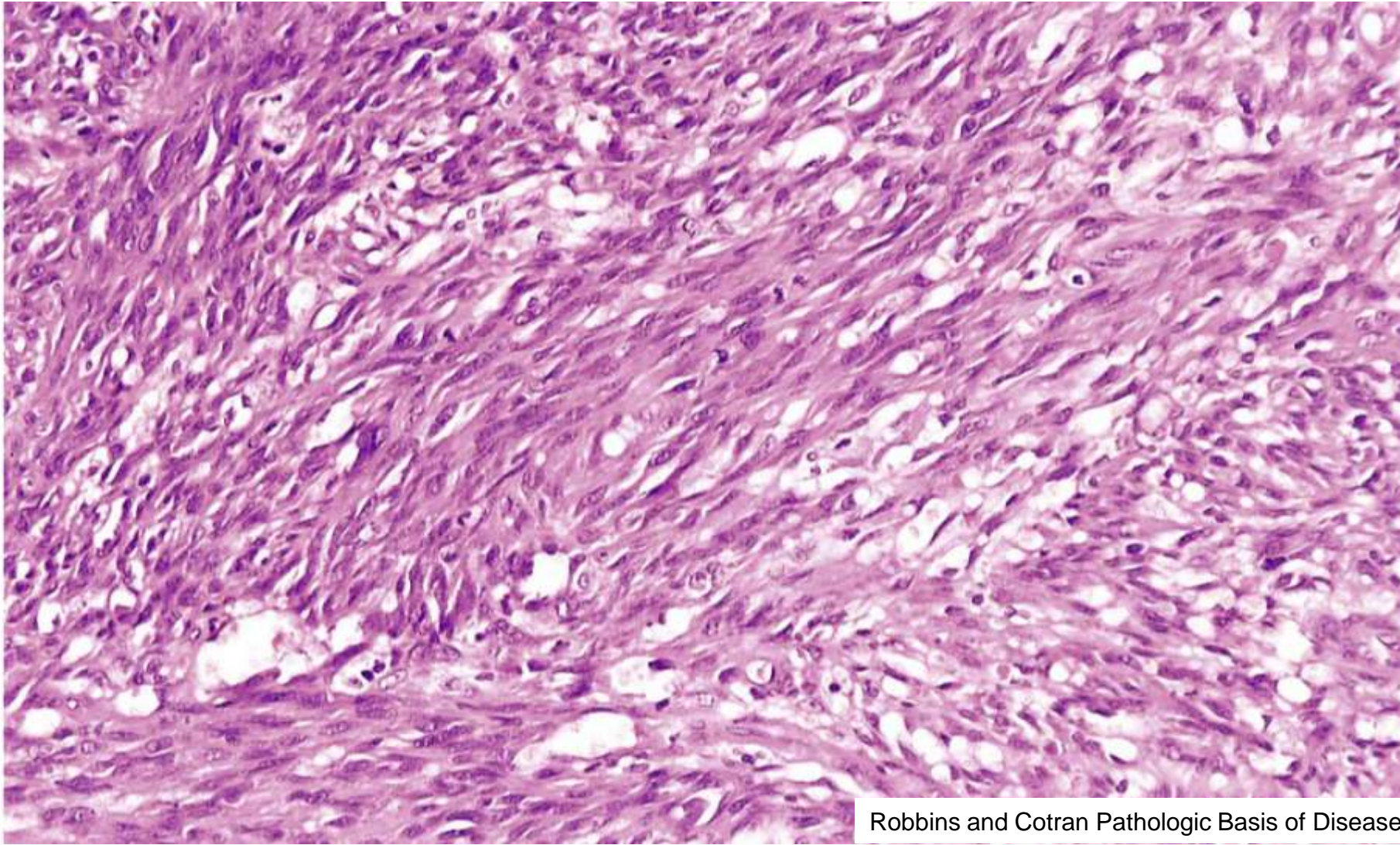
Robbins and Cotran Pathologic Basis of Disease



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Kaposi sarcoma



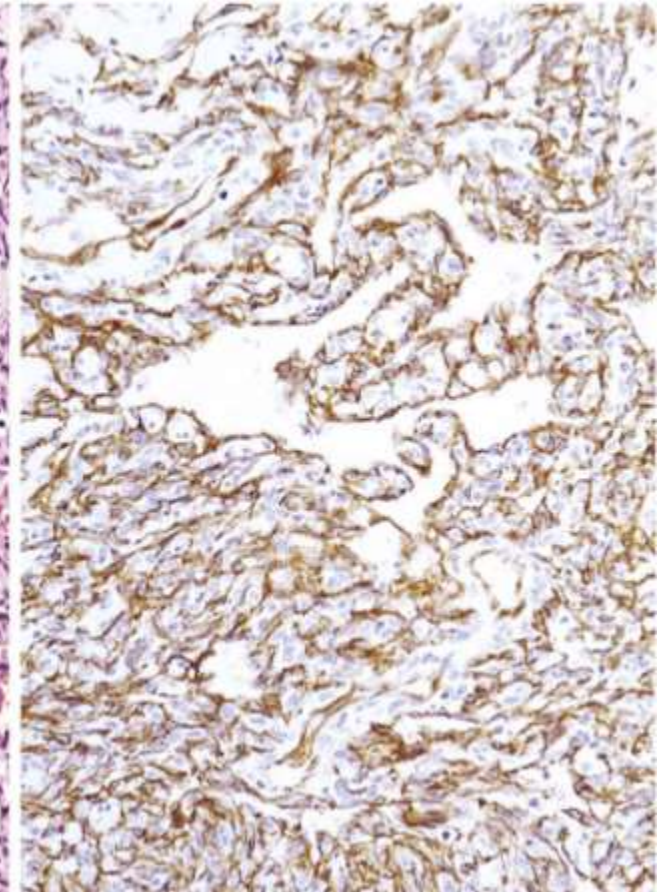
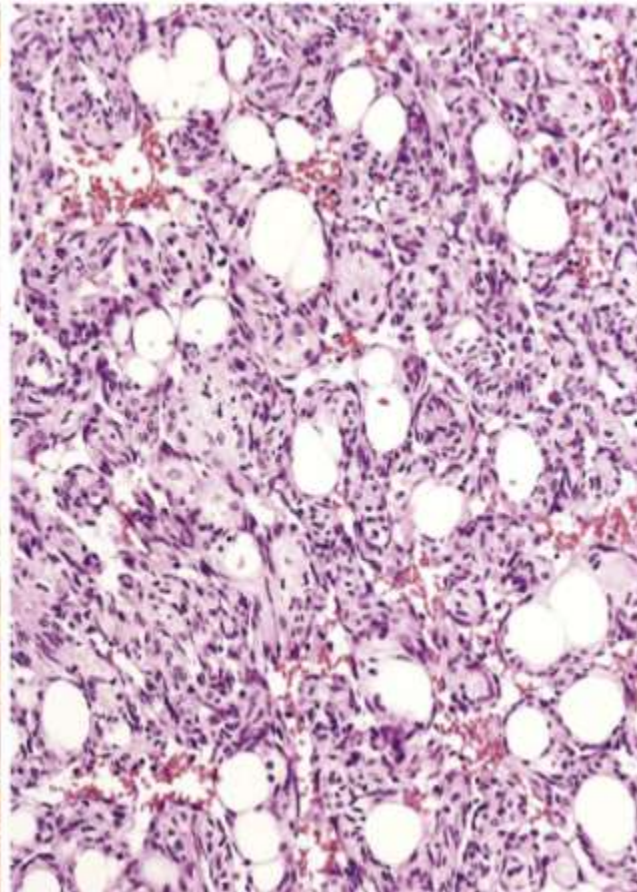
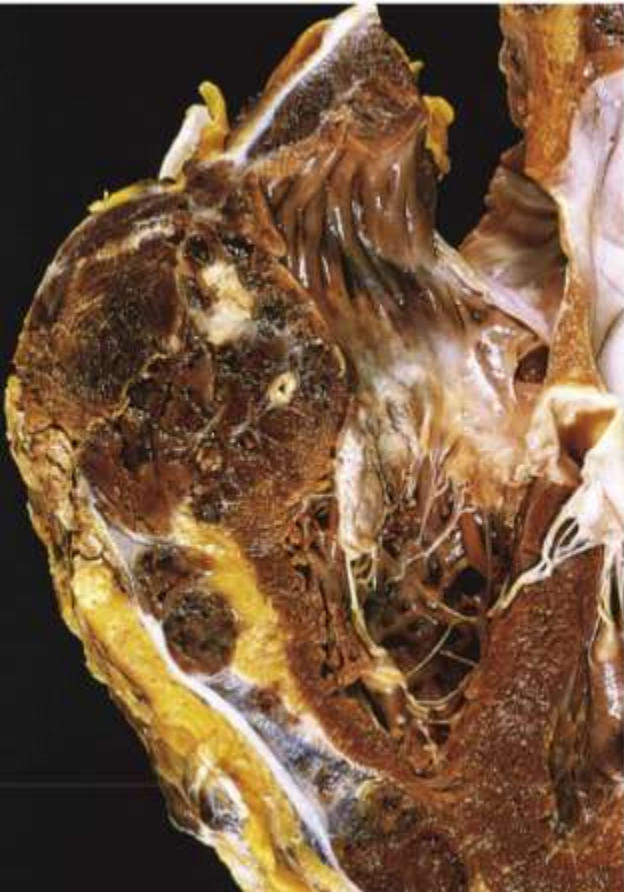
Robbins and Cotran Pathologic Basis of Disease



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<http://semmelweis.hu>

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Angiosarcoma



HE staining

CD31 staining

Robbins and Cotran Pathologic Basis of Disease





Complication of atherosclerosis could be...

- A. Aneurism
- B. Rupture
- C. Thrombosis
- D. Critical narrowing
- E. All of them.



Which vasculitis contains granulocytes?

- A. Granulomatosis with polyangiitis
- B. Eosinophylic granulomatosis with polyangiitis
- C. Lymphocytoclastic vasculitis
- D. None of them.

