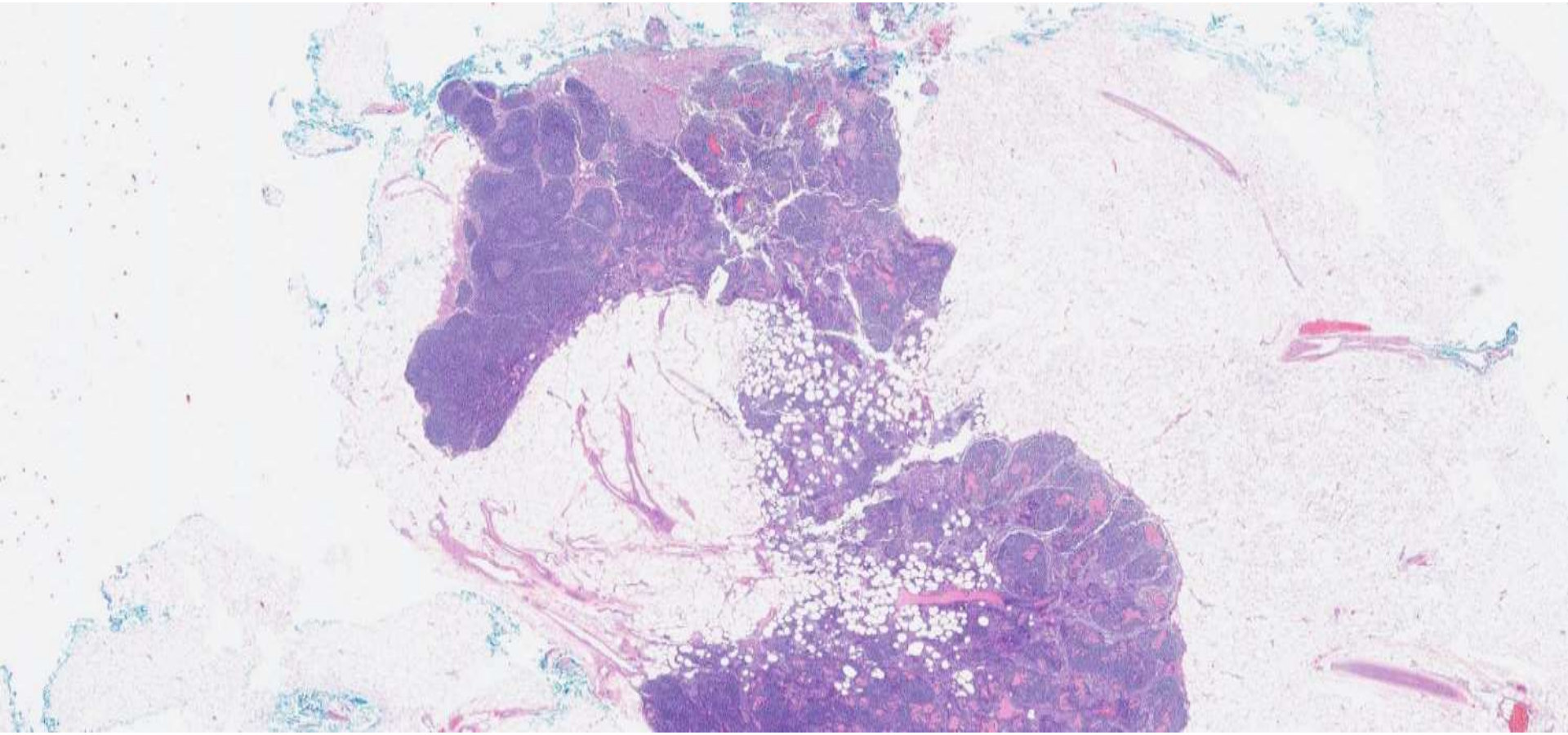
AUGUST 2021 DIAGNOSIS LIST

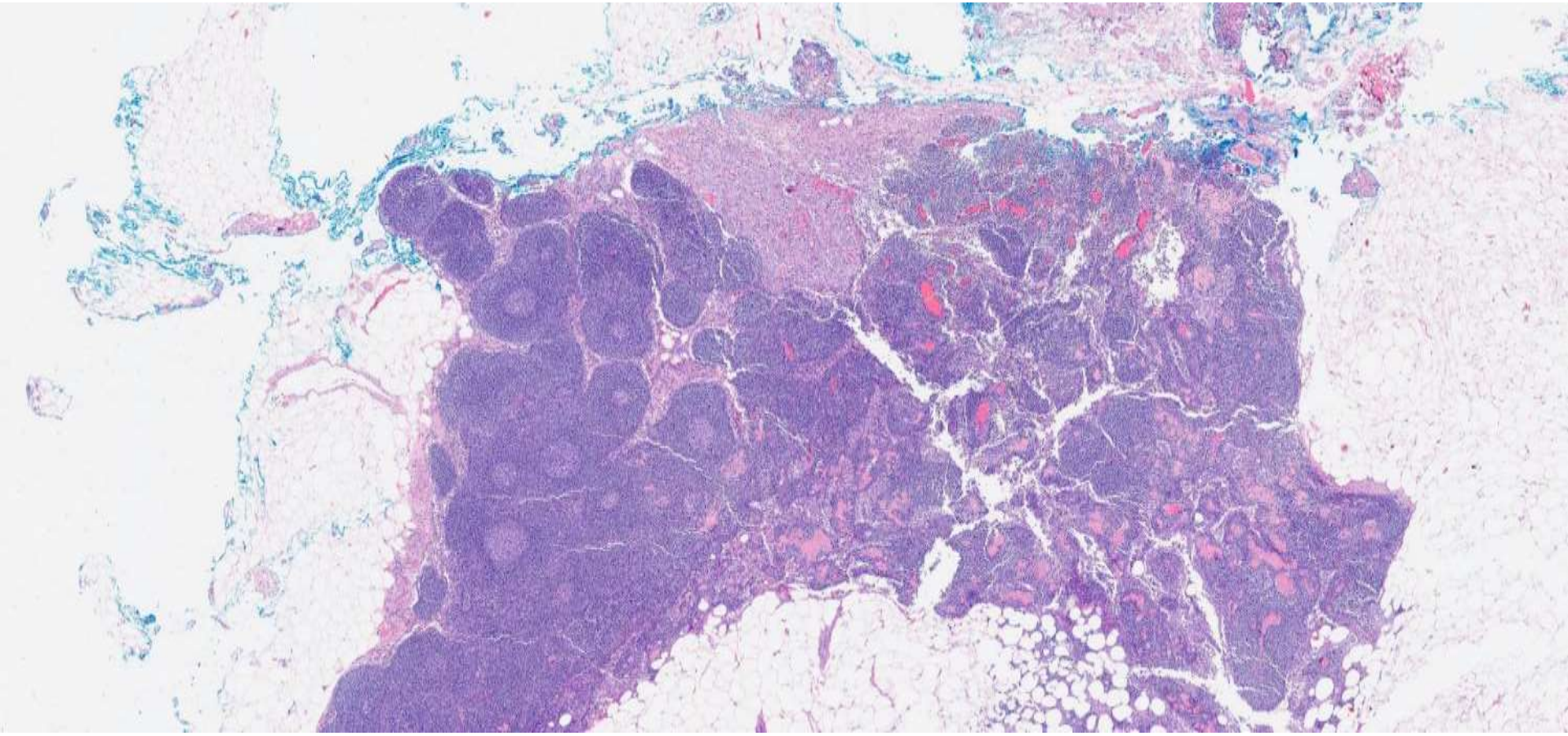
21-0801: lymphangioleiomyomatosis [lymph node; GYN path]
21-0802: mucinous mammary carcinoma with neuroendocrine differentiation [vulva; GYN path]
21-0803: sparganosis [soft tissue; ID path]
21-0804: spirochetosis [large bowel; Gipath+ID path]
21-0805: ALK-renal cell carcinoma [kidney; GU path]
21-0806: microcystic pattern seminoma [testis; GU path]
21-0807: CMV oophoritis [ovary; GYN path+ ID path]
21-0808: nonspecific CAIX staining in necrotic papillary renal cell carcinoma [kidney; GU path]

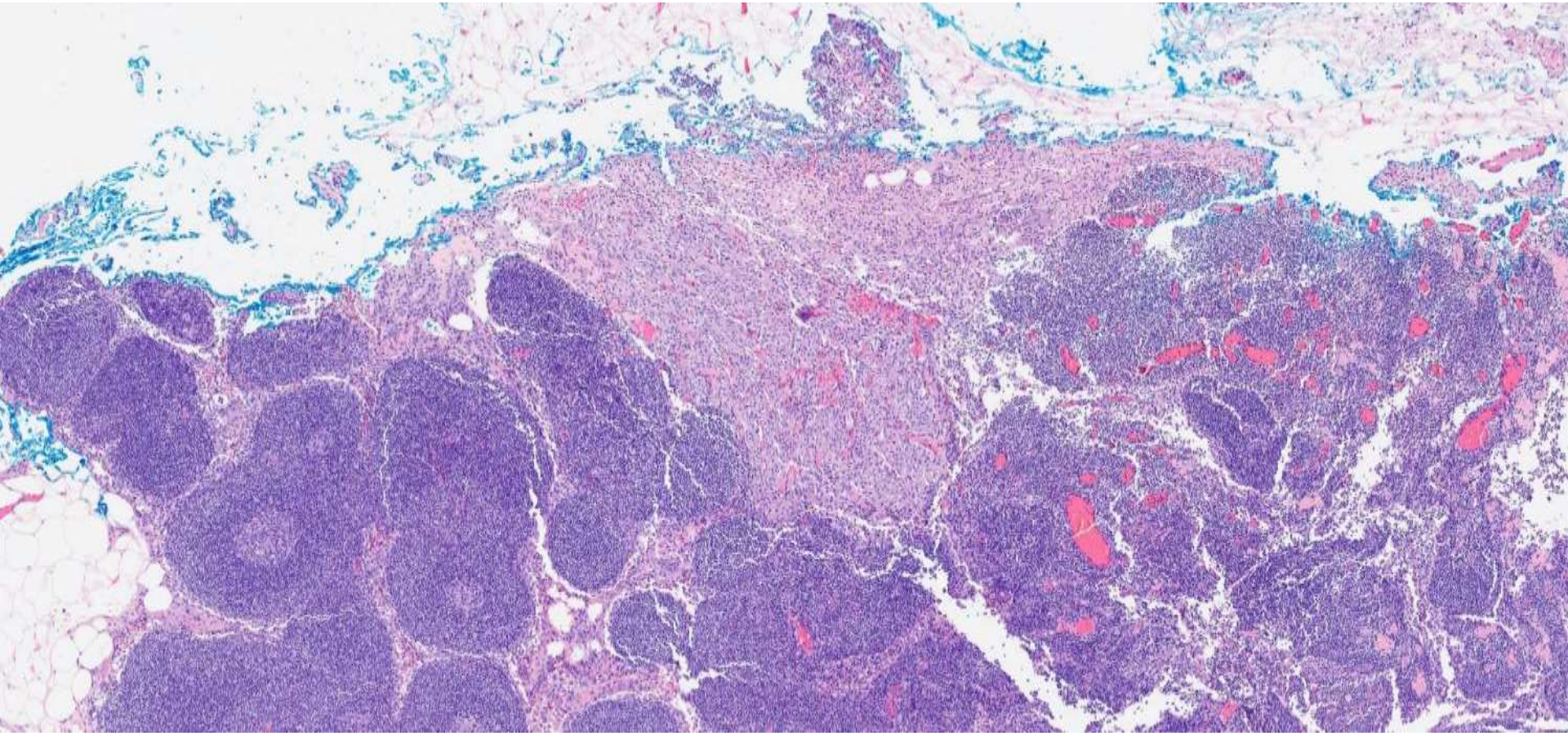
21-0801

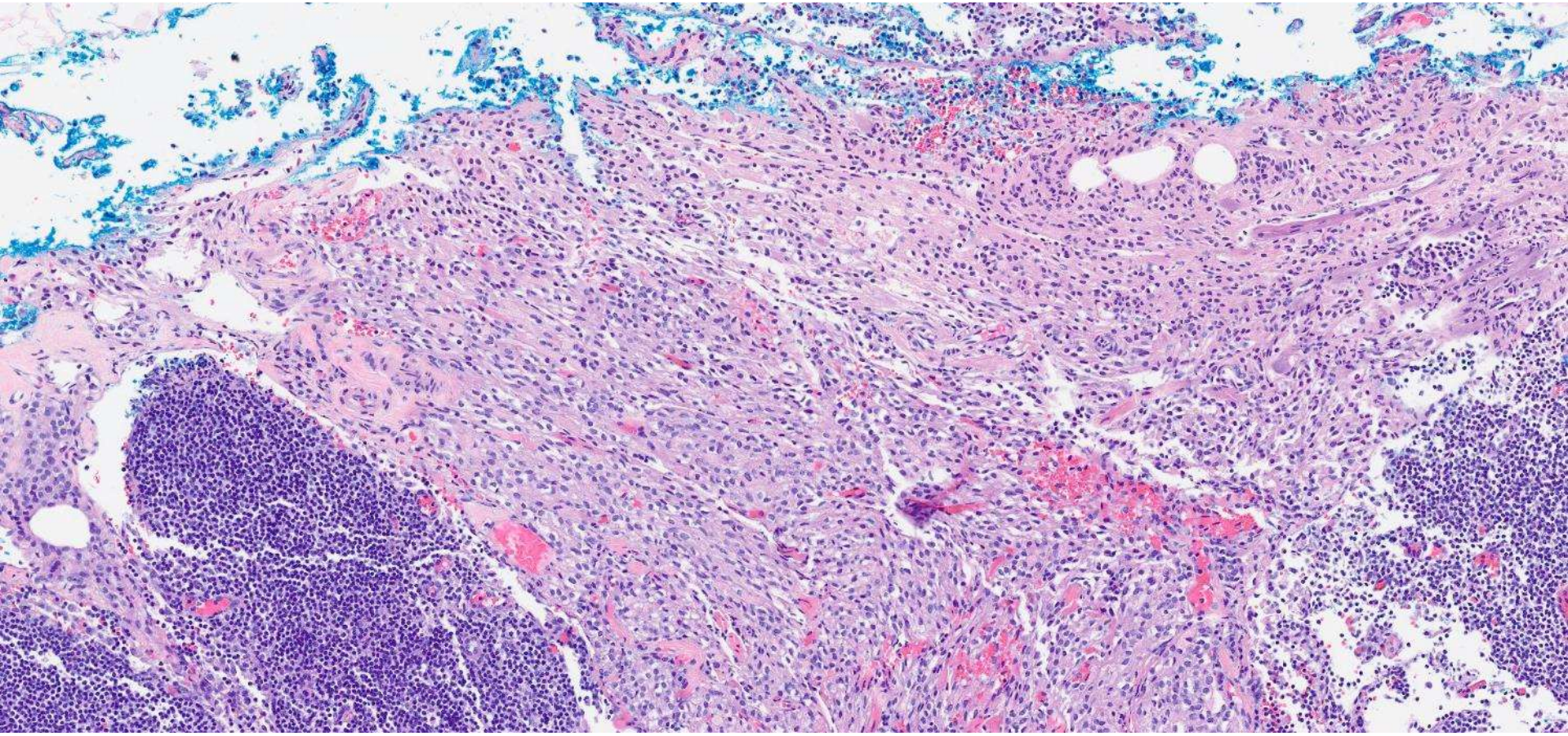
Keith Duncan; Mills-Peninsula

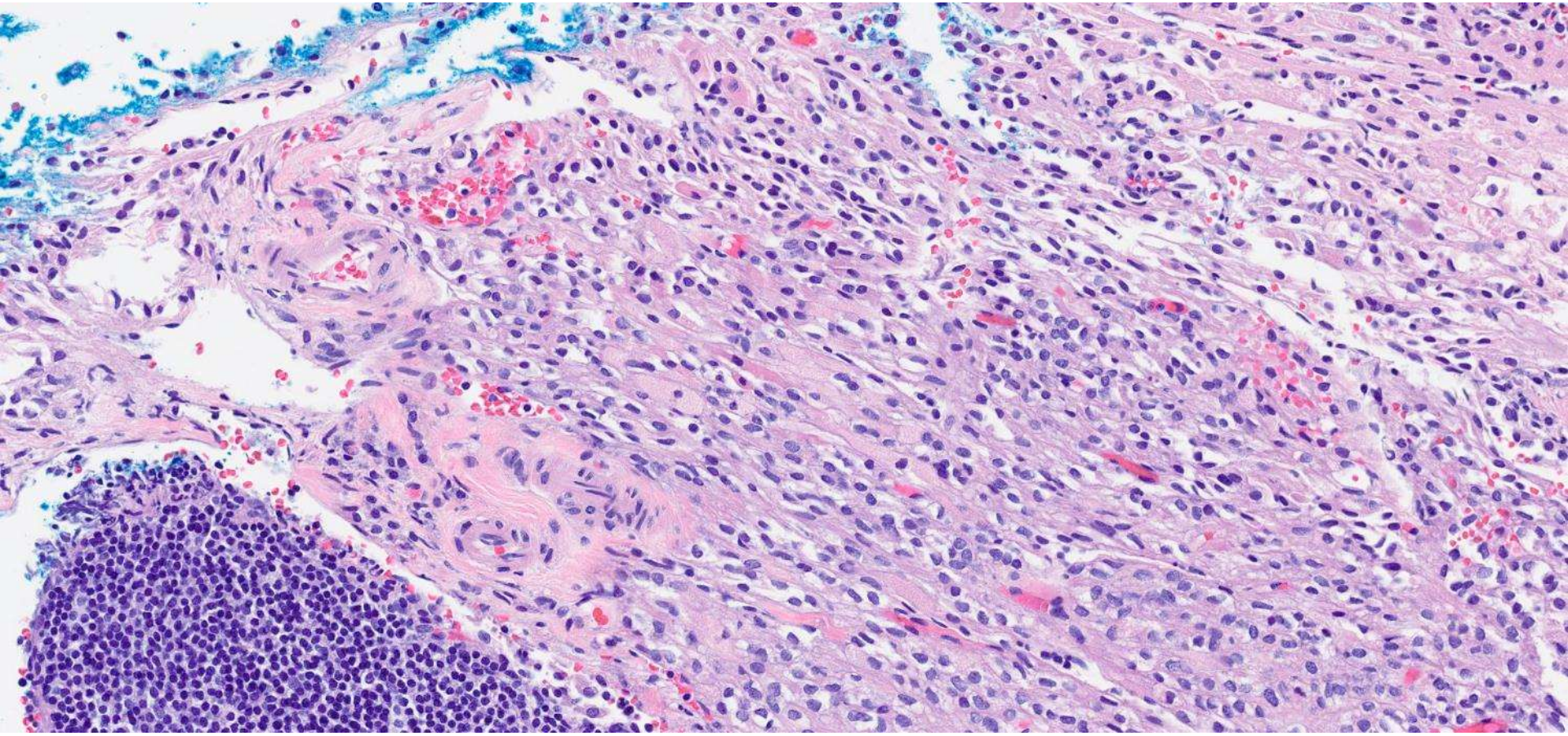
53-year-old F underwent TAH/BSO for complex atypical hyperplasia. Sentinel lymph node bx shown.

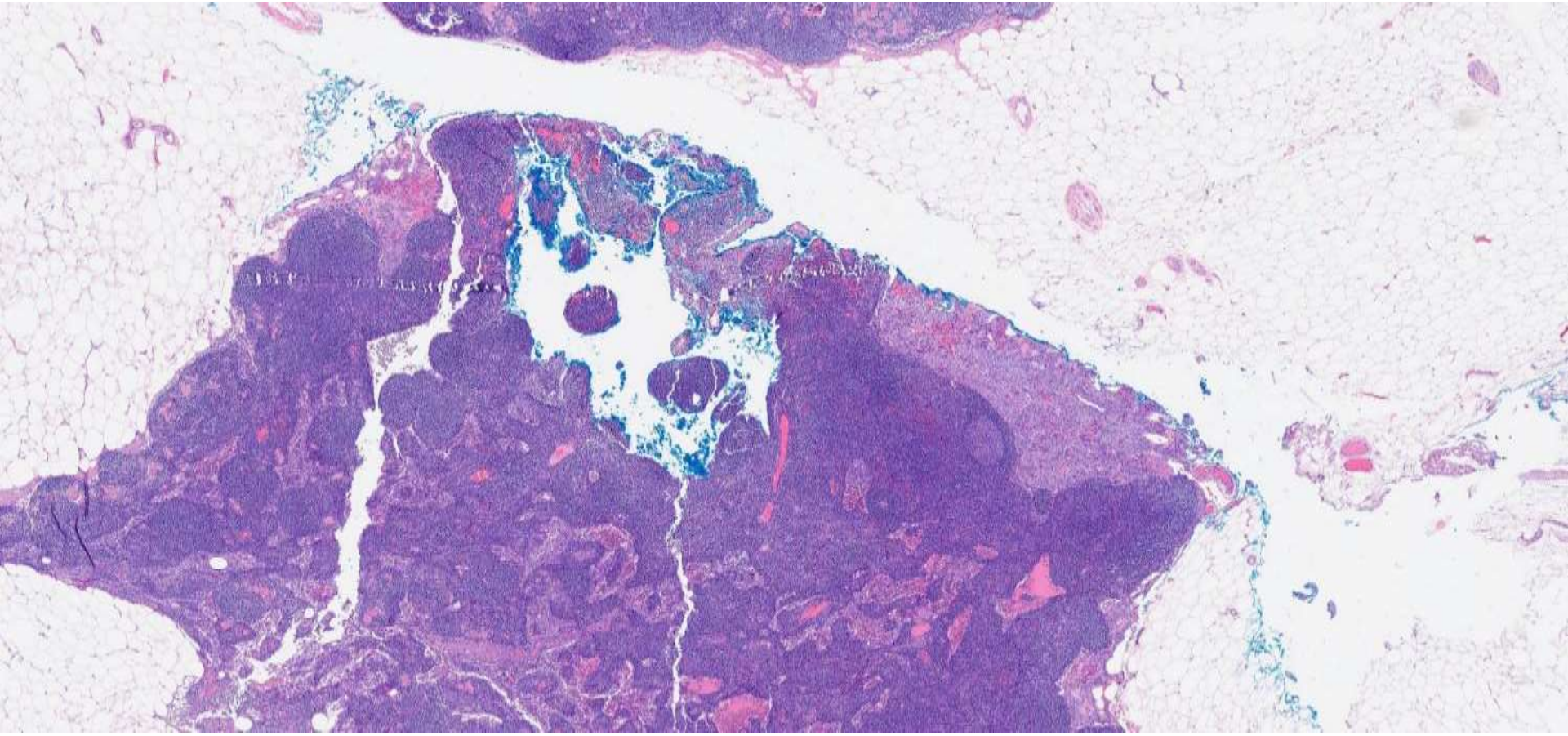


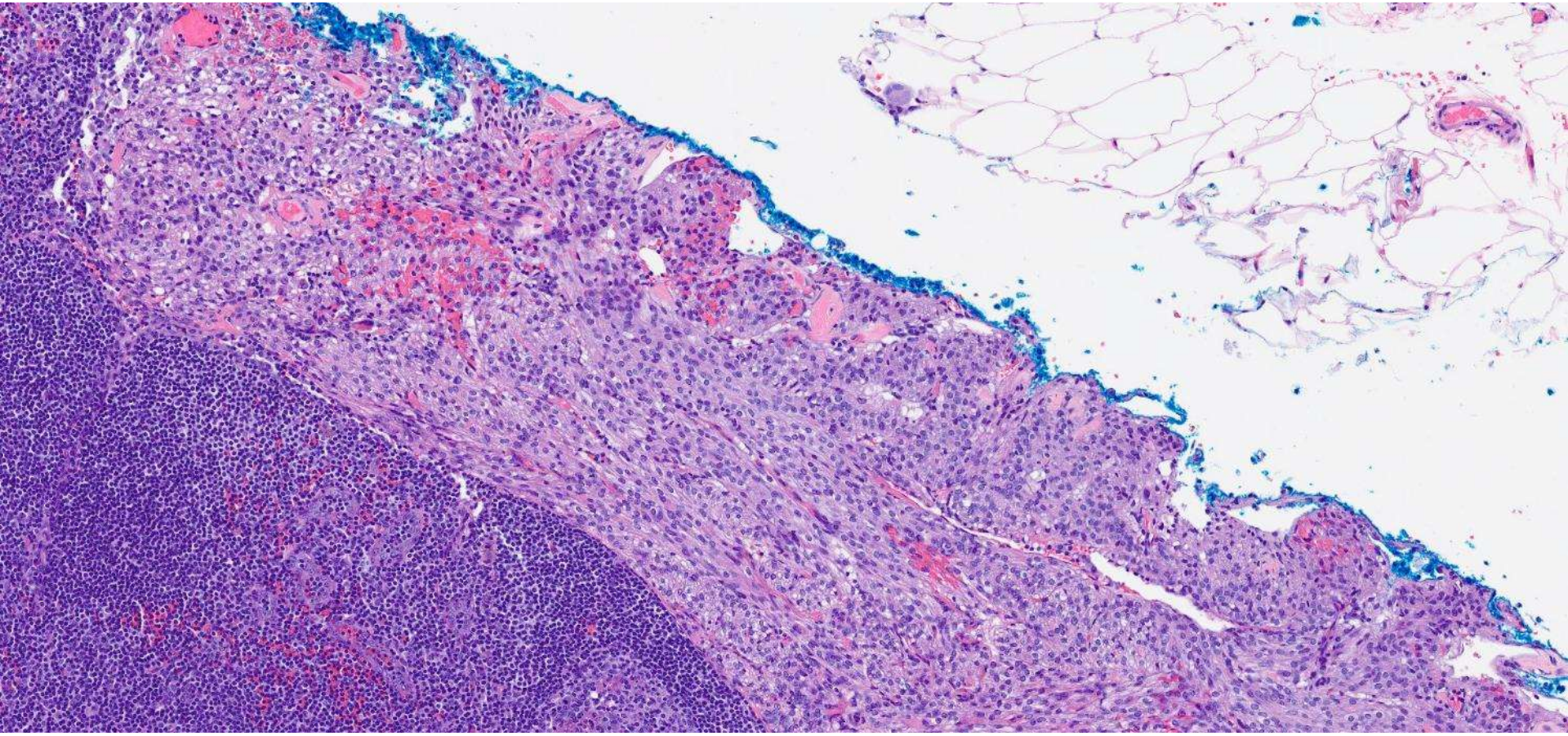


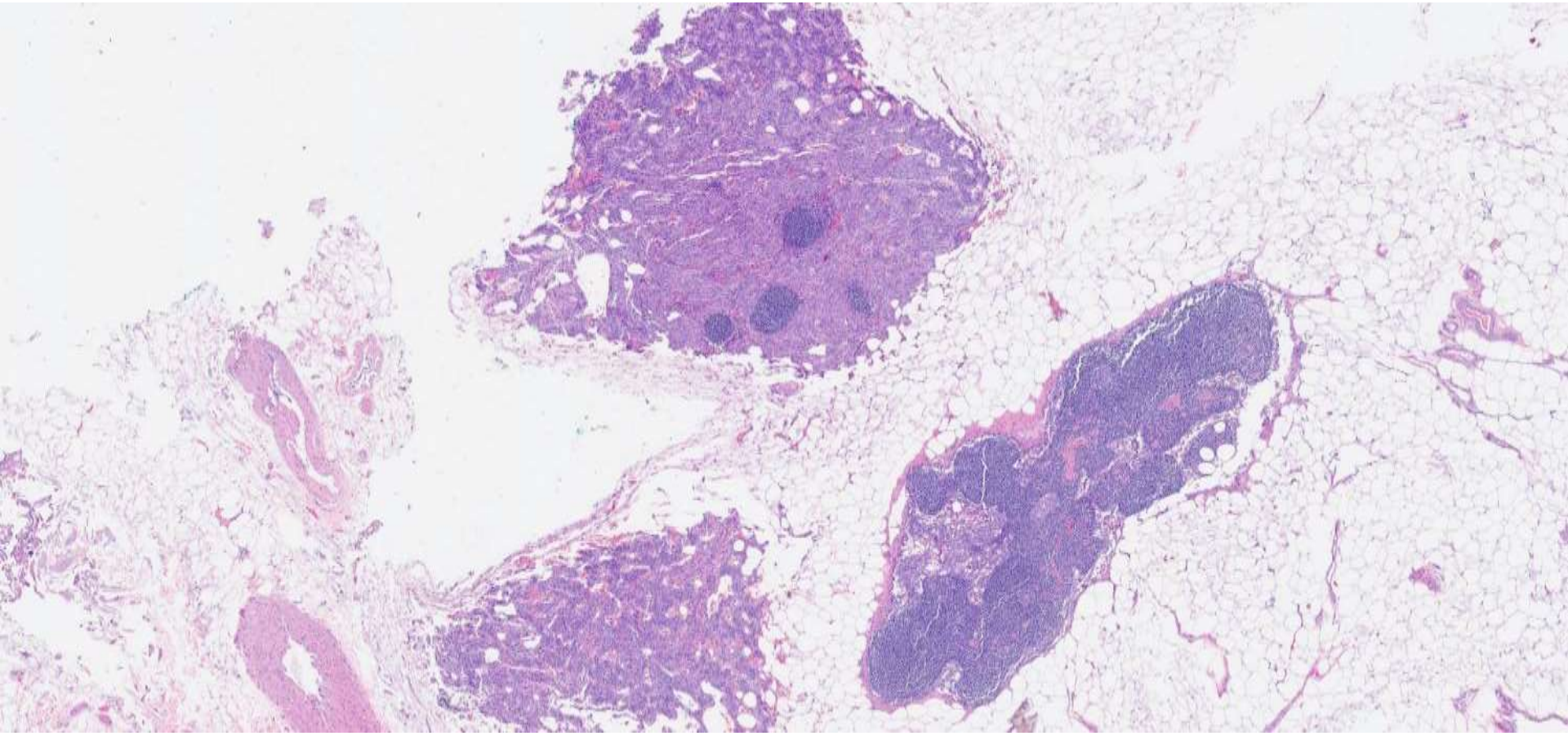


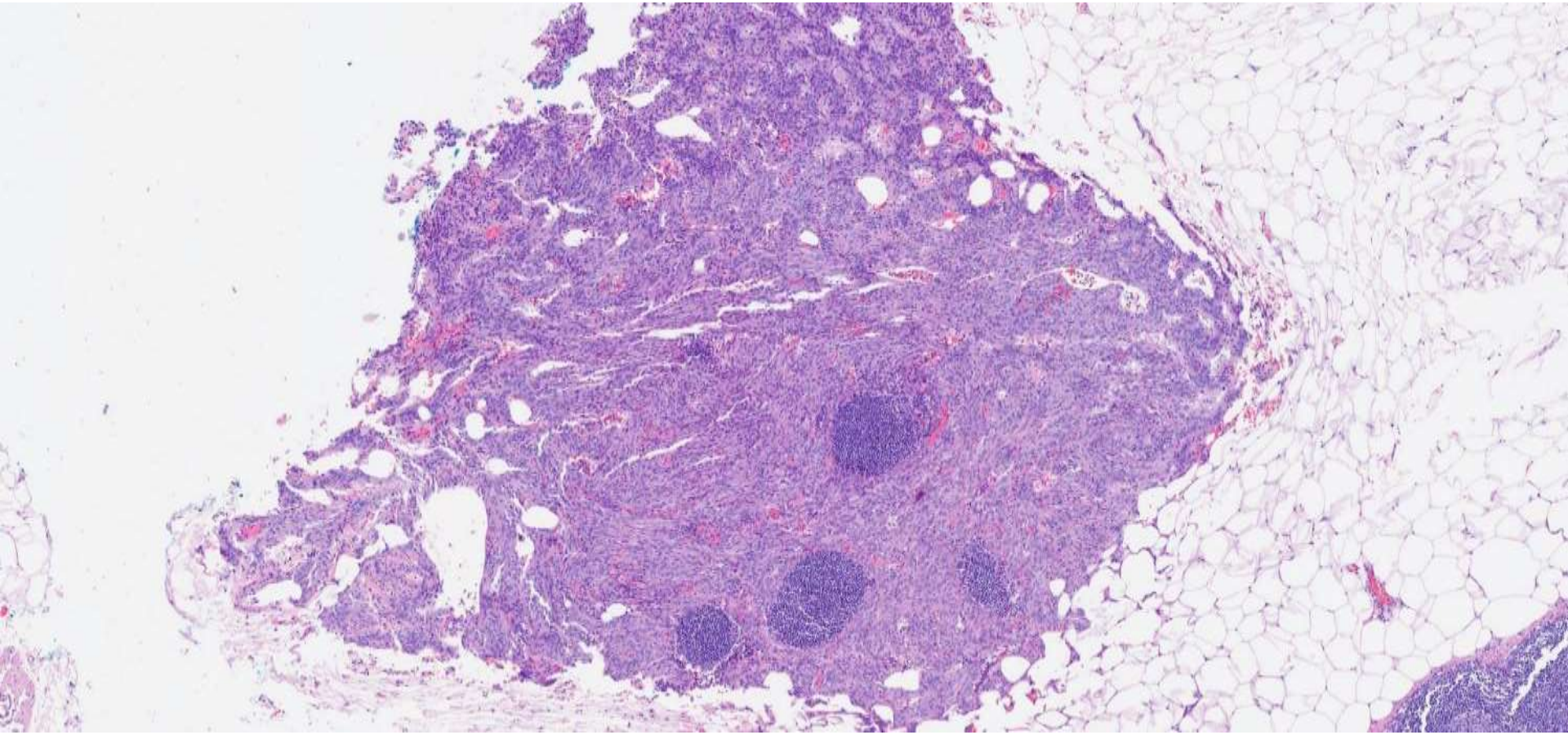


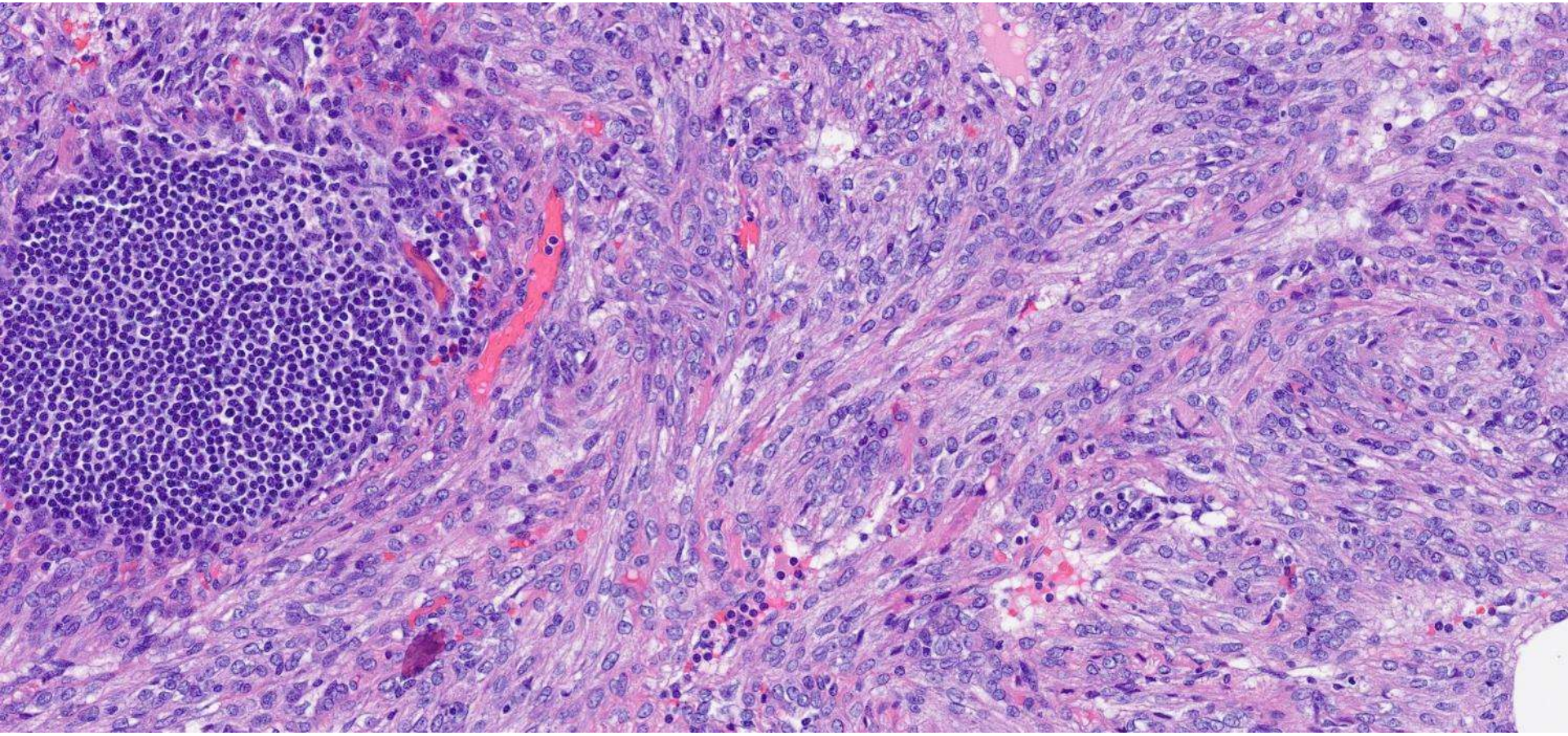












INCIDENTAL LYMPH NODE 54 Y/O WOMAN Lymphangiomyomatosis

- Multisystem disorder affecting mainly middle age females: pulmonary and extrapulmonary disease
- Pathologic features result from the proliferation of neoplastic cells (LAM cells), which have characteristics of both smooth muscle cells and melanocytes
- Member of perivascular epithelioid cell tumor (PEComa) family
- Associated with tuberous sclerosis
- Originally classified benign but now considered a "low grade, destructive metastasizing neoplasm"

Microscopic findings

Single or multiple lymph nodes, median size 3.5 cm

Primarily in nodal parenchyma but can be seen in hilum, subcapsular sinuses or extranodal extension

LAM cells are either spindle or epitheliod

Epithelioid cells are arranged in nests or swirls, separated by clefts which resemble lymphatic spaces

Spindled cells show fascicular growth with some nesting & less prominent lymphatic channels

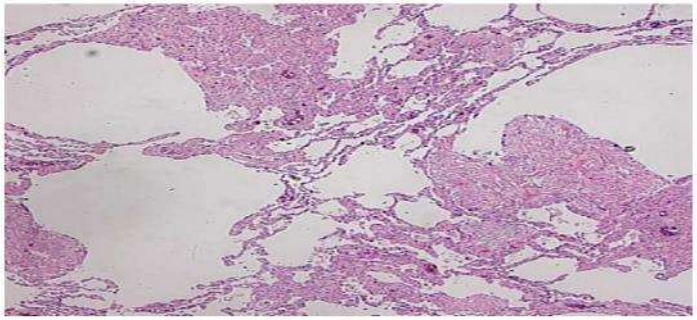
No atypia, no necrosis, no mitosis

IPOX STAINS

- **Positive stains**
- SMA & desmin
- HMB45: patchy or diffuse, cytoplasmic or membranous
- B catenin: positive, strong and diffuse
- MelanA / A103: positive in 40% of cases

- **Differential diagnosis**
- Metastatic well differentiated leiomyosarcoma: no prominent vascular channels, more atypia and mitotic figures, HMB45-

(a)



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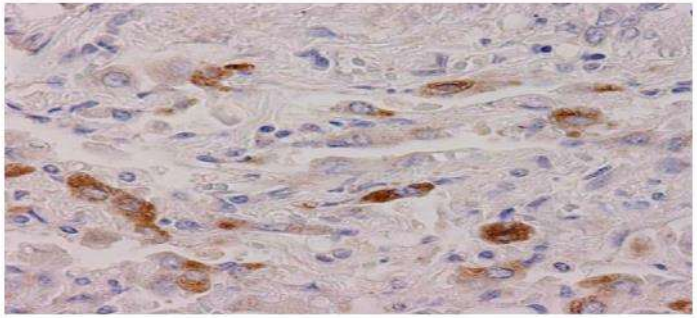


(c)

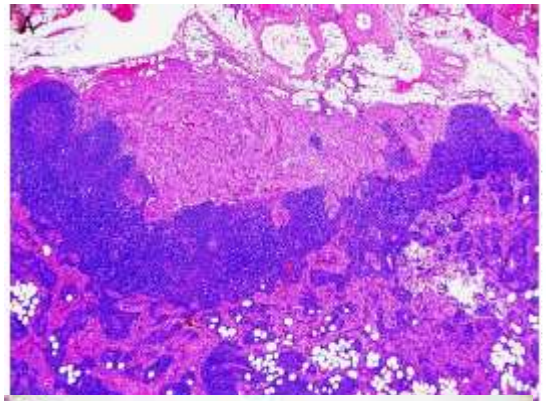
Incidental Pelvic and Para-aortic Lymph Node Lymphangioleiomyomatosis Detected During Surgical Staging of Pelvic Cancer in Women Without Symptomatic Pulmonary Lymphangioleiomyomatosis or Tuberous Sclerosis Complex

Joseph T. Rabban, MD, MPH, Brandie Firetag, MD,* Ankur R. Sangoi, MD,† Miriam D. Post, MD,‡ and Charles J. Zaloudek, MD**

Abstract: Extrapulmonary lymphangioleiomyomatosis (LAM) is a rare neoplasm of spindle cells exhibiting melanocytic and myoid differentiation that arises as a mass in the mediastinum, retroperitoneum, uterine wall, and/or intraperitoneal lymph nodes. Many patients also have pulmonary LAM, tuberous sclerosis complex (TSC), and/or other neoplasms of the perivascular epithelioid cell tumor family. This study reports 26 patients with clinically occult LAM involving pelvic/para-aortic lymph nodes removed from women undergoing surgical staging of a uterine (17), ovarian (5), cervical (3), or urinary bladder (1) neoplasm. None of the patients exhibited symptoms of pulmonary LAM, and the median patient age (56 y) was older than what would be expected for patients presenting with pulmonary LAM. Only 2/26 patients had TSC. Four patients also had uterine LAM. One of these 4 had uterine perivascular epithelioid cell tumor, and 1 had vaginal angiomyolipoma. In all 26 patients the lymph node LAM was grossly occult, measured 3.5 mm on average (1 to 19 mm), and involved either a single lymph node (12/26) or multiple lymph nodes (14/26). HMB45 was positive in 24/25 cases, mostly in a focal or patchy distribution. Other melanocytic markers included MiTF (12/14) and MelanA (2/12). Myoid markers included smooth muscle actin (23/23) and desmin (15/16), mostly in a diffuse distribution. Estrogen receptor was positive in all cases tested, as was D240 expression in the lymphatic endothelium lining the spindle cell bundles. Concurrent findings in the involved lymph nodes included metastatic carcinoma (3/26), endosalpingiosis (3/26), and reactive lymphoid hyperplasia (13/26). This study demonstrates that clinically occult lymph node LAM can be detected during surgical staging of pelvic cancer and is not commonly associated with pulmonary LAM or TSC, although these patients should still be formally evaluated for both of these diseases.

Key Words: lymphangioleiomyomatosis, tuberous sclerosis complex, PEComa, HMB45

(*Am J Surg Pathol* 2015;39:1015–1025)



From the *Department of Pathology, University of California San Francisco, San Francisco; †Department of Pathology, El Camino Hospital, Mountain View, CA; and ‡Department of Pathology, University of Colorado, Denver, CO.

Presented in part at the 2012 Annual Meeting of the United States and Canadian Academy of Pathology.

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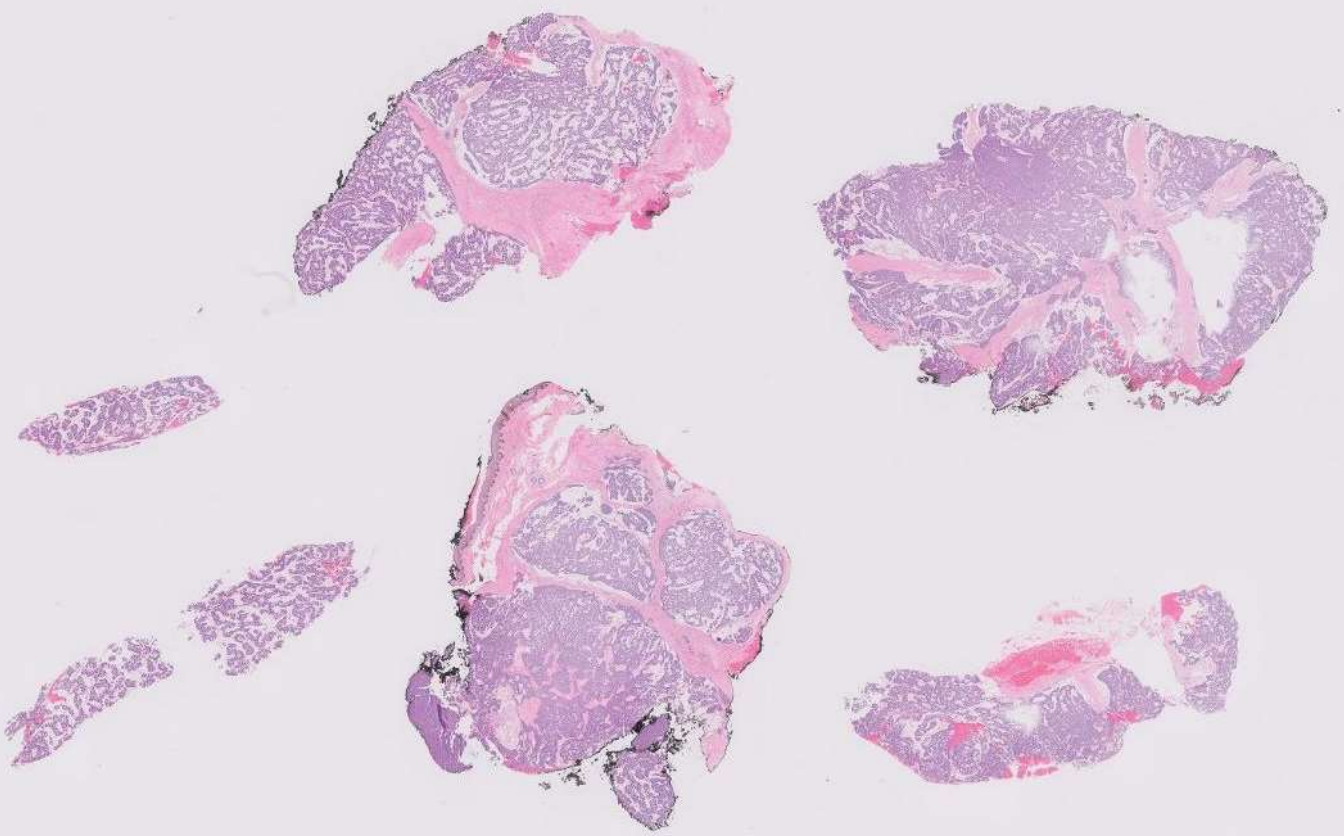
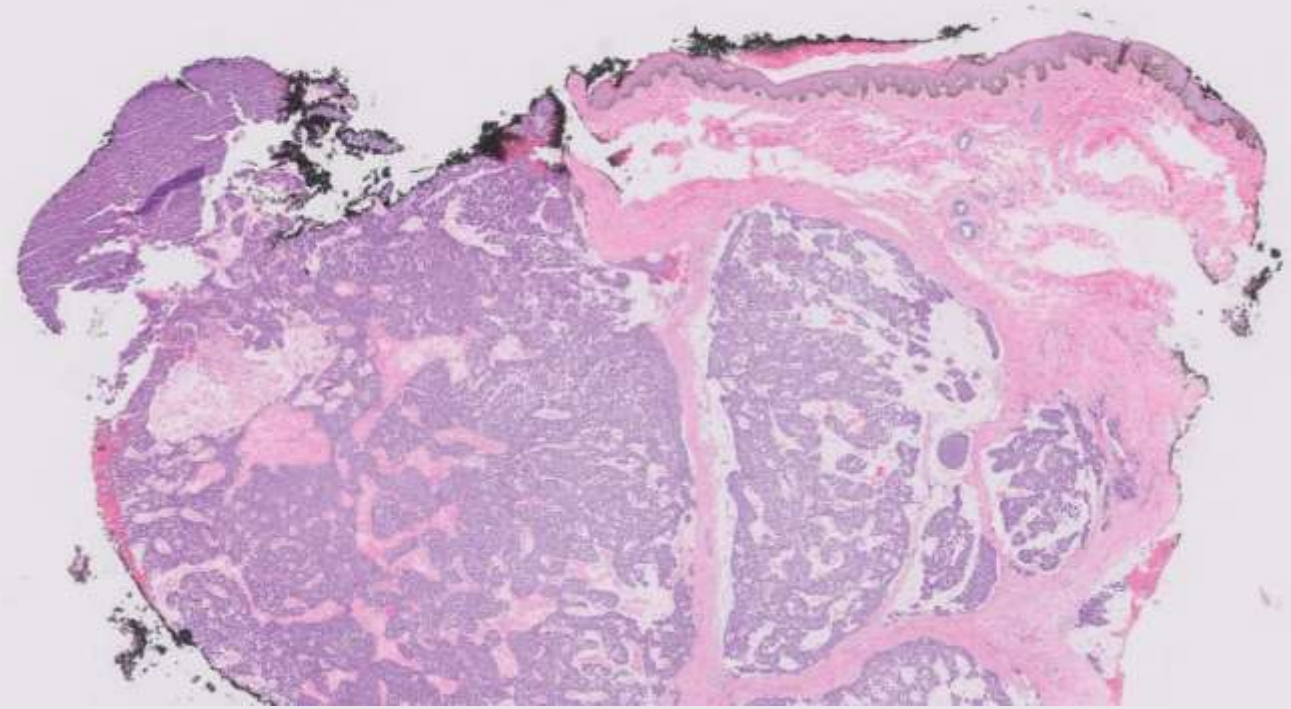
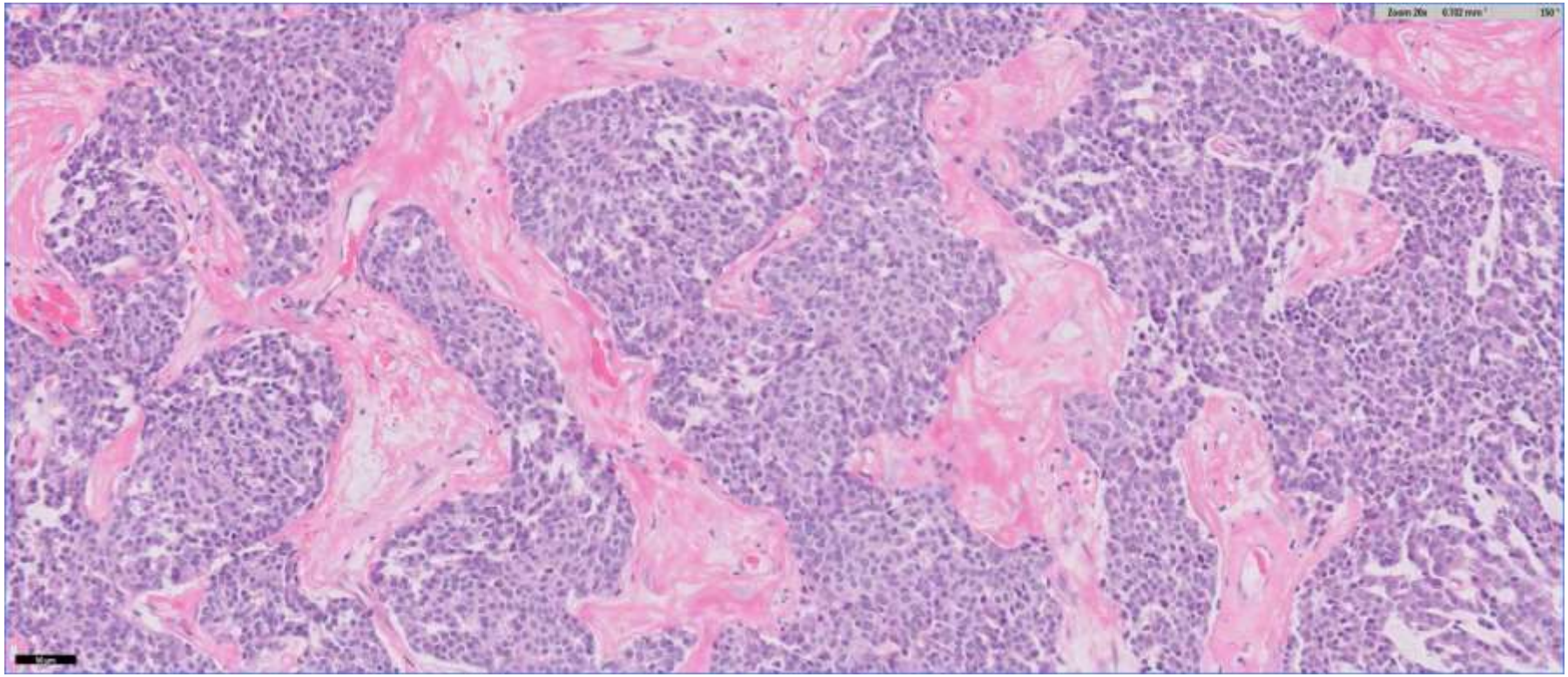
21-0802

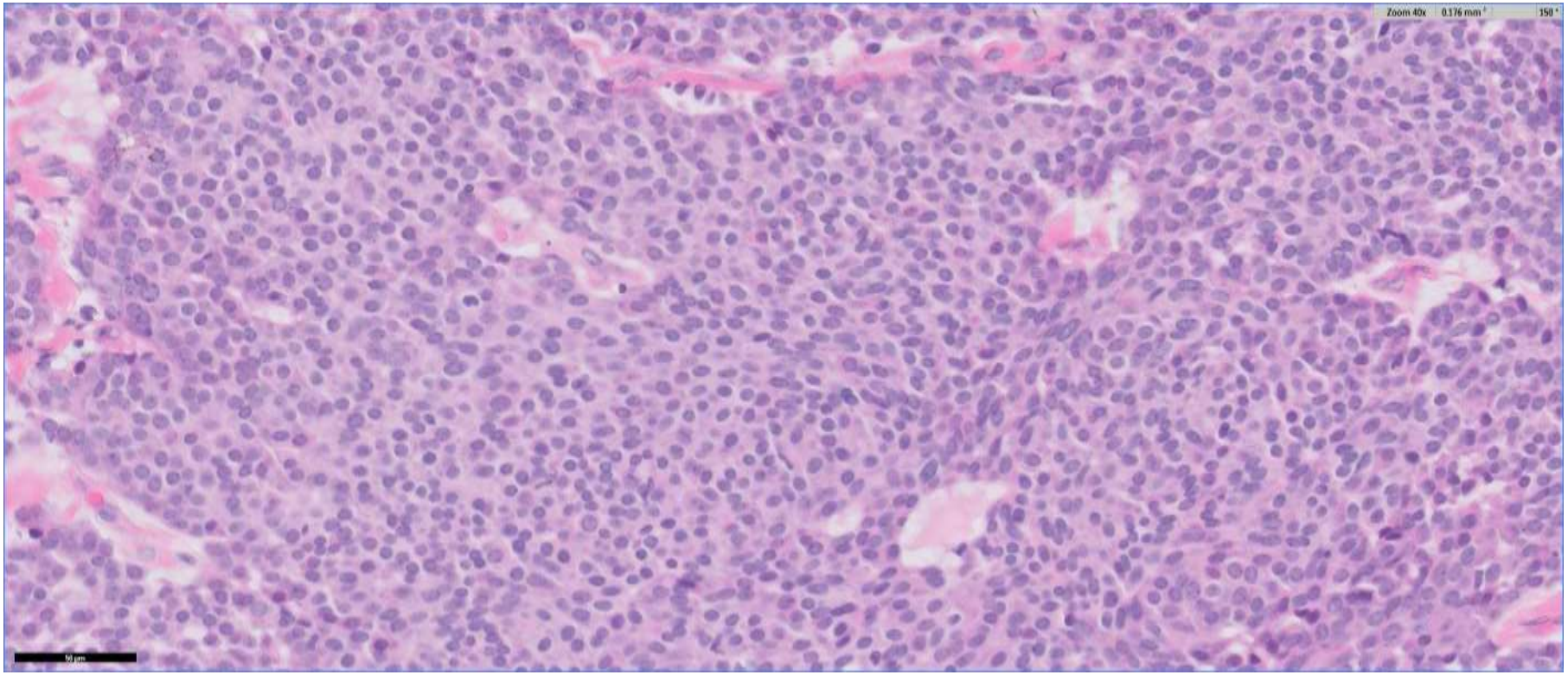
Nicholas Ladwig; UCSF

73-year-old F with non-painful, ball-like vulvar mas (3cm) present for 3 months.





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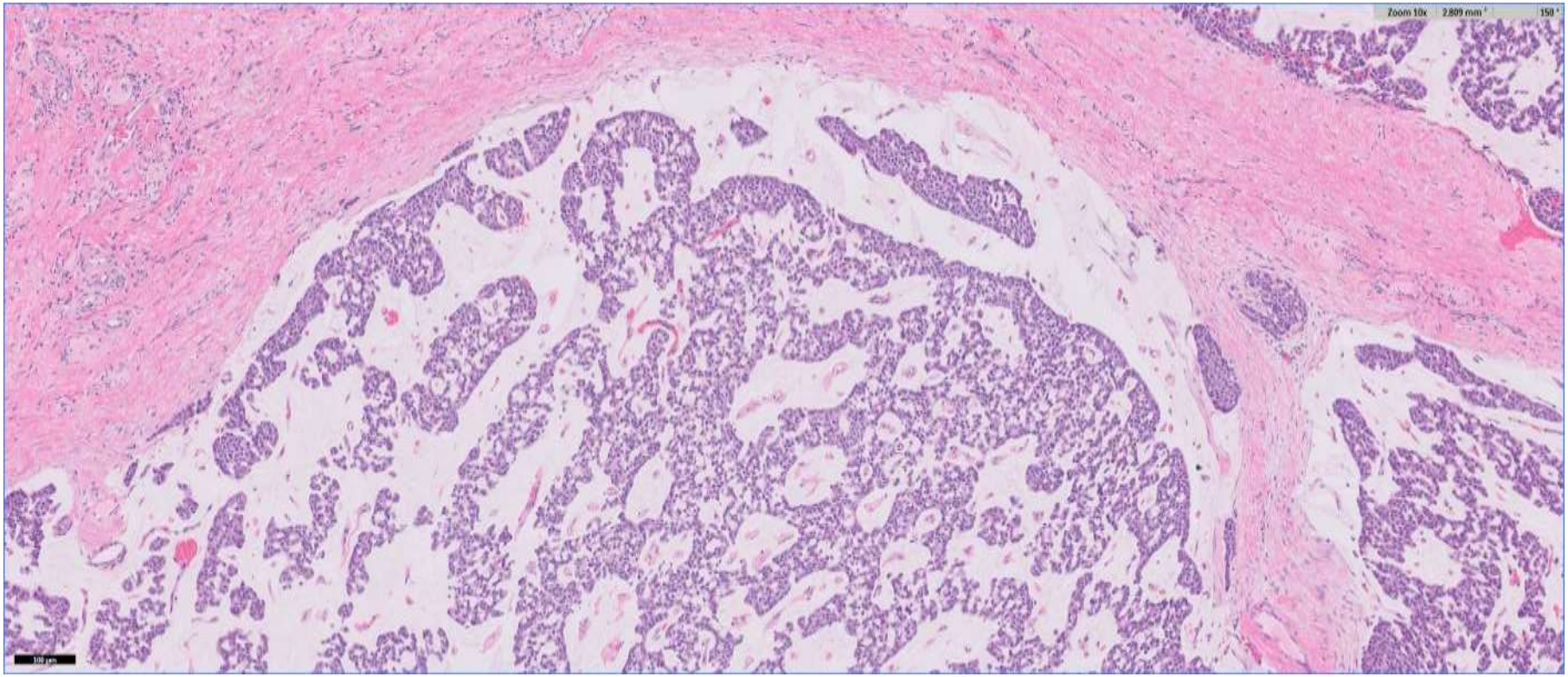
0.176 mm²
150 °
50 µm


Zoom 10x
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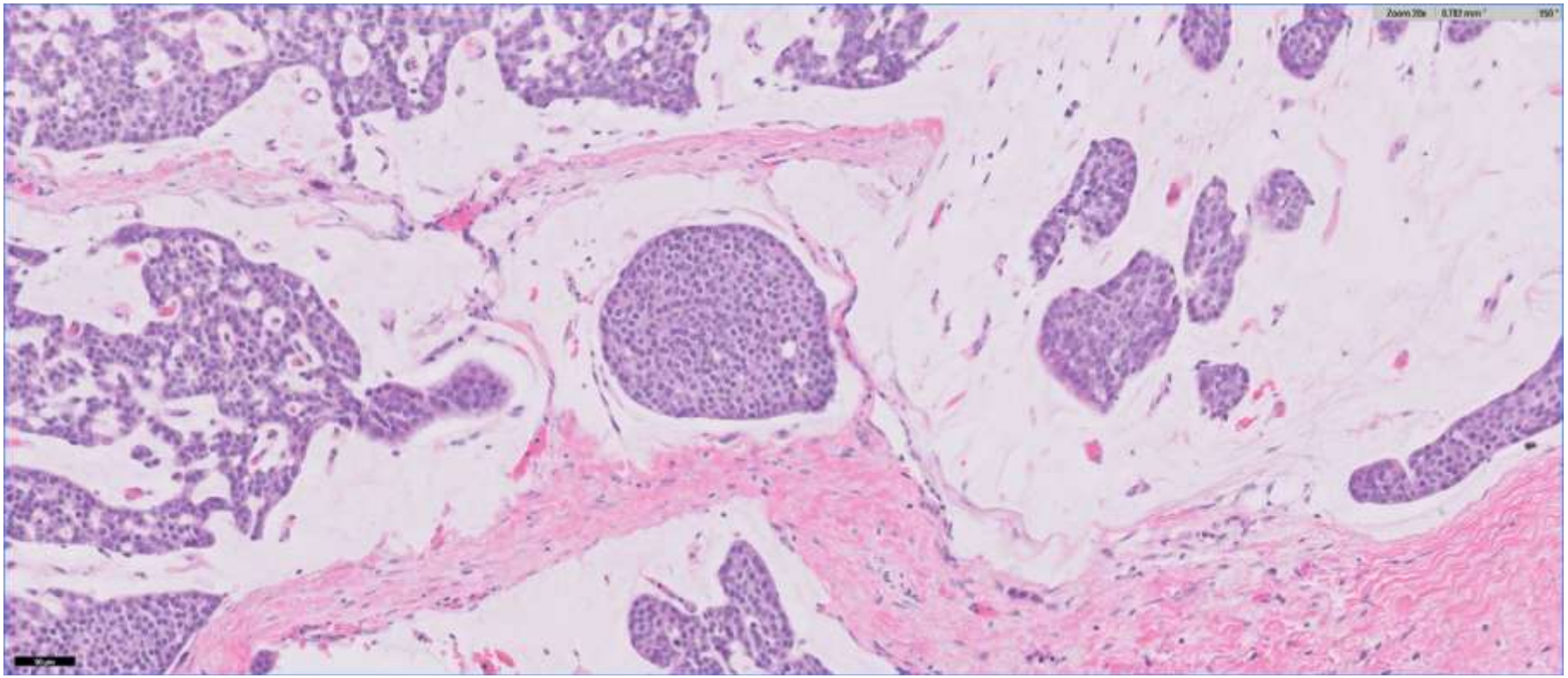


Differential Diagnosis

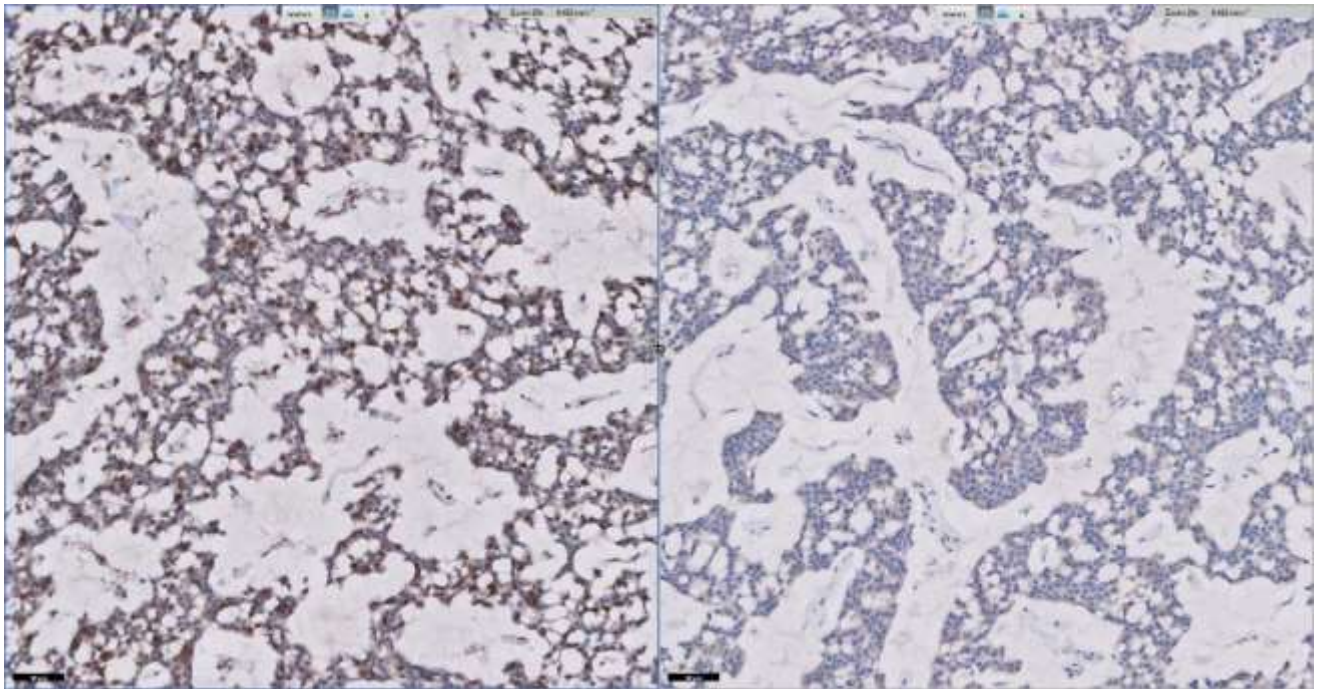
- Difficult because this morphology is quite unusual for a primary vulvar neoplasm

- Well-differentiated neuroendocrine tumor
- Myoepithelial neoplasm or mixed tumor
- Vulvar adenocarcinoma
  - Mammary-type
  - Enteric-type
- Melanoma
- Metastasis

Immunohistochemistry

p16

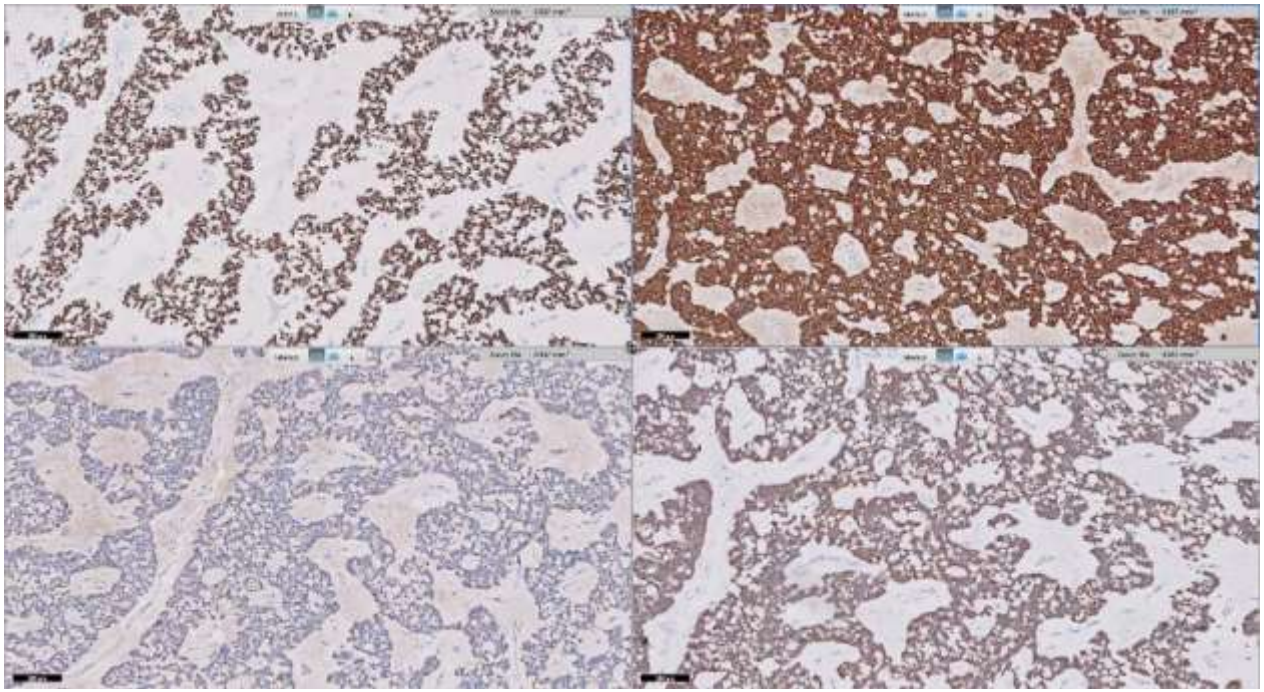
p63



Immunohistochemistry

ISNM1

EMA



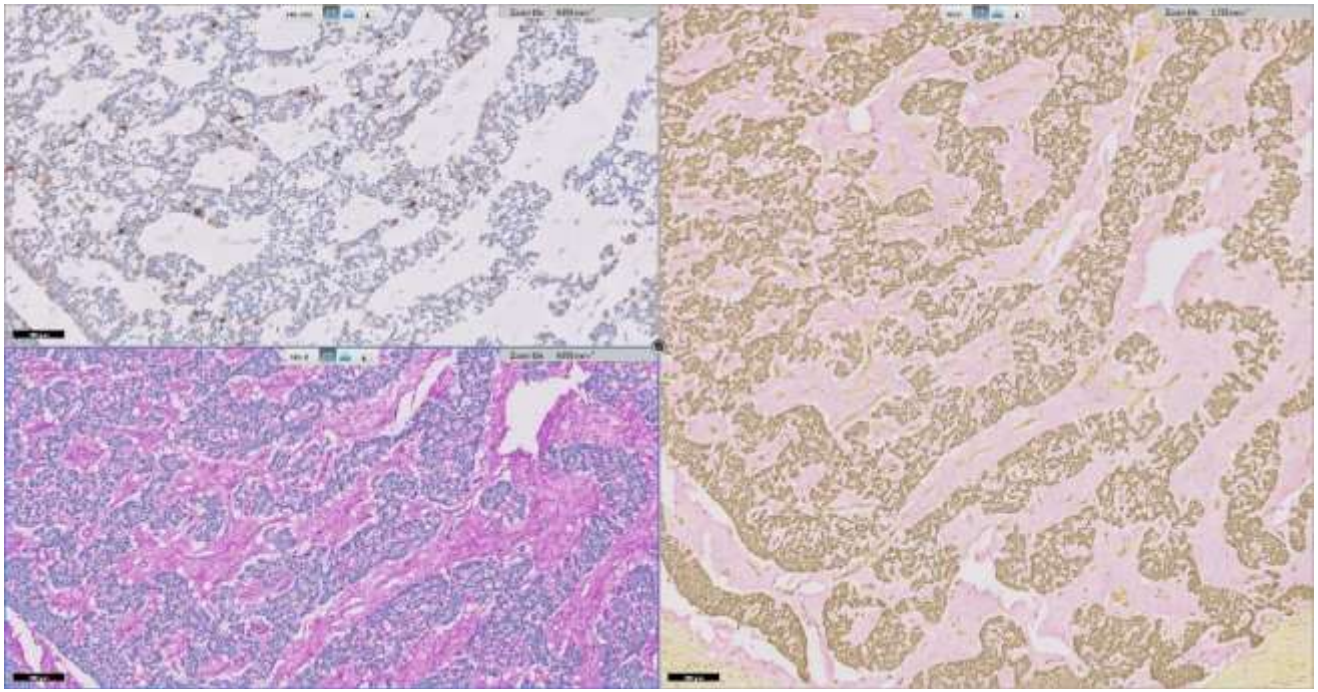
Chromogranin

Synaptophysin

Immunohistochemistry

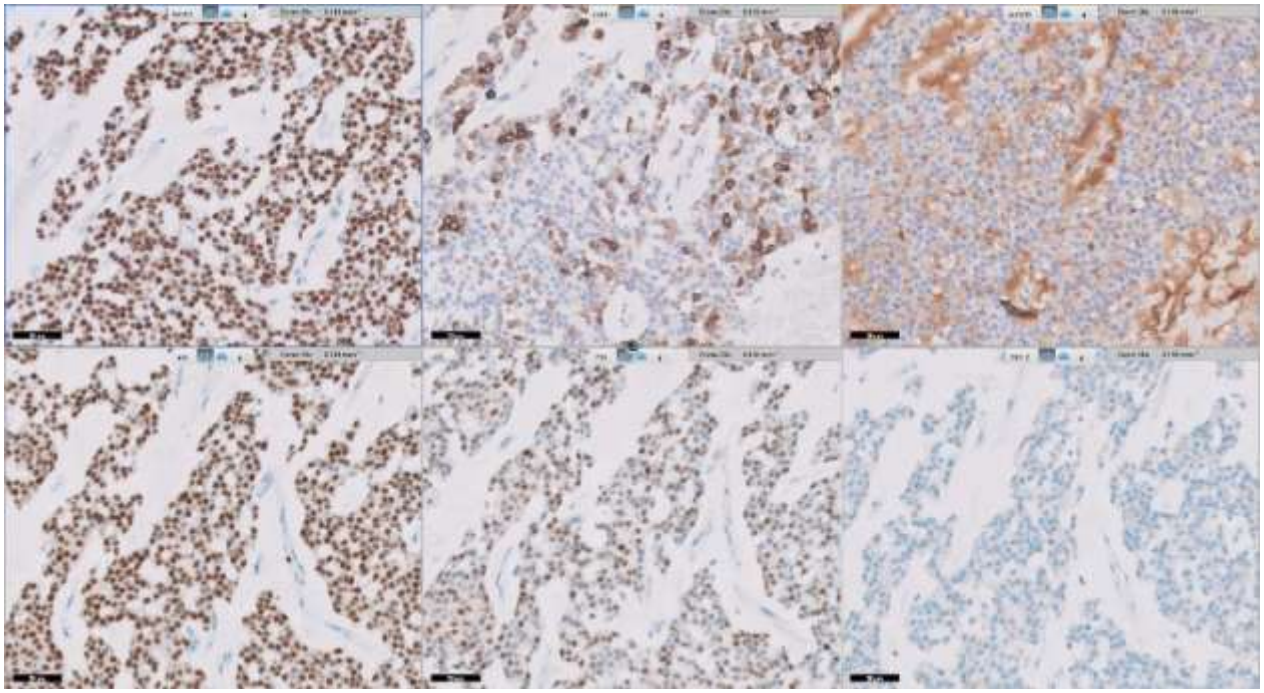
pCEA

Mucicarmine



PAS-D

Immunohistochemistry

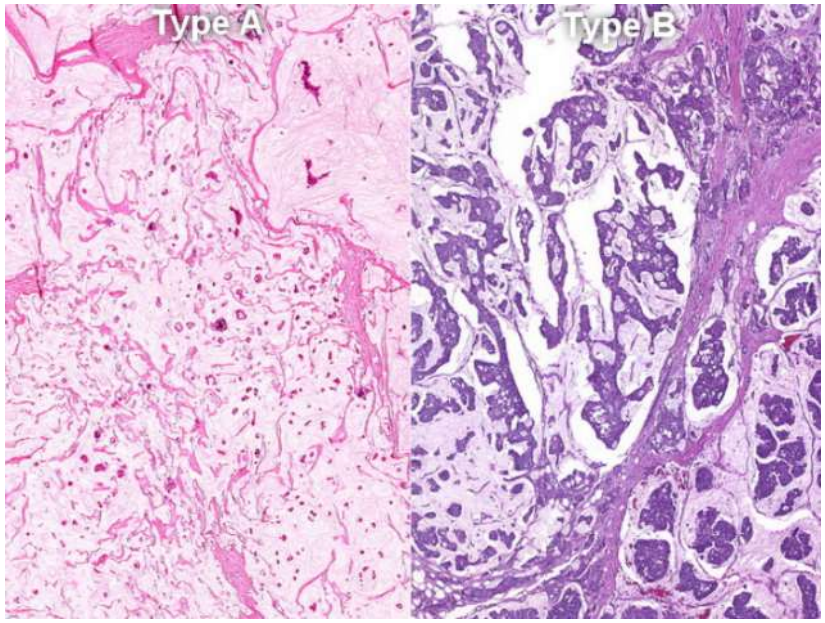


Final diagnosis:

Invasive mucinous mammary-type carcinoma with neuroendocrine differentiation

Mucinous Carcinoma (Breast)

- Hallmark feature = extracellular mucin production
- Typically low nuclear grade
- Type A = paucicellular
- Type B = hypercellular
  - Often show neuroendocrine differentiation
- Typically ER+/PR+/HER2-



Source: webpathology

Case Report

Vulvar mucinous adenocarcinoma with neuroendocrine differentiation: A case report and review of the literature

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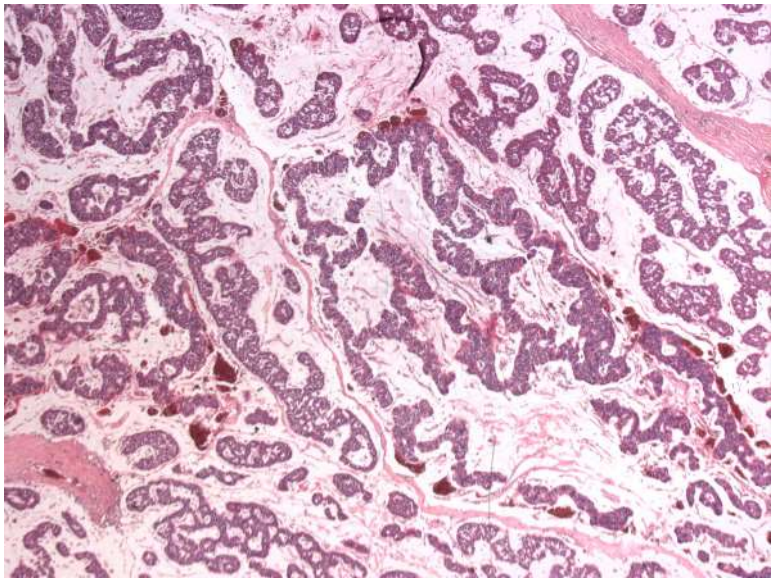
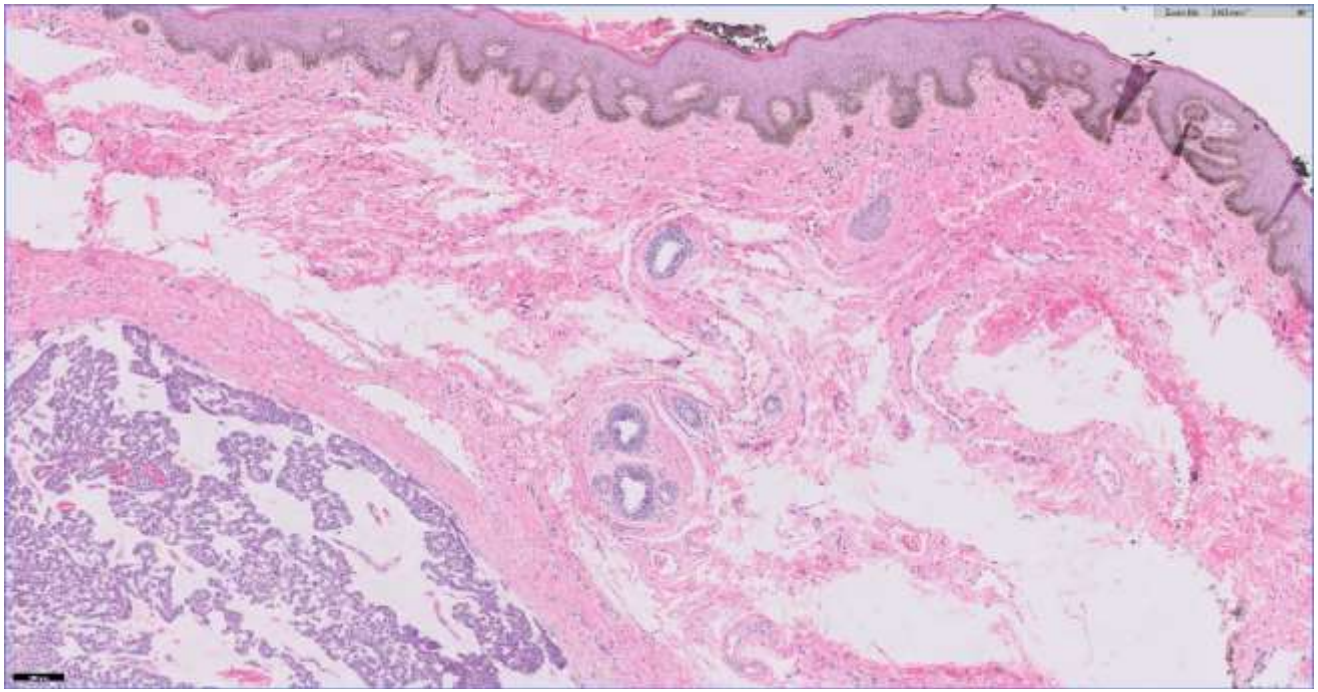
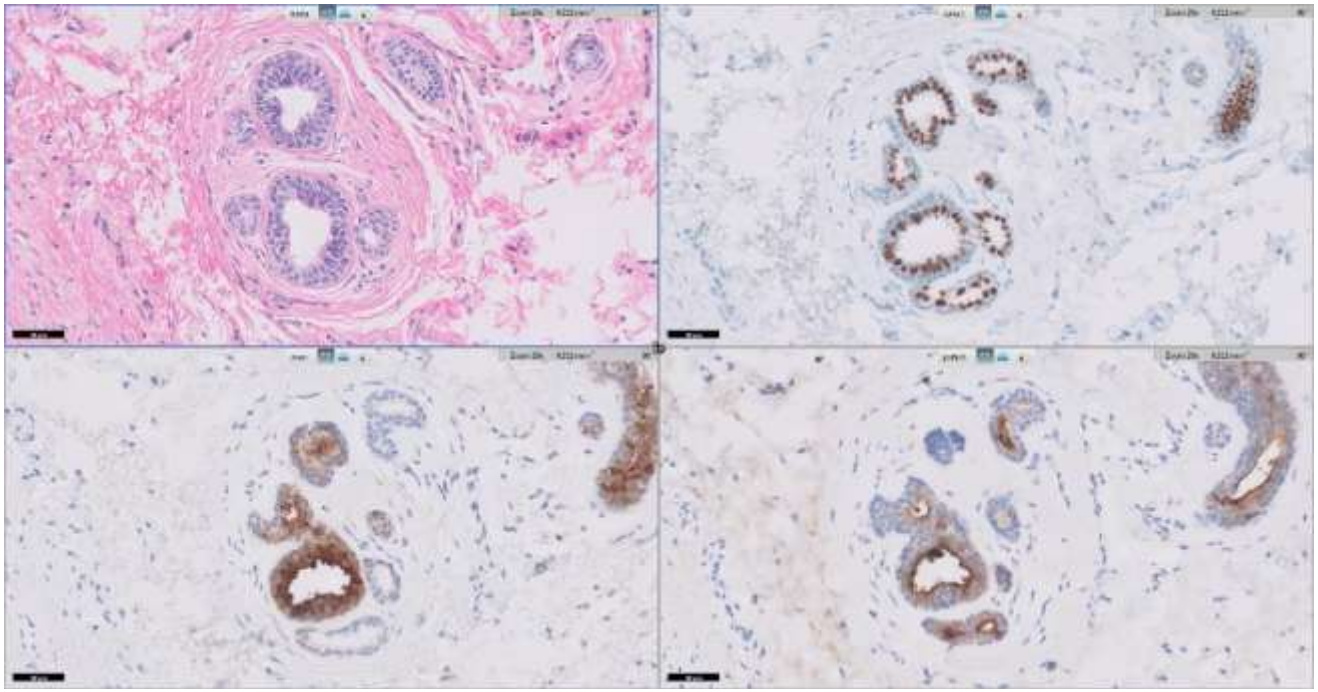


Mammary Type Anogenital Glands in the Vulva



Mammary Type Anogenital Glands in the Vulva



Mammary Lesions of the Vulva

TABLE 1. Main Entities of Anogenital Mammary-like Glands and Their Histological Mammary Counterparts[1–39]

Anogenital Mammary-like Glands	Breast
Benign tumors	
Hidradenoma papilliferum	Intraductal papilloma
Lactating adenoma	Lactating adenoma
Tubular adenoma	Tubular adenoma
Fibroadenoma, including juvenile type	Fibroadenoma, including juvenile type
Phyllodes tumor, benign	Phyllodes tumor, benign
Malignant tumors	
Phyllodes tumor, low-grade malignant	Phyllodes tumor, low-grade malignant
Extramammary Paget disease	Mammary Paget disease
Mammary type invasive and in situ ductal carcinoma	Invasive and in situ ductal carcinoma
Mammary type lobular invasive carcinoma*	Invasive lobular carcinoma
Mammary type tubulolobular carcinoma	Tubulolobular carcinoma
Mucinous (colloid) carcinoma	Mucinous (colloid) carcinoma

The lesion reported by McFarland as an ectopic mammary gland seems to have all the attributes of a tubular adenoma, as defined in the breast.[33]
*The reported cases of purported invasive lobular carcinoma are rather lesions with mixed ductal and lobular features (see text).

Kazakov DV, Spagnolo DV, Kacerovska D, Michal M. Lesions of anogenital mammary-like glands: an update. Adv Anat Pathol. 2011 Jan;18(1):1-28. doi: 10.1097/PAP.0b013e318202eba5. PMID: 21169735.

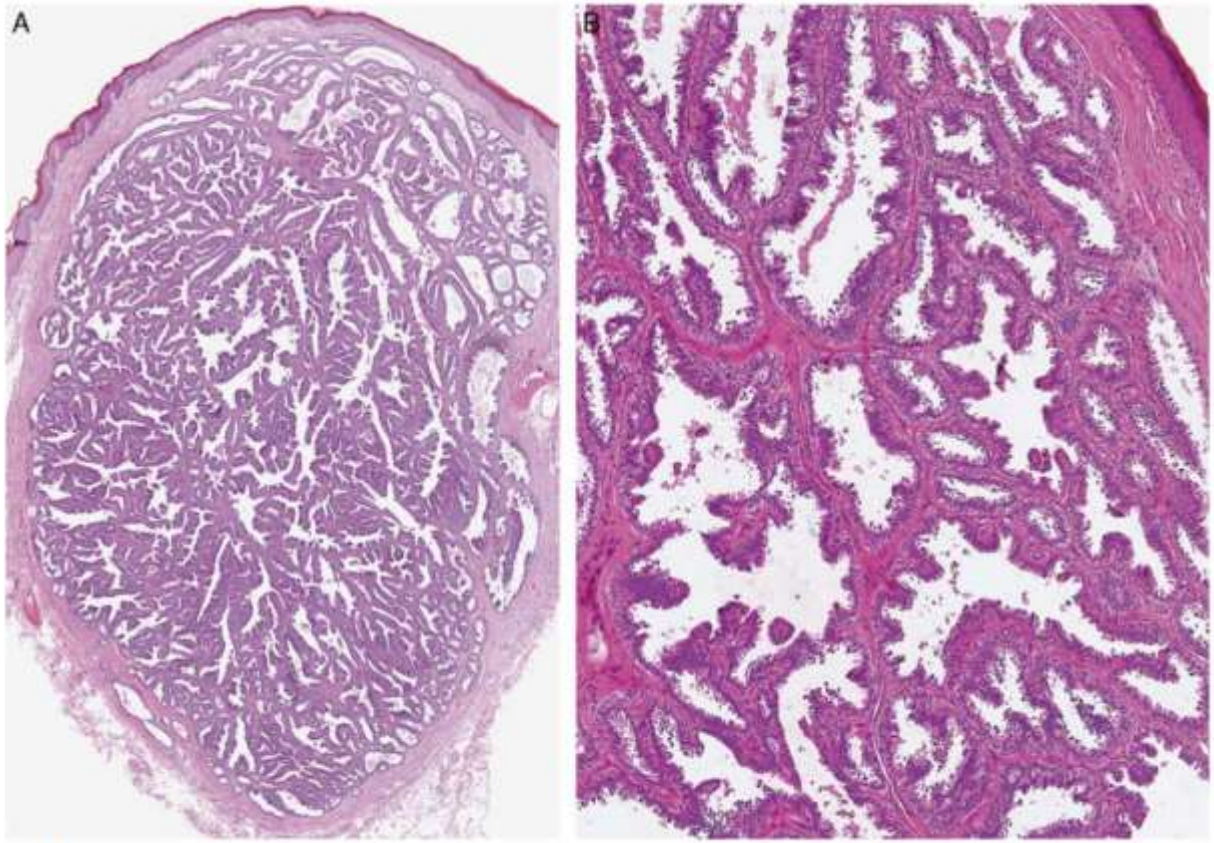


FIGURE 8. Hidradenoma papilliferum with prominent micropapillae and true papillae projecting into the lumens (A, B).

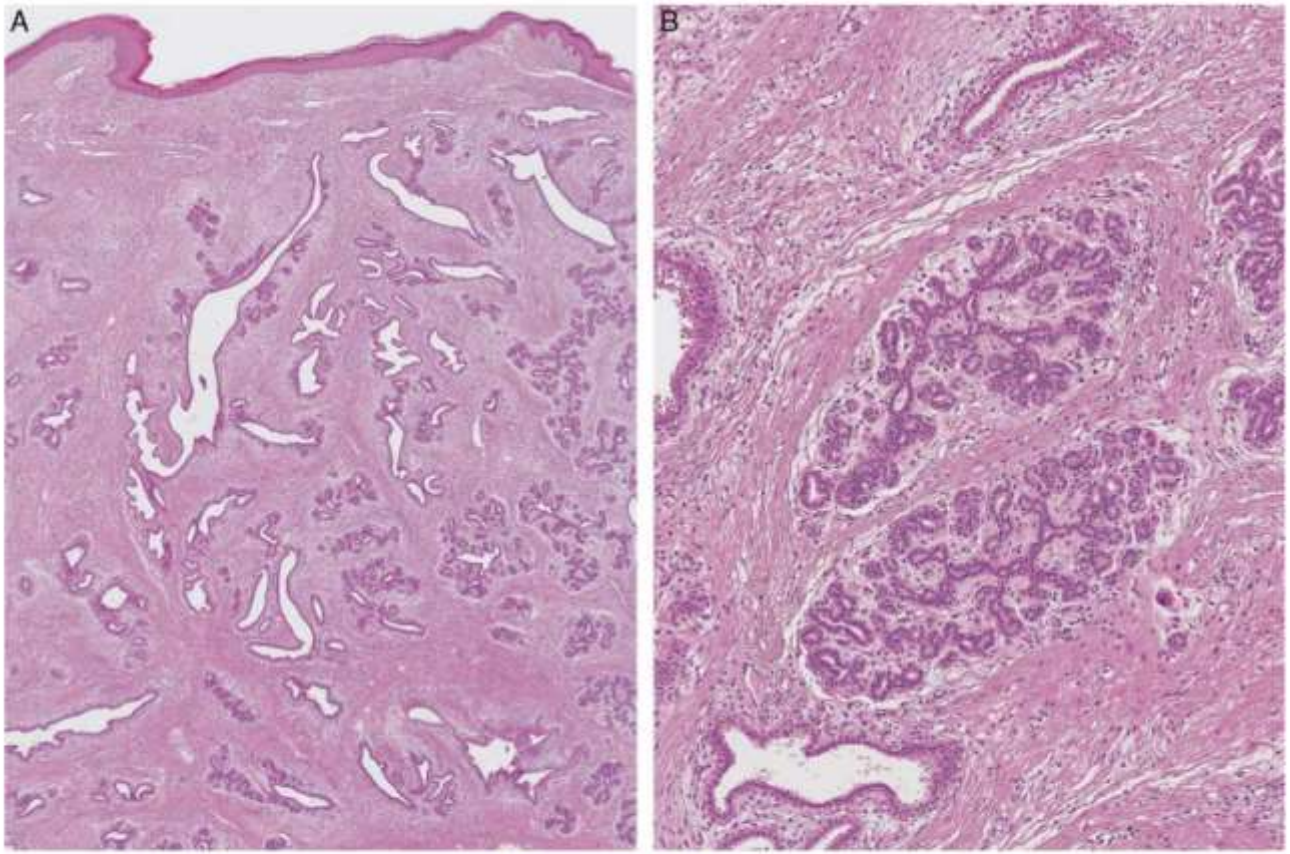


FIGURE 15. Fibroadenoma of anogenital mammary-like glands. A well-circumscribed biphasic epithelial-stromal neoplasm composed of round or elongated, often branching and anastomosing glands surrounded by a typically paucicellular stroma of bland spindled or stellate cells showing few or absent mitoses (A, B).

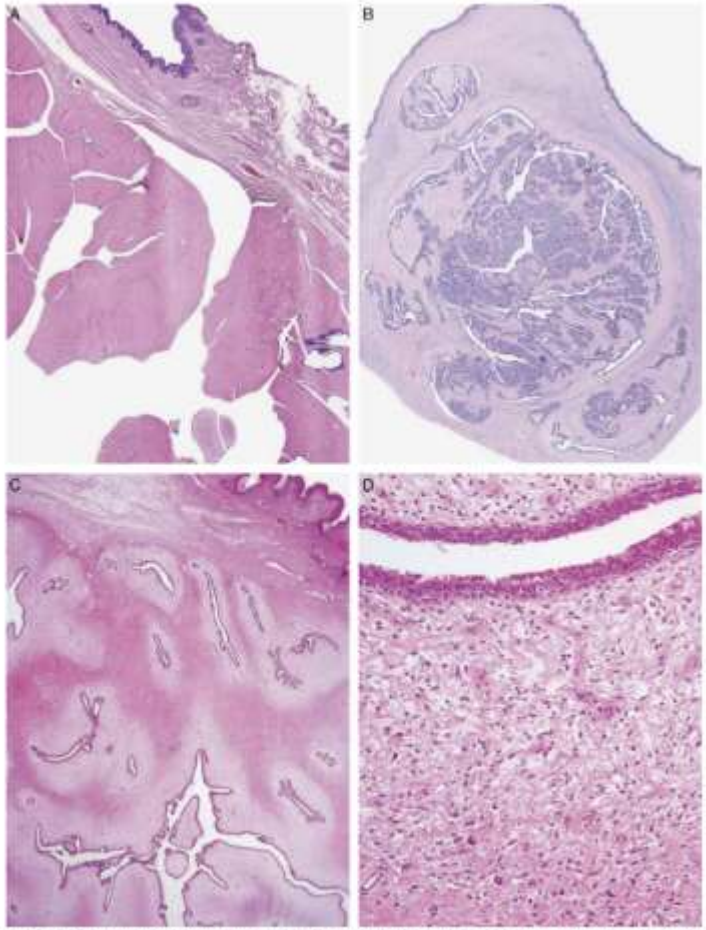


FIGURE 16. Phyllodes tumor of anogenital mammary-like glands showing typical leaf-like projections into glandular lumens (A–C). Note the hypercellular stroma (D) with classical periglandular condensation (C). As in the breast, the degree of stromal atypia stratifies phyllodes tumor into benign or low-grade malignant (D). High-grade malignant phyllodes tumor of the anogenital area has not been thus far described.

Take Home Point

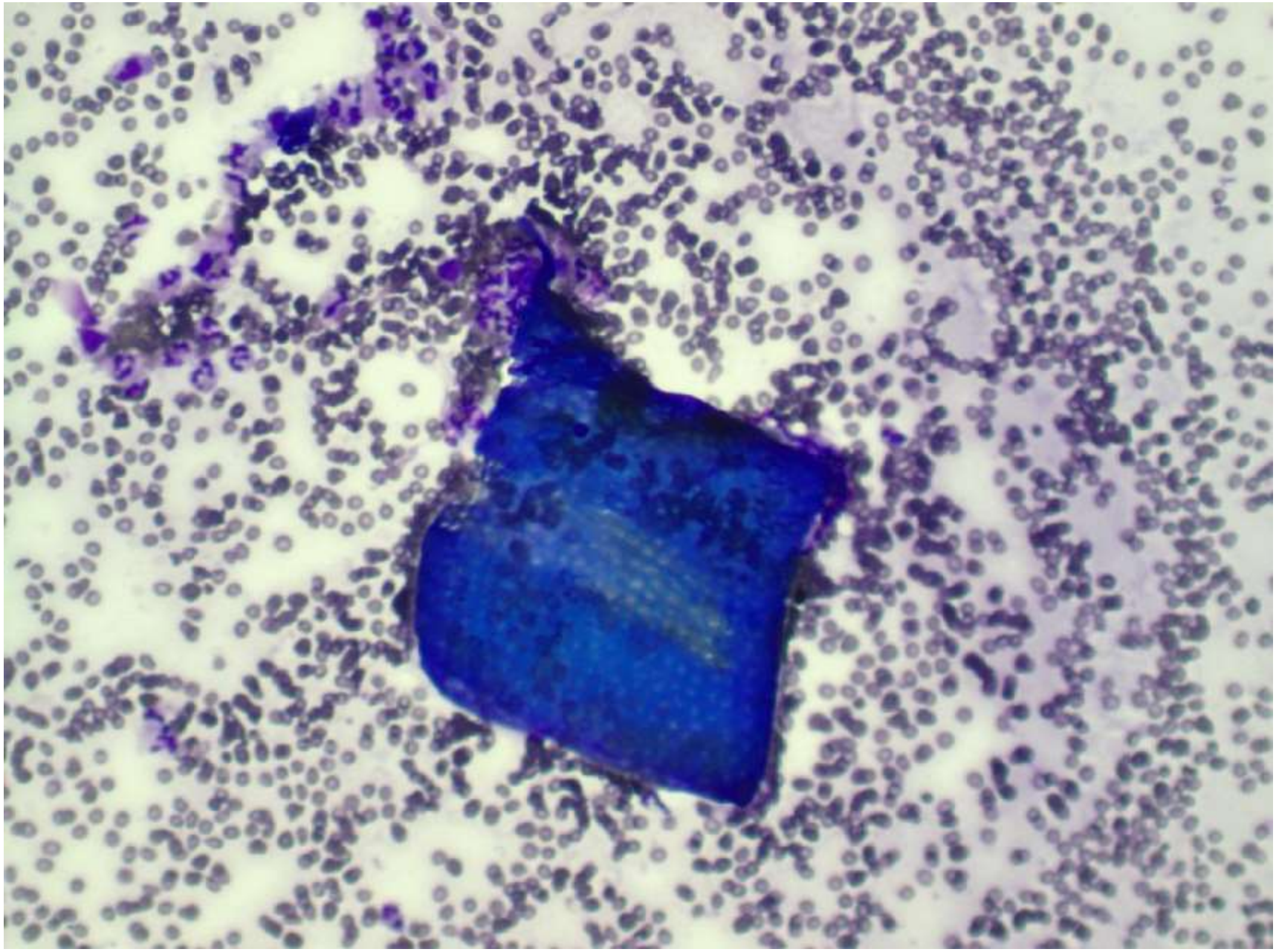
- Don’t forget to consider mammary-type lesions if you encounter an unusual glandular lesion in the vulva!

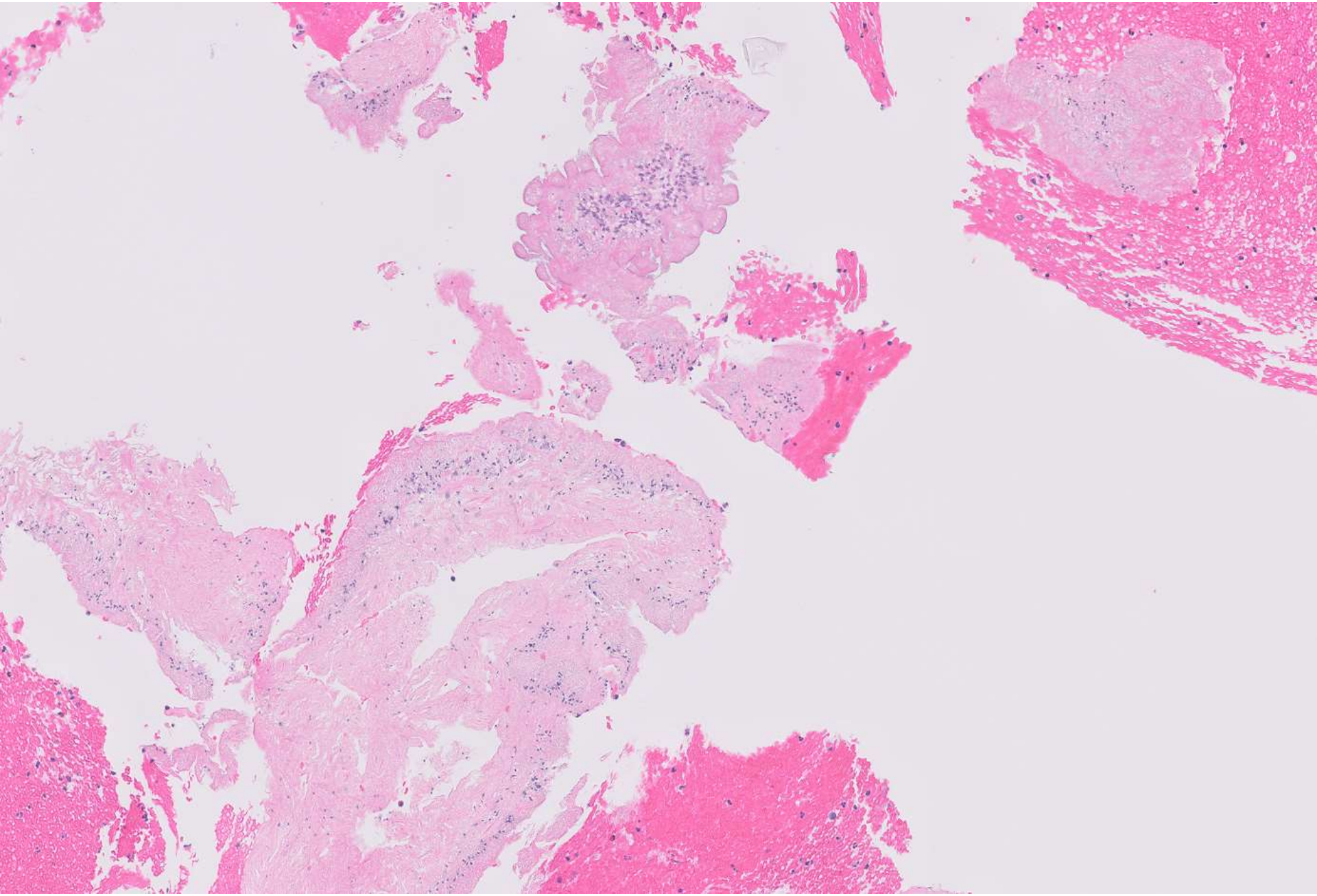
- Immunohistochemistry should resolve difficult cases:
  - GATA3 / Mammaglobin / GCDFP15

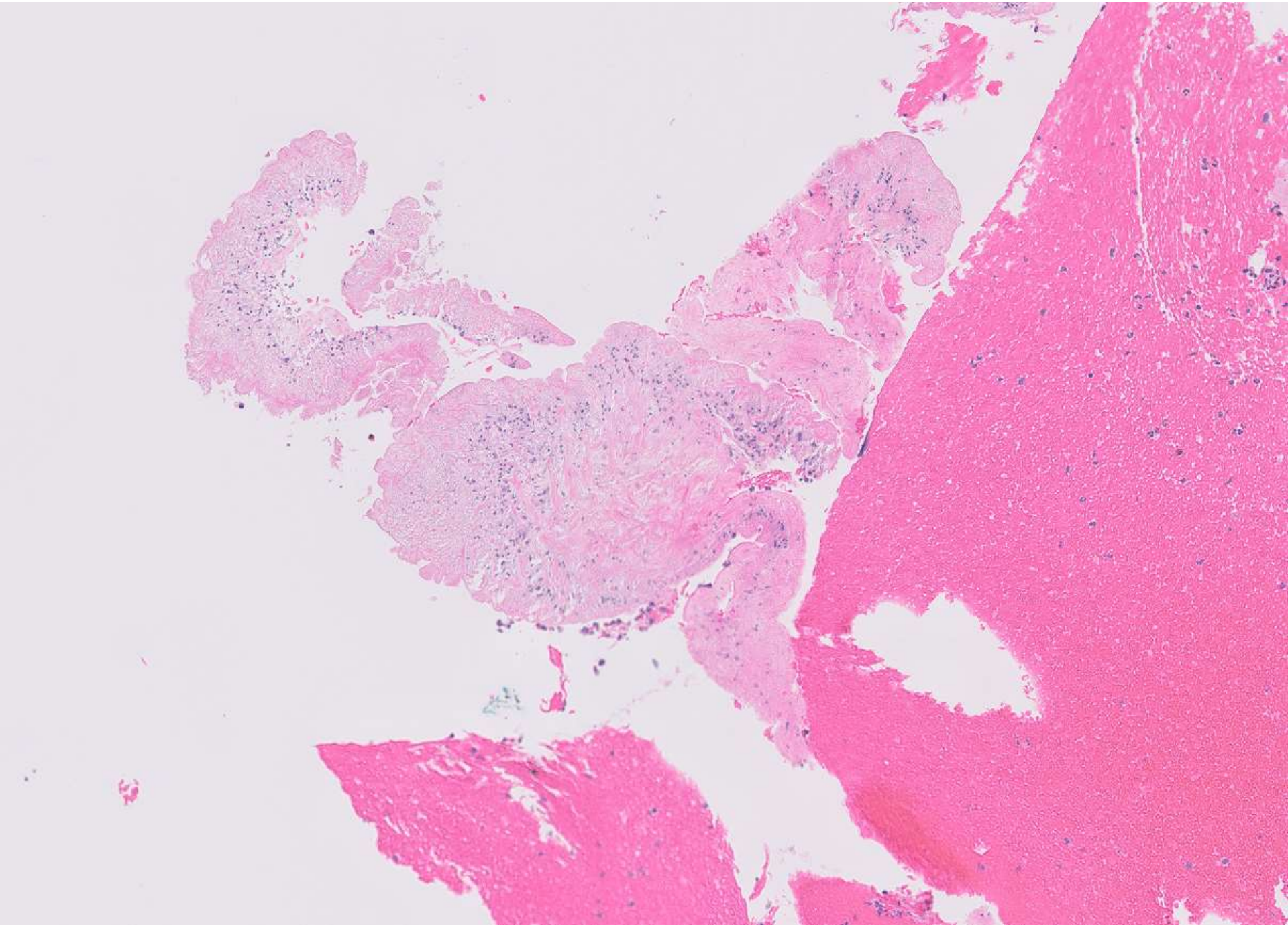
21-0803

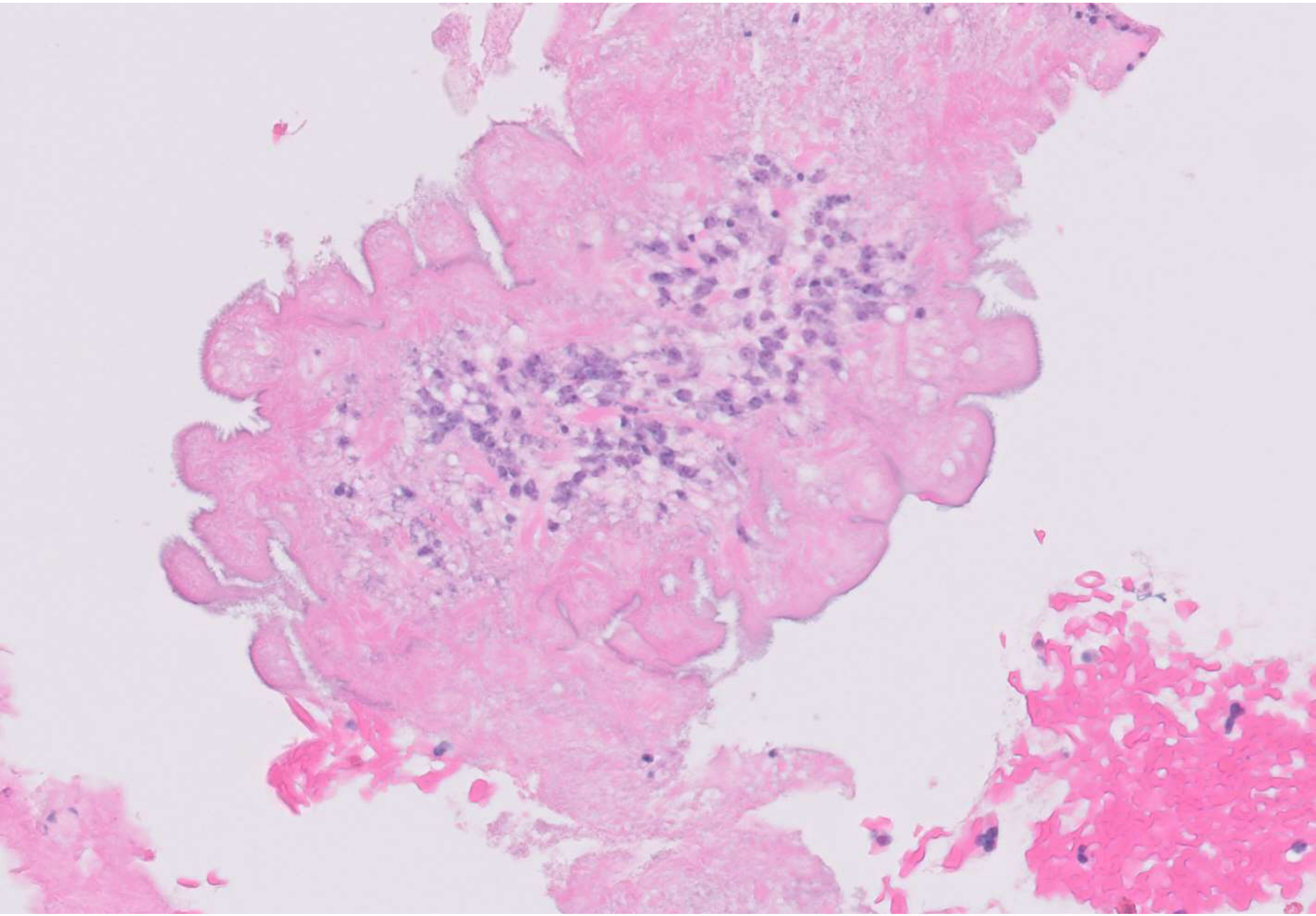
Marie Perrone; Cascade Pathology Services; Portland, OR

69-year-old M with cystic posterior neck lump. MRI reported: well-circumscribed 11x8x22mm right posterior neck cystic mass deep to trapezius, no reduced diffusion to suggest abscess with minimal surrounding stranding to suggest necrotic lymph node; elongated appearance may suggest cystic schwannoma or lymphocele. FNA with cell block performed.









Differential of a Superficial Mass

- Mesenchymal tumors
  - DF/DFSP
  - Lipoma
  - (lymph)Angioma
  - Schwannoma/neurofibroma
  - Nodular fasciitis
- Skin Appendage lesions
  - EIC
  - Pilomatricoma
  - Cylindroma
- Myxoma
- Lymphoma
- Granuloma annulare
- Metastasis
- Cellulitis/Abscess
- Parasite

Reference: Yadav, YK; Gupta, O; Aggarwal, R. Cytological diagnosis of parasites presenting as superficial nodular swelling: report of 35 cases J Parasit Dis. 2012 Apr;36(1):106-11

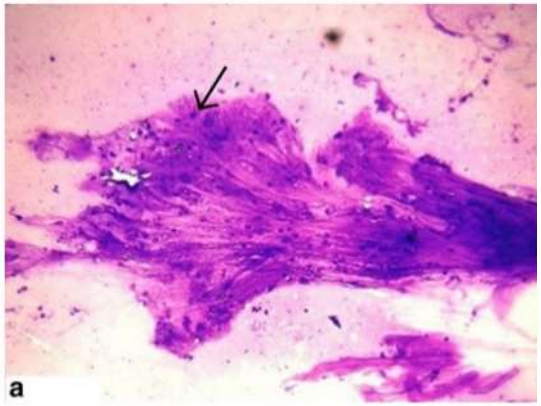
Neglected Parasitic Infections (NPIs) in the US

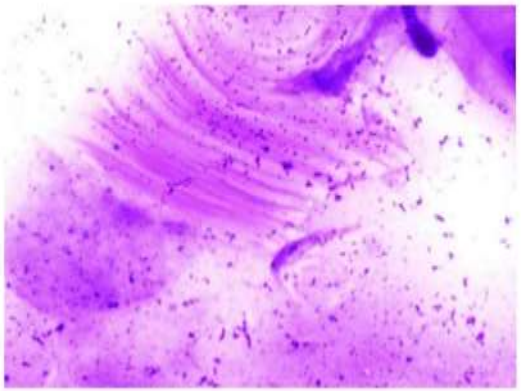
- High prevalence, chronic/disabling features, strong links with poverty
- "Anyone can become infected although *certain racial or ethnic minority groups, persons born outside the United States, and people with lower incomes* appear to be most at risk."

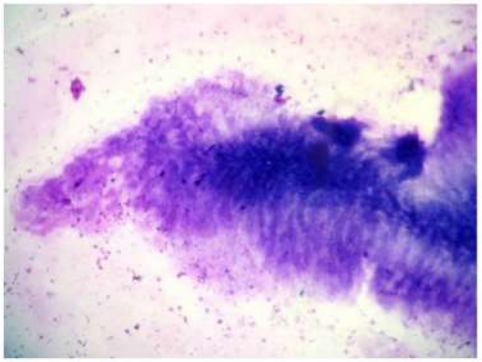
References: Neglected Parasitic Infections and Poverty in the United States, https://www.cdc.gov/parasites/npi/

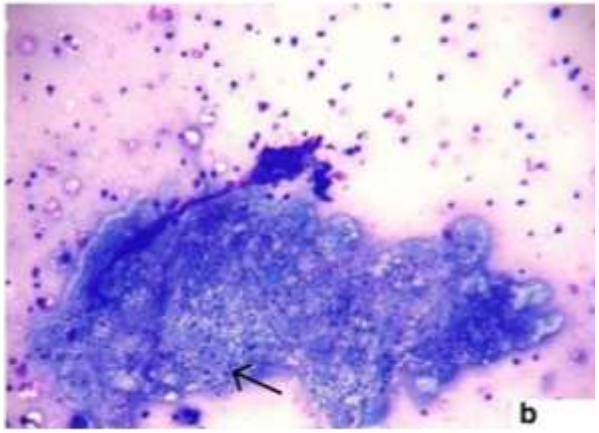
Cytologic Features

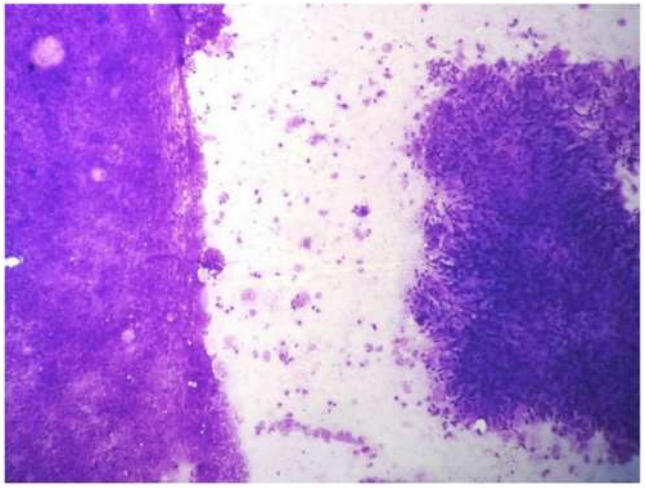
- Clear fluid
- Eosinophils/macrophages
- Granular background







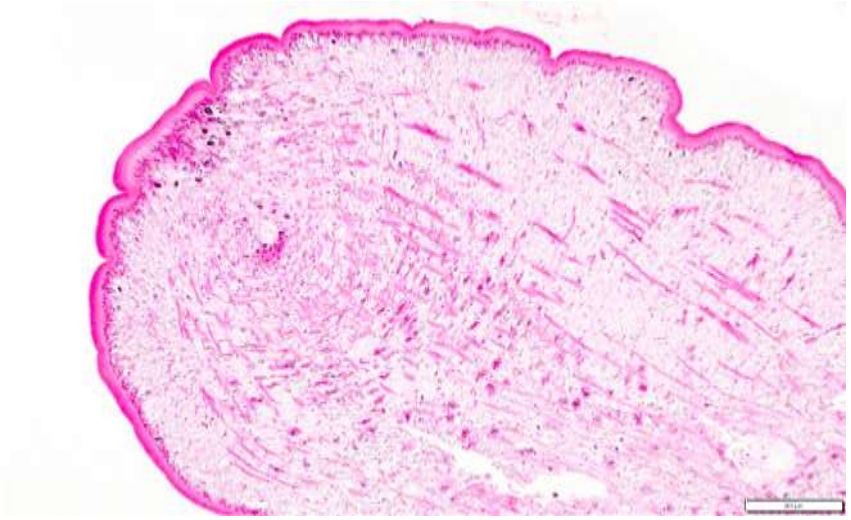


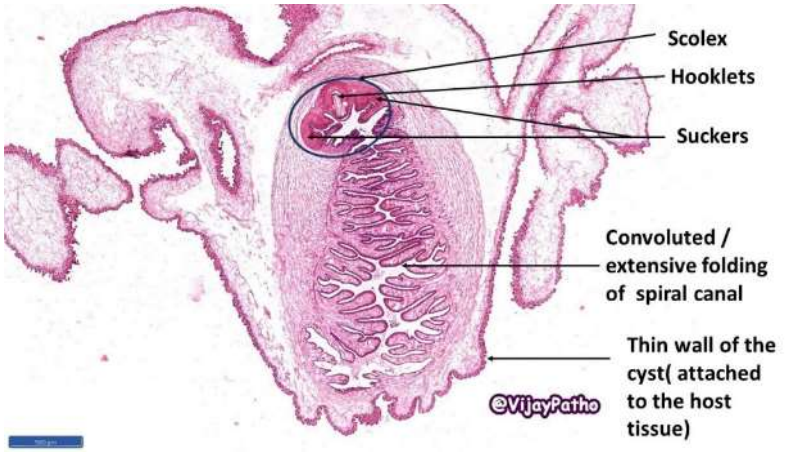


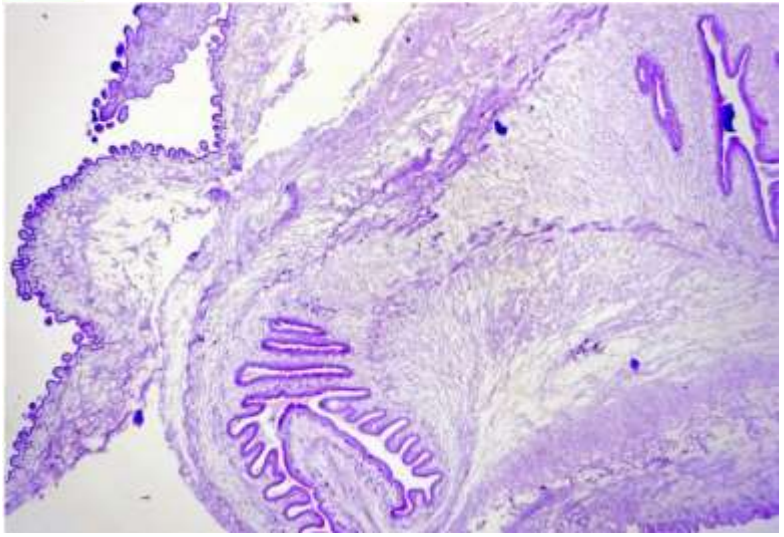
References: Yadav, YK; Gupta, O; Aggarwal, R. Cytological diagnosis of parasites presenting as superficial nodular swelling: report of 35 cases J Parasit Dis. 2012 Apr;36(1):106-11; Goyal et al. A cytological study of palpable superficial nodules of parasitic origin: a study of 41 cases. Patholog Res Int. 2014;2014:373472

Histologic Features

- Noncellular eosinophilic tegument
- Calcareous corpuscles (mineralized concretions)
- +Scolex in Cysticerci







Micro/Molecular Results and Follow-up

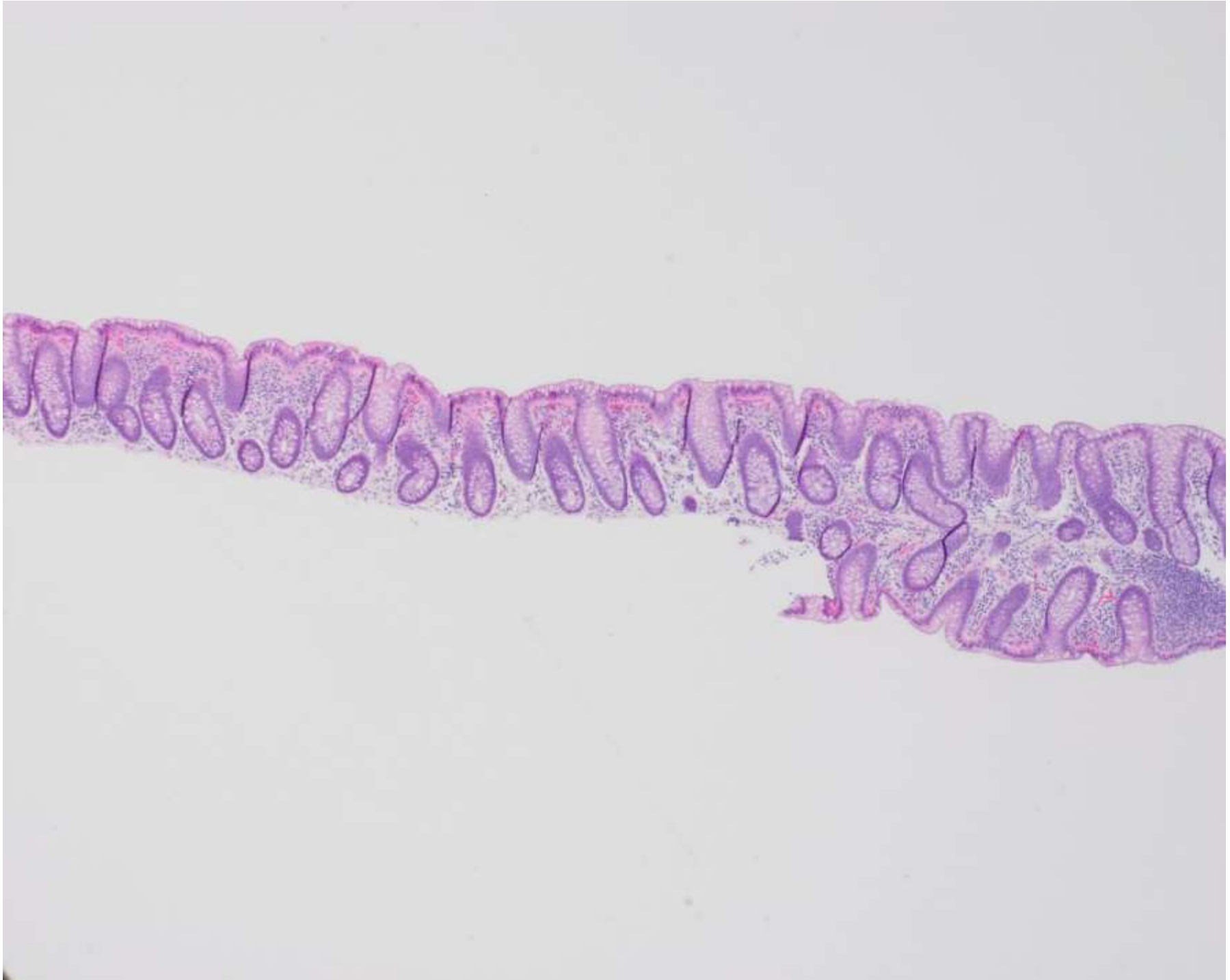
- EITB for cysticercosis: negative
- 18S RNA: negative for Spargnosis and *Taenia solium*
- NGS performed by the Bhatt lab: Identified a *Taenia spp.* similar to *T. serialis* (canid tapeworm)
- *….potential sequencing of the patient's dog's stool*

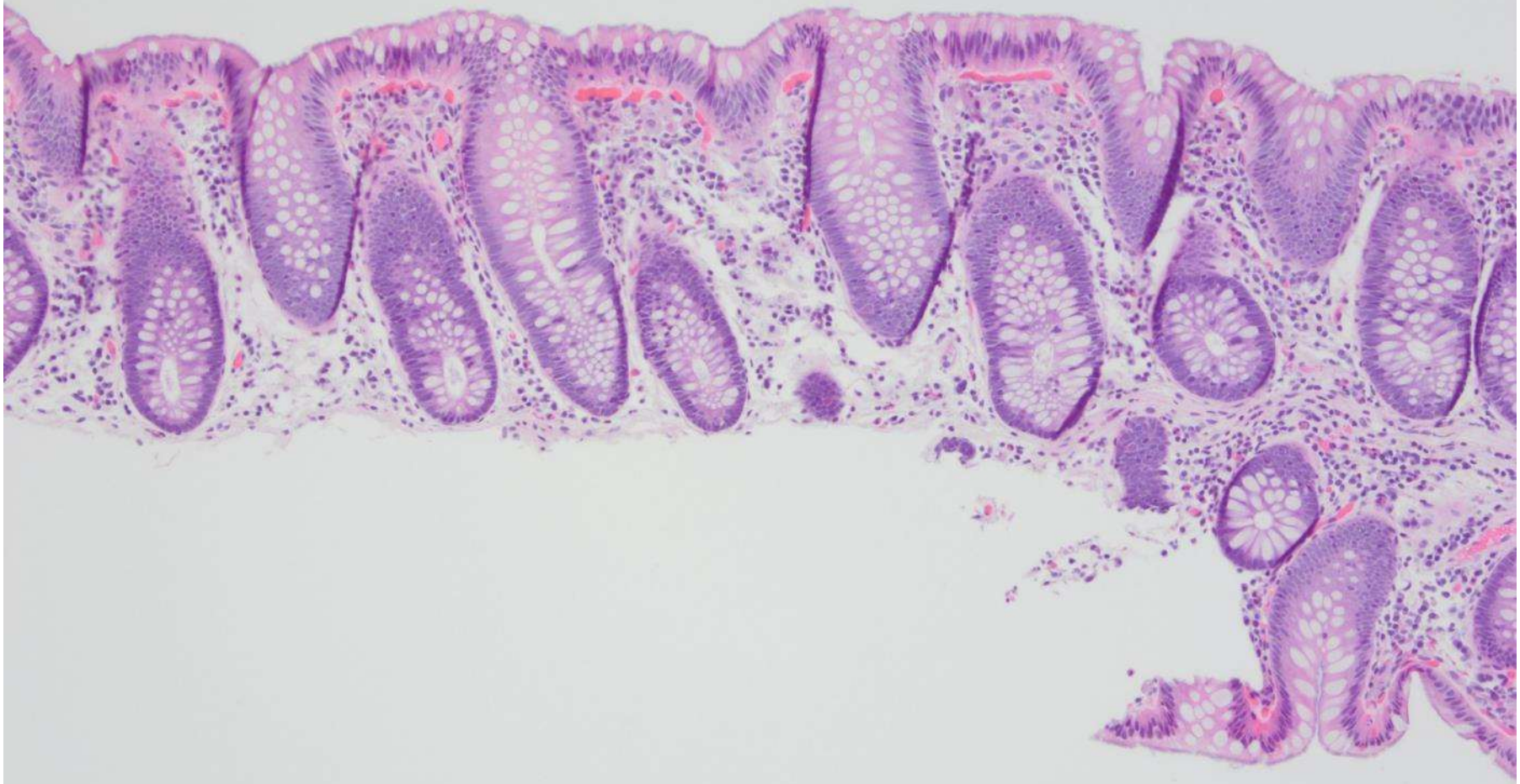
- Patient was offered excision, but opted for a "wait and watch" approach. As of April, the cyst had completely resolved.

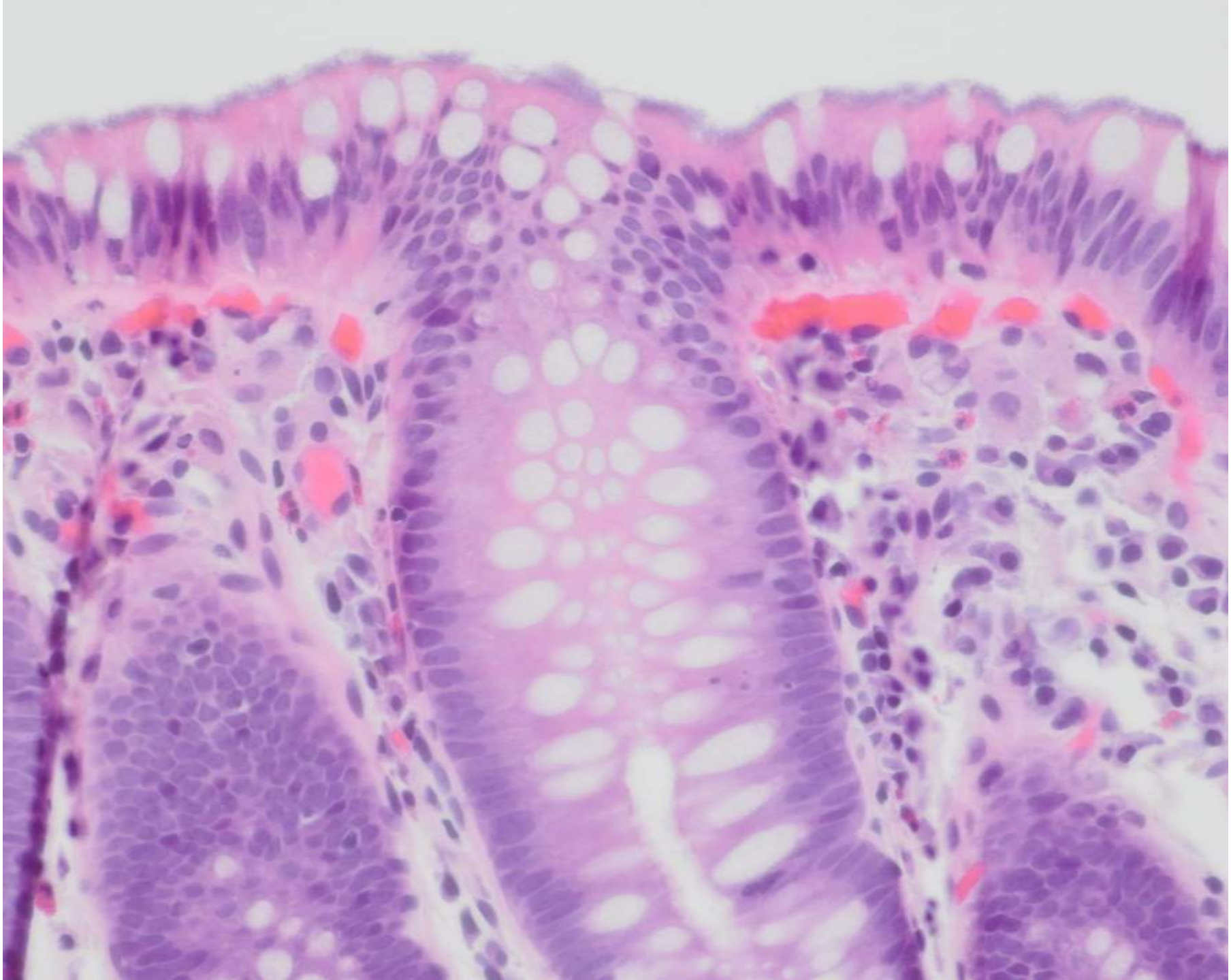
21-0804

Richard Garcia-Kennedy; CPMC

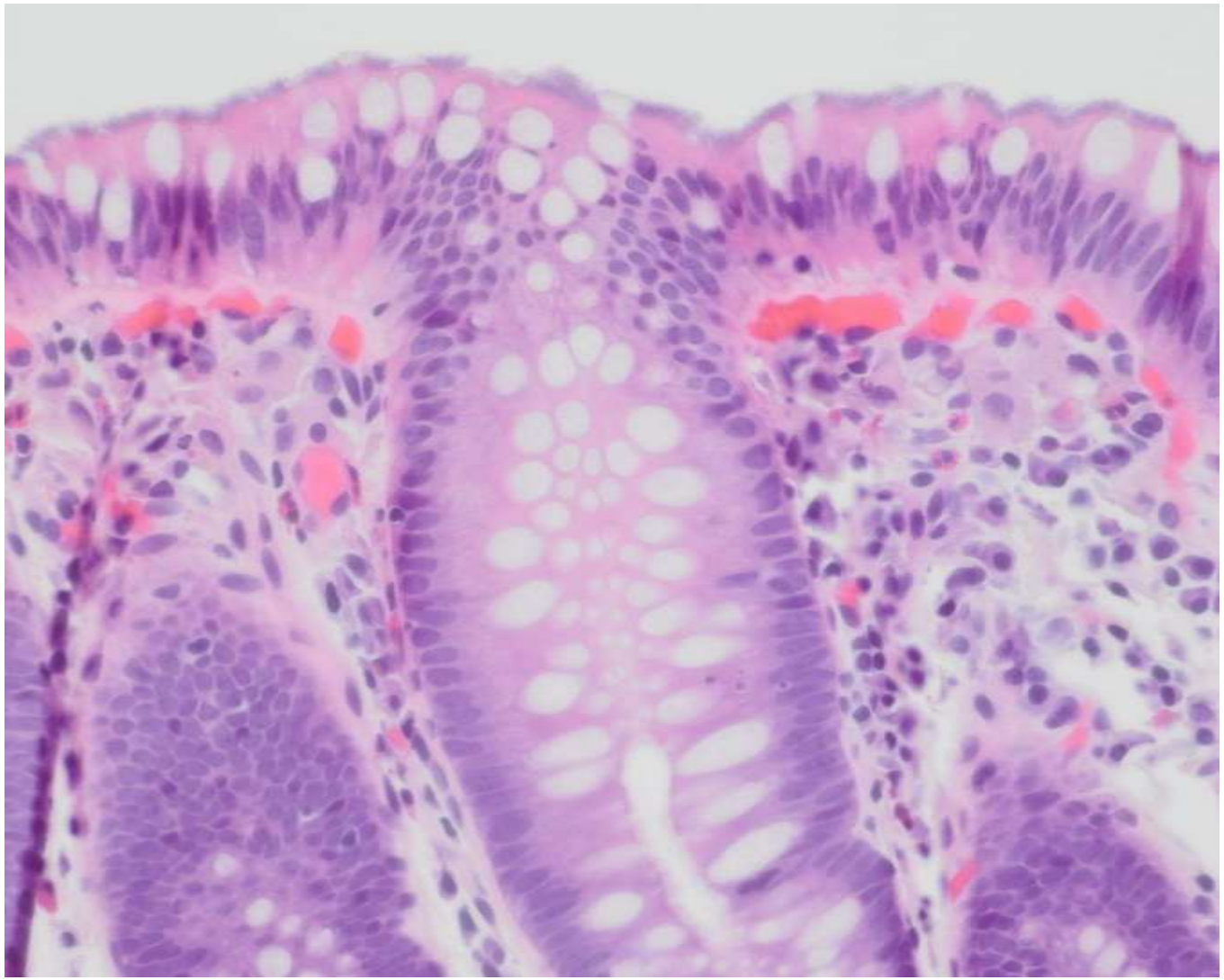
36-year-old M undergoes right colon biopsy, r/o inflammation.

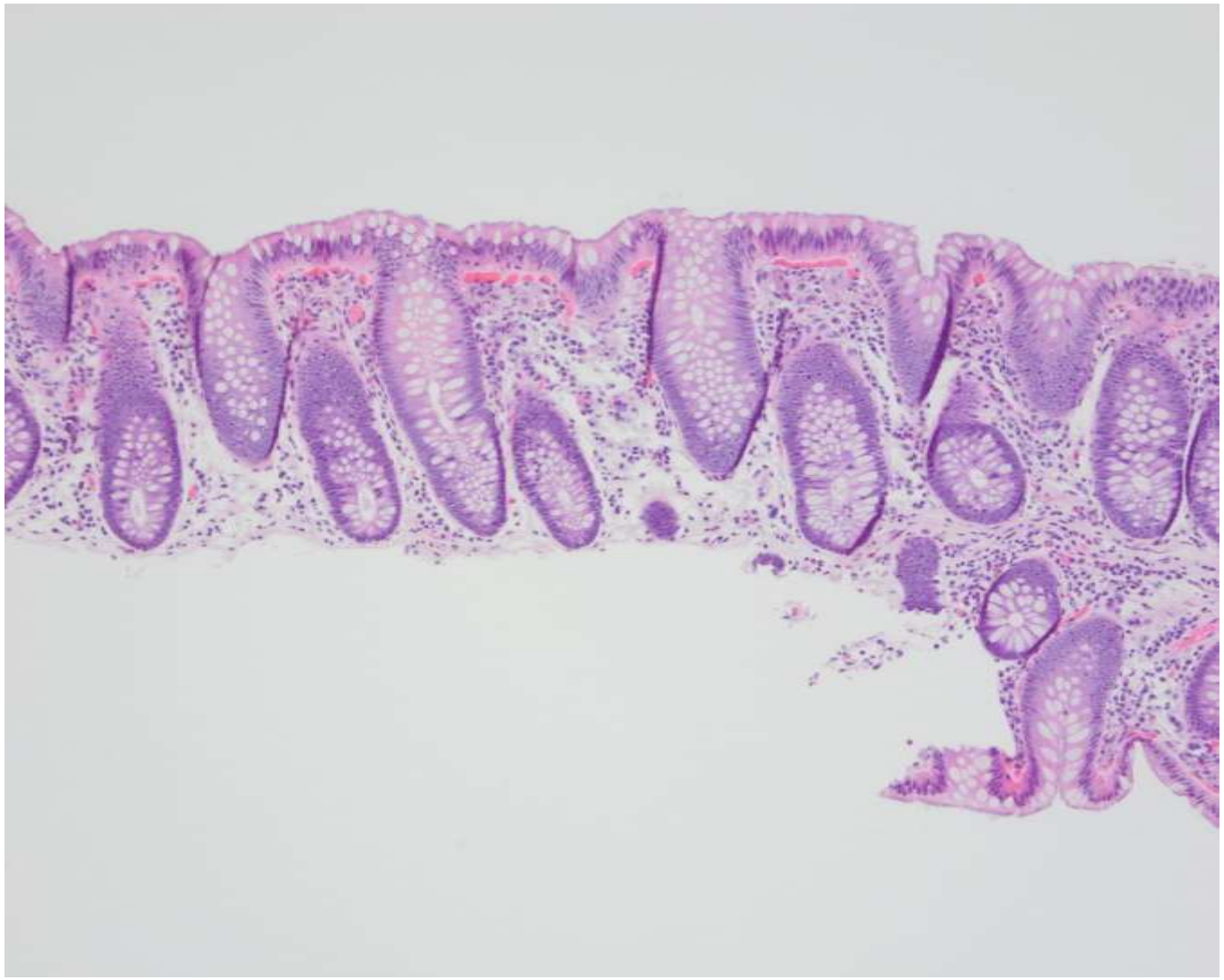


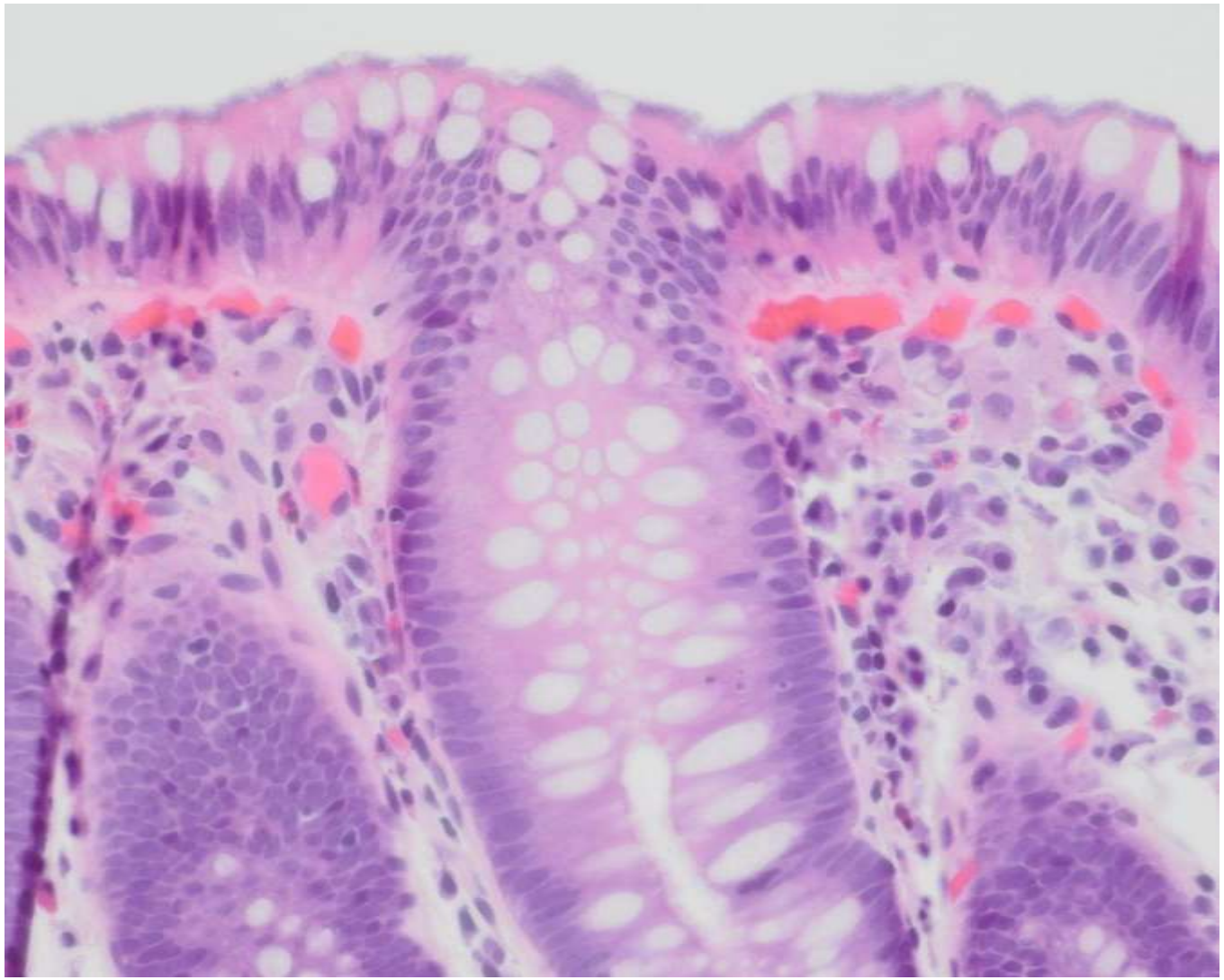




Spirochetosis/Intestinal spirochetosis





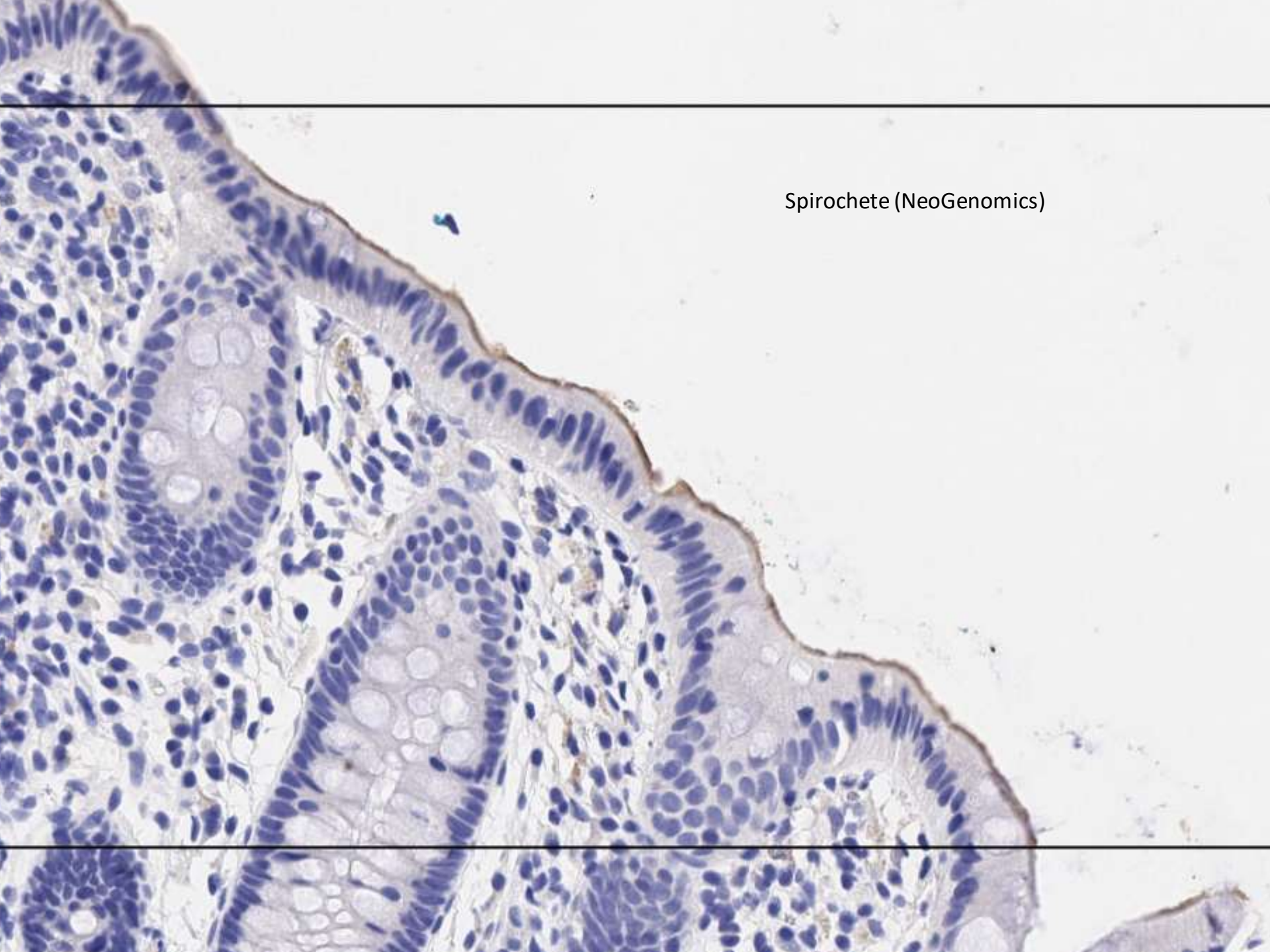


Differential

- Prominent brush border – heavy purple hematoxylin day, especially right side; spirochetosis will be essentially everywhere so if not question
  - [Spirochetosis not over tubular adenomas, yes over hyperplastic polyps, ?SSA]
- Enteroadherent *E coli* – lay down flat, stain densely and usually will have a superficial acute colitis
- Poor prep/stool – patchy as clouds and very variable in size
- If real acute or lymphocytic colitis is probably not simply spirochetosis

Stains

- H&E
- Steiner, Warthin-Starry
- Spirochete immunostain
- Electron microscopy (how I learned about ~1985)


Spirochete (NeoGenomics)

- Leeuwenhoek described spiral animalcules in stool
- 1967 described as intestinal spirochetosis; sometimes colonic sporochetosis now
- *Brachyspira aalborgi* mostly, *B pilosicoli*, and others
- Reservoir – *B aalborgi* in humans/primates; it and others in many domesticates, e.g. pigs. Complex microbiology, overlapping hosts, and adapts to species
- Clinical significance – "controversial" incidental vs diarrhea; maybe IBS relation
- Rx – Flyagl clears histologically
- Suspect most patients get treated for their "pig syphilis"
- Recurrence - unknwn
- Incidence of "spirochetosis" – unknwn but not exotic - primarily MSM here, maybe 30% in Africa
- Peds – don't know much; need to consider sexual abuse

Original research Association between Brachyspira and irritable bowel syndrome with diarrhoea
Karolina S Jabbar,1,2 Brendan Dolan,1 Lisbeth Eklund,1,2 Catharina Wising,1 Anna Ermund,1 Åsa Johansson,1 Hans Törnblom,2,3 Magnus Simren,2,3 Gunnar C Hansson 1
Gut 2021;**70:**1117-1129.

Literature = mostly small case series and voluminous subtle (to me) microbiology. Random fun papers:

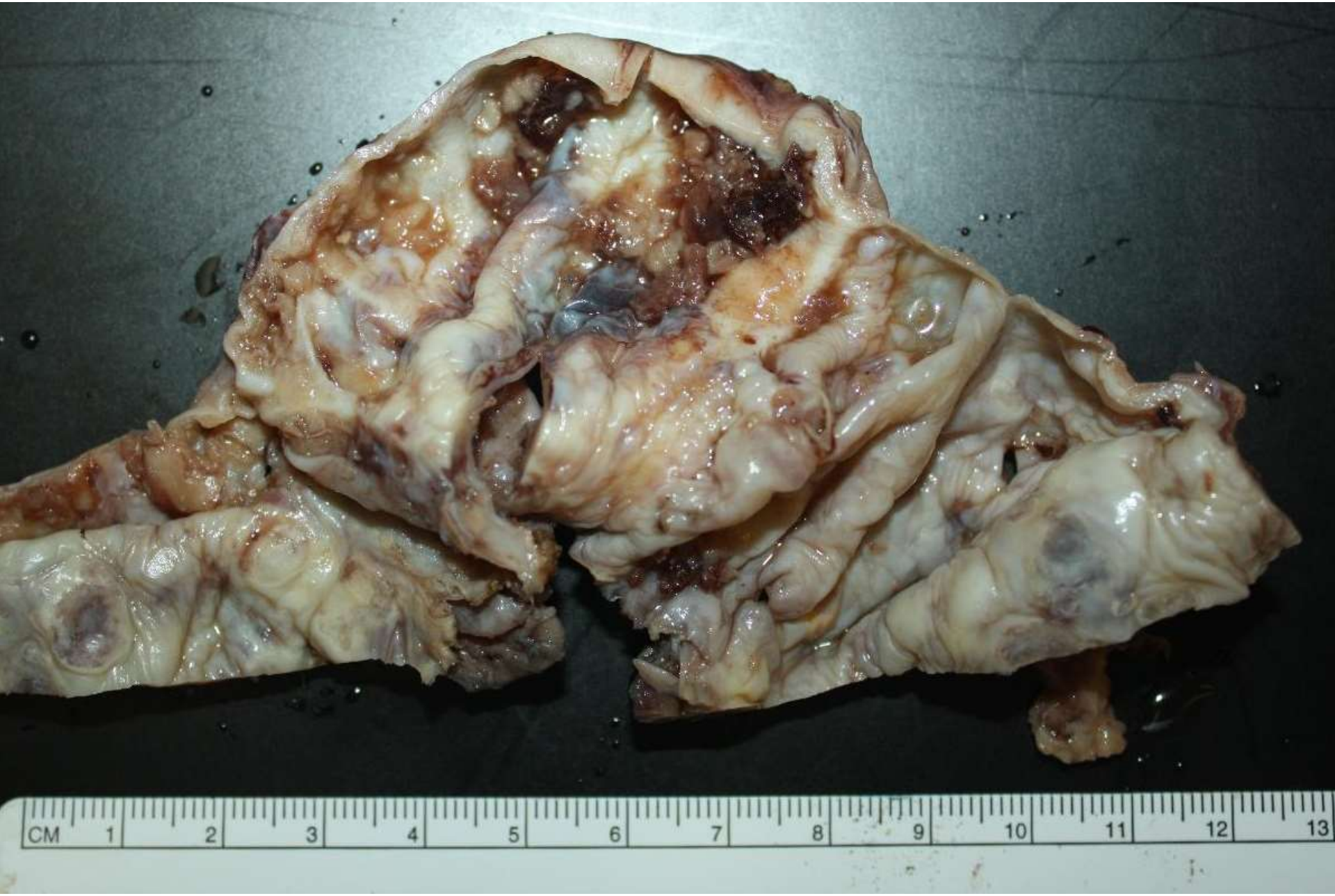
Norris SJ. 2019. Hiding in plain sight: colonic spirochetosis in humans. J Bacteriol 201:e00465-10.

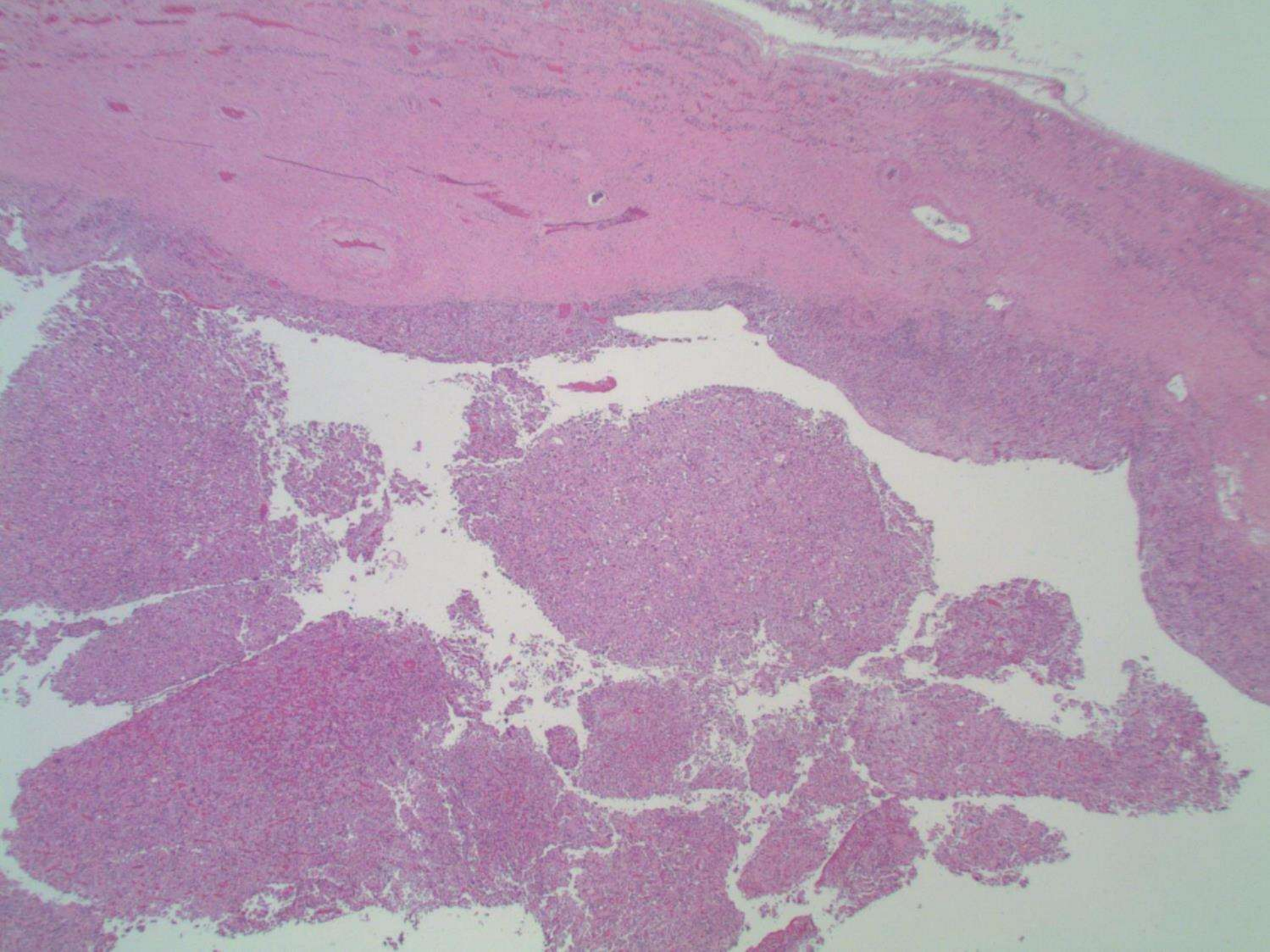
Smith JL. 2005. Colonic spirochetosis in animals and humans. J Food Protection 68: 1525-1534.

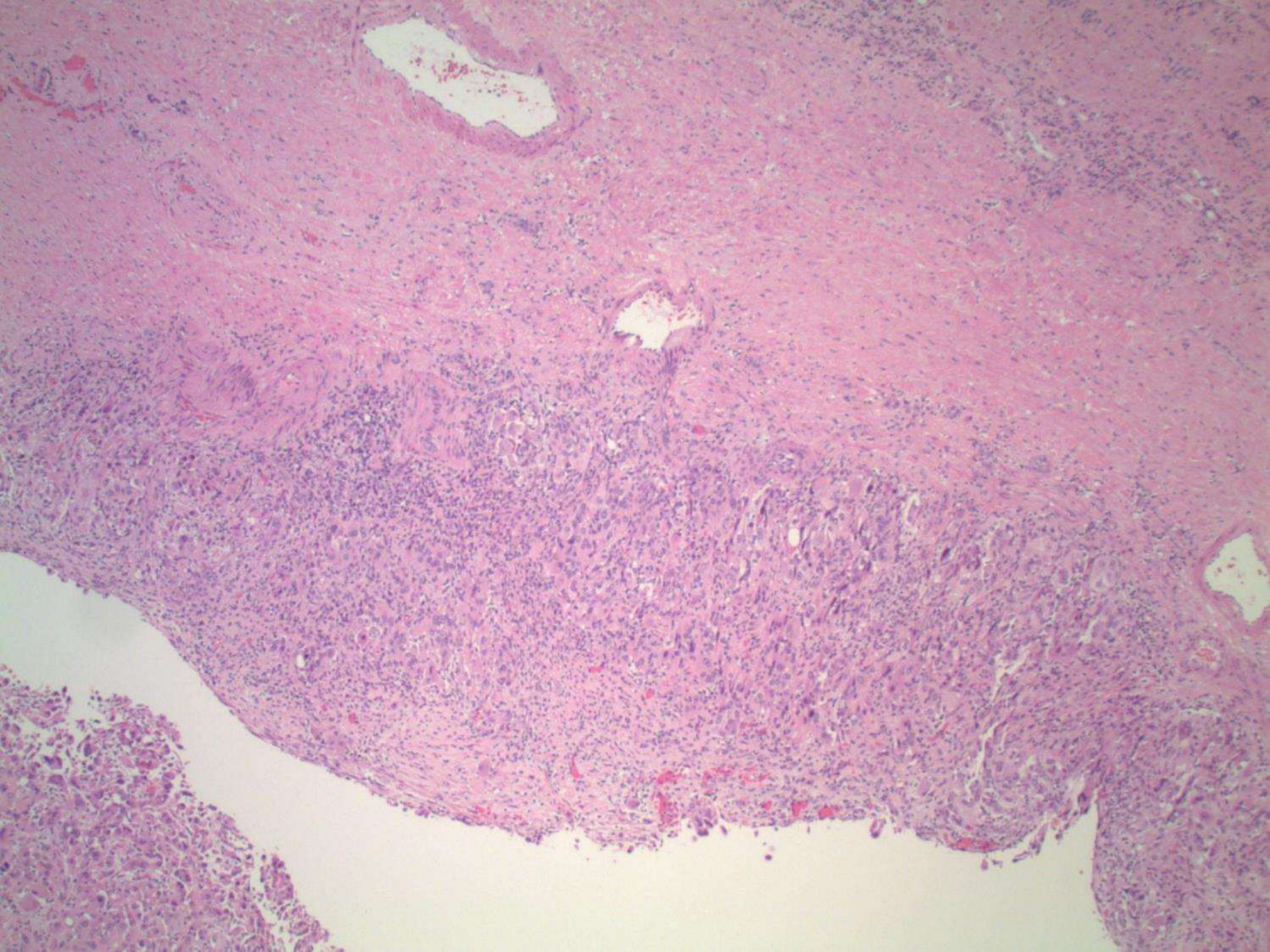
21-0805

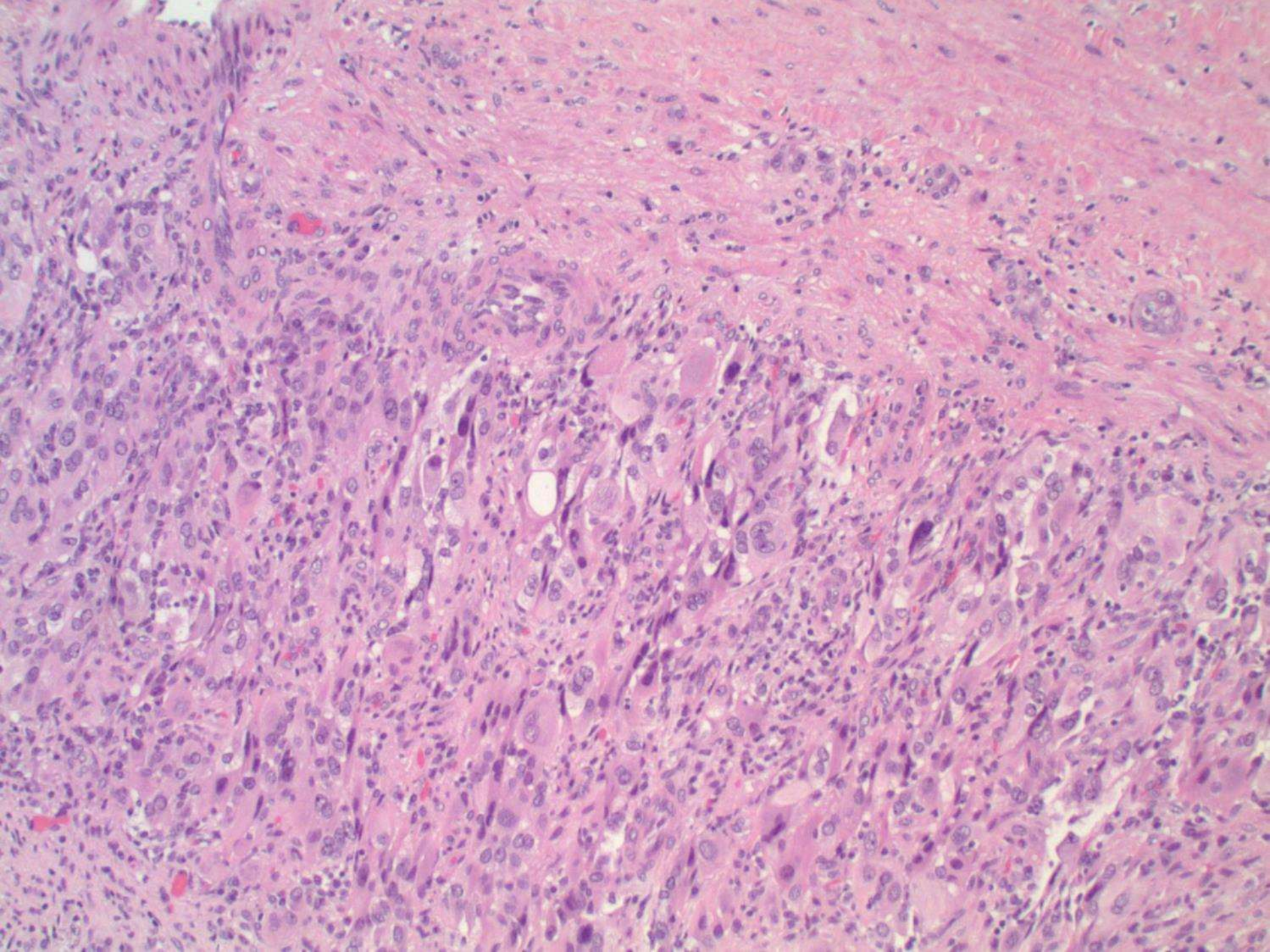
Ankur Sangoi; El Camino Hospital

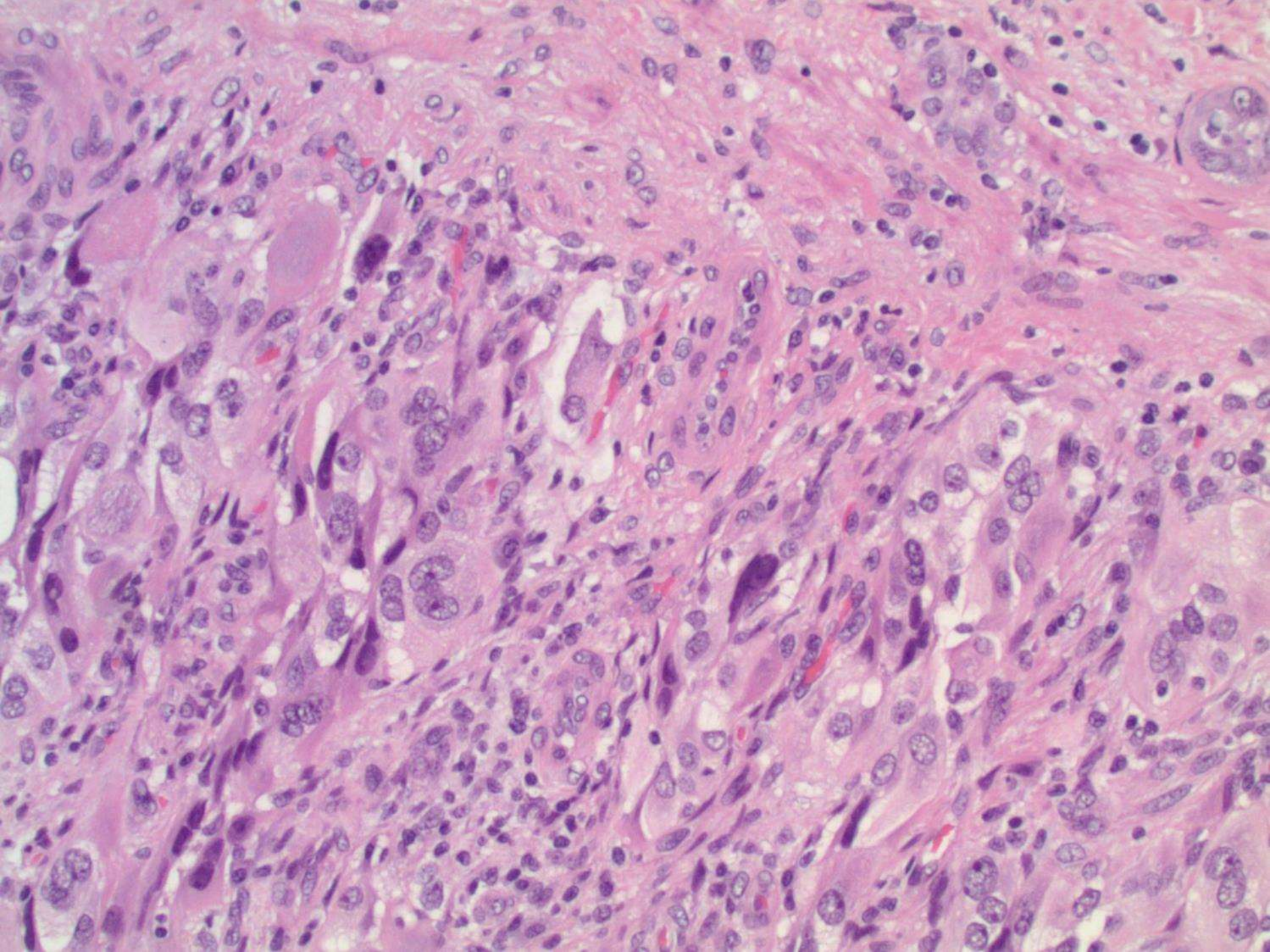
Middle-aged adult F undergoes partial nephrectomy for 8cm renal mass.

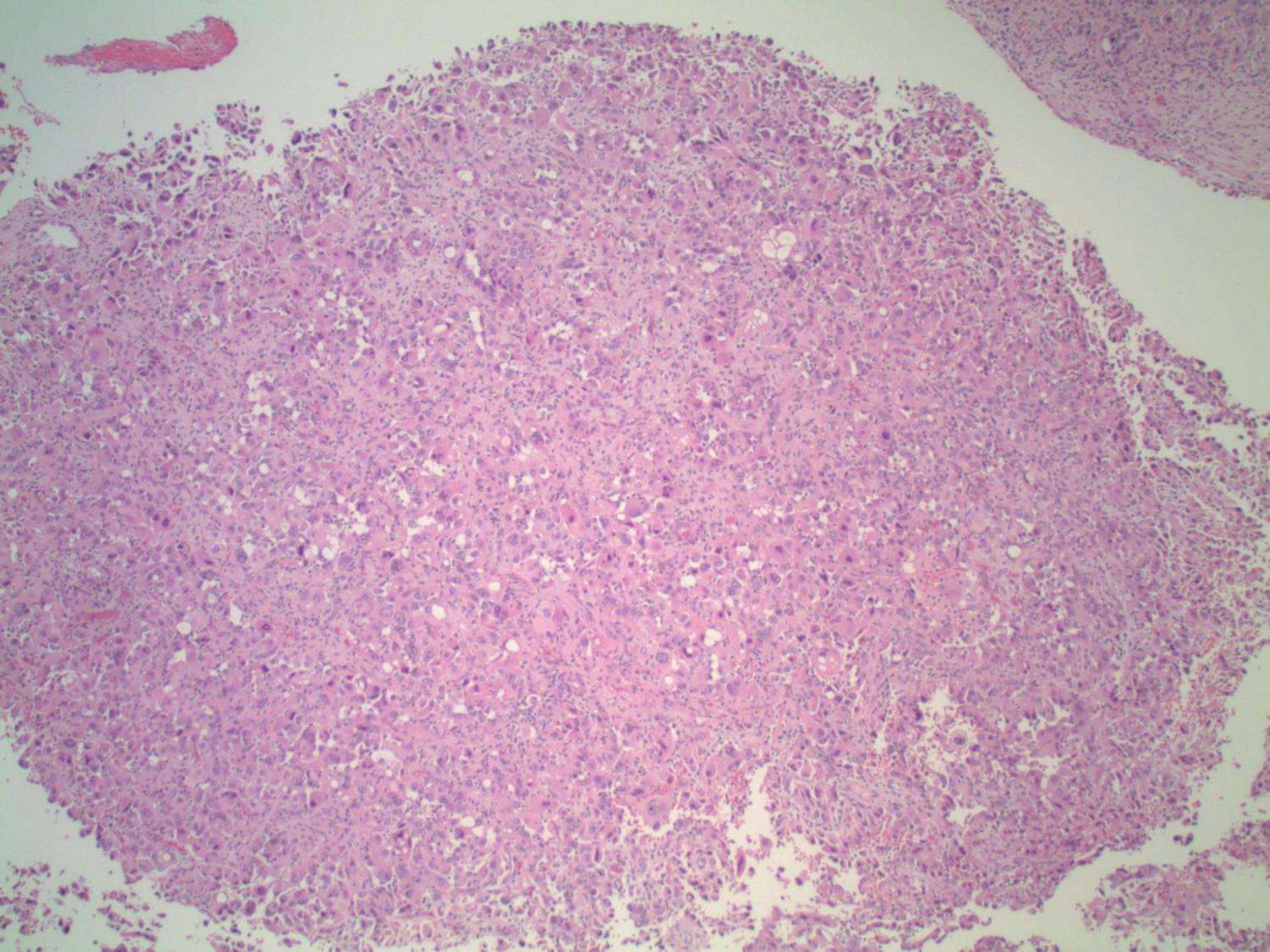

CM 1 2 3 4 5 6 7 8 9 10 11 12 13

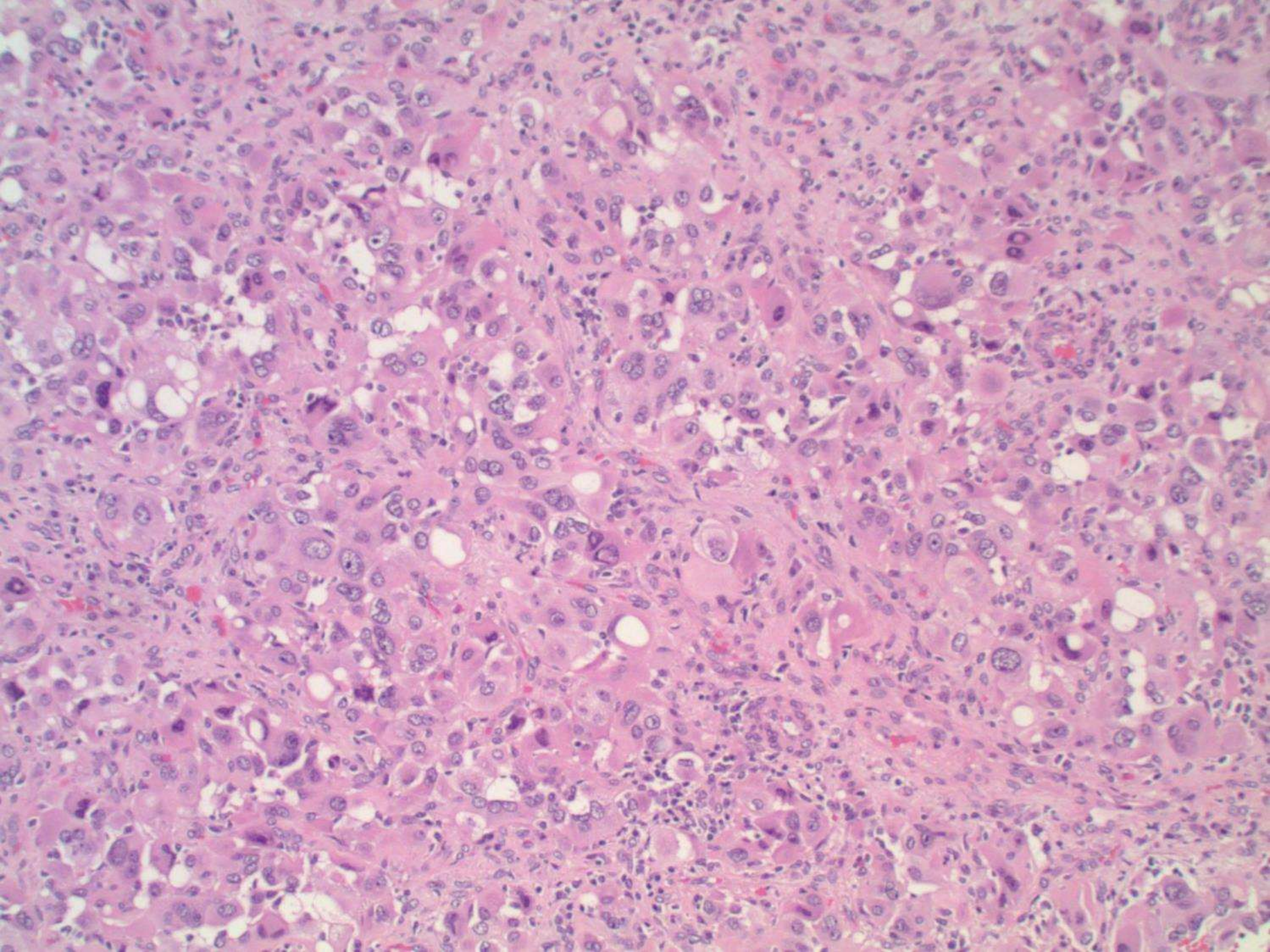


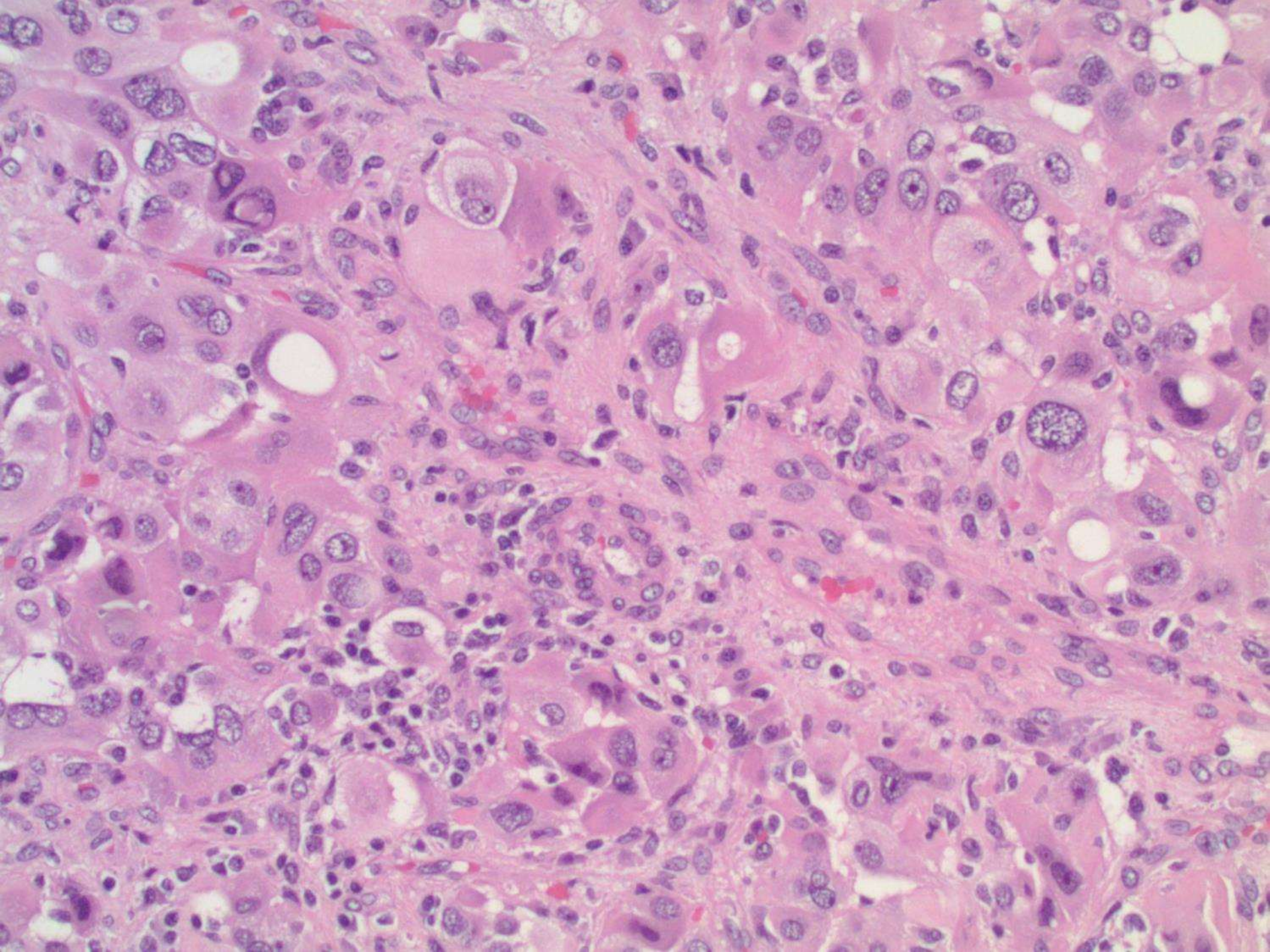












initial IHC summary

POSITIVE: AE1/AE3, PAX8, AMACR

NEGATIVE: CAIX, CK7, CK20, p63, GATA3, cathepsinK, S100, OCT3/4

DDx

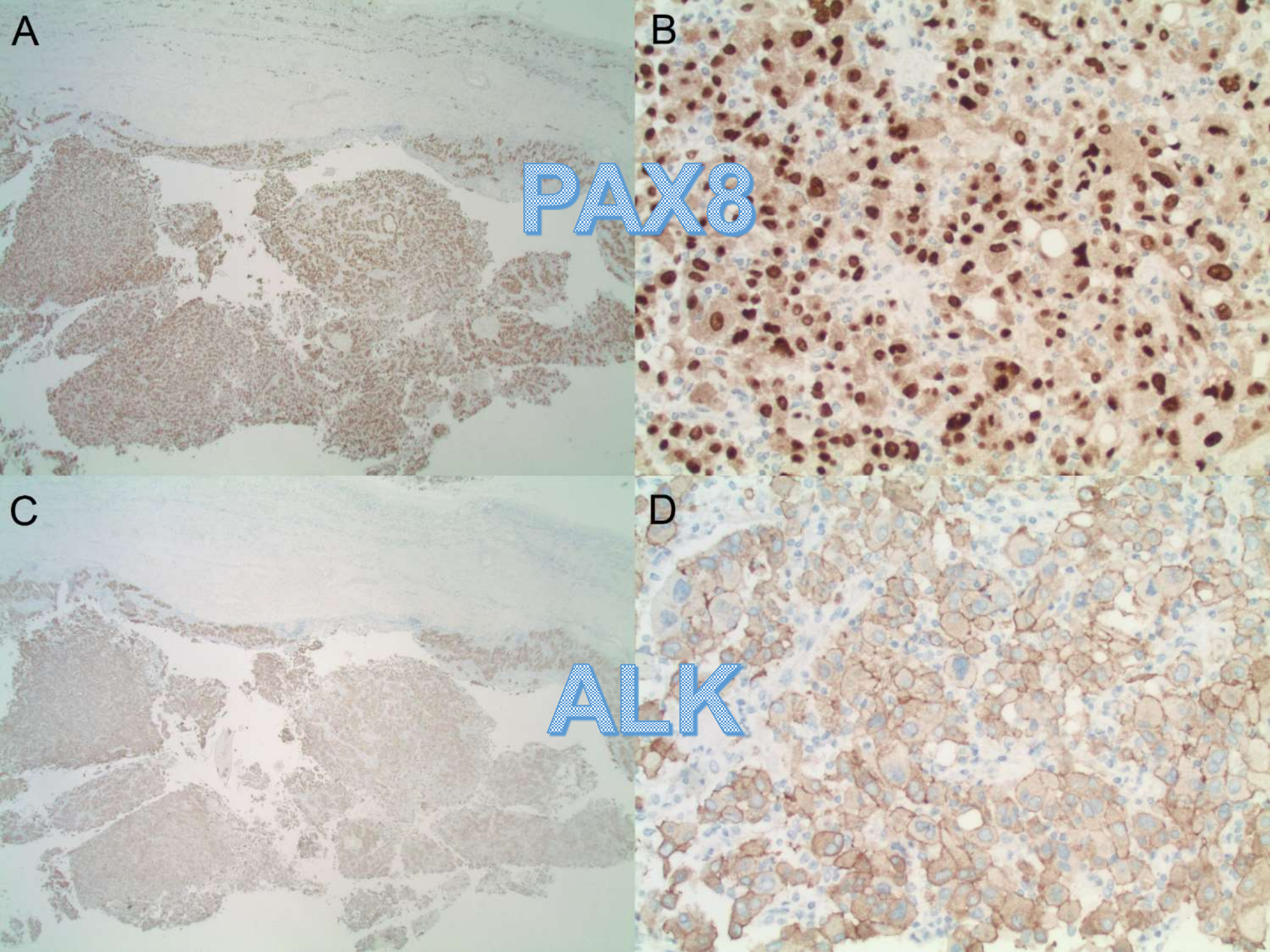
- **Renal cell carcinoma**
  - Renal medullary carcinoma, collecting duct carcinoma, papillary RCC, MiTF RCC, MTSC RCC, thyroid-like follicular RCC, SDHB deficient RCC, FH deficient RCC, ALK RCC
  - Unclassified type
- **Urothelial carcinoma**
- **Metastatic carcinoma**

IHC PROFILE

POSITIVE: AE1/AE3, PAX8, AMACR

NEGATIVE: CK7, CK20, p63, GATA3, cathepsinK, S100, OCT3/4

NORMAL/RETAINED: FH, SDHB


A
B
PAX8
C
D
ALK

FINAL DX

- **ALK RCC**
  - NGS: ALK-RCC gene fusion
  - 2016 WHO "emerging/provisional" subtype RCC
    - Less than 50 cases reported
    - Growing # of ALK fusion partners
      - *VCL*, *TPM3*, *EML4*, *STRN*, *HOOK1*, *PLEKHA7*, *CLIP1*, *KIF5B*, *KIAA1217*
      - *VCL* gene usually pediatric population & sickle cell trait

VCL-ALK Renal Cell Carcinoma in Children With Sickle-cell Trait

The Eighth Sickle-cell Nephropathy?

Nathaniel E. Smith, MD, Andrea T. Deyrup, MD, PhD,† Adrian Mariño-Enriquez, MD,‡ Jonathan A. Fletcher, MD, PhD,‡ Julia A. Bridge, MD,§ Peter B. Illei, MD,* George J. Netto, MD,*‖ and Pedram Argani, MD*¶*

Abstract: We report the third case of a renal cell carcinoma bearing a fusion of the vinculin (*VCL*) and anaplastic lymphoma kinase (*ALK*) genes. Like the 2 other reported cases, this neoplasm occurred in a young patient (6 y old) with sickle-cell trait and demonstrated distinctive morphologic features including medullary epicenter, discohesive polygonal or spindle-shaped cells with prominent cytoplasmic vacuoles, and prominent lymphocytic infiltrate. The neoplastic cells demonstrated focal membranous labeling for ALK protein by immunohistochemistry, *ALK* gene rearrangement by fluorescence in situ hybridization, and a specific *VCL-ALK* gene fusion by reverse transcriptase polymerase chain reaction. *VCL-ALK* renal cell carcinoma may represent the eighth sickle-cell nephropathy.

Key Words: renal cell carcinoma, anaplastic lymphoma kinase, vinculin

(*Am J Surg Pathol* 2014;38:858–863)

International Journal of Surgical Pathology
1-7

DOI: 10.1177/10668969211003660
journals.sagepub.com/home/ijs
SAGE

ALK-rearranged Renal Cell Carcinoma (RCC): A Report of 2 Cases and Review of the Literature Emphasizing the Distinction Between *VCL-ALK* and Non-*VCL-ALK* RCC

Sintawat Wangsiricharoen, MD[1], Minghao Zhong, MD, PhD[2], Sarangarajan Ranganathan, MD[3], Andres Matoso, MD[1], and Pedram Argani, MD[1]

Abstract

Anaplastic lymphoma kinase (ALK) rearrangement-associated renal cell carcinoma (*ALK*-rearranged RCC) is a new provisional entity that has been included in the 2016 World Health Organization classification of RCCs. We report 2 cases of *ALK*-rearranged RCC, 1 with a vinculin-ALK (*VCL-ALK*) fusion and the other with an *EML4-ALK* fusion. The *VCL-ALK* RCC occurred in a 14-year-old girl with sickle cell trait and showed features similar to previously described *VCL-ALK* RCCs, including medullary epicenter, solid architecture, and polygonal cells with cytoplasmic vacuoles. The *EML4-ALK* RCC occurred in a 14-year-old boy with no evidence of sickle cell trait and had multiple less-specific growth patterns comprising tubular, solid, and tubulopapillary architectures in the desmoplastic stroma, reminiscent of collecting duct carcinoma. Both tumors demonstrated cytoplasmic and membranous ALK protein expression by immunohistochemistry. Fluorescence in situ hybridization confirmed the *ALK* gene rearrangements in both cases. On review in the literature, we found that solid architecture and cytoplasmic vacuoles were present significantly more frequently in *VCL-ALK* RCC than in non-*VCL-ALK* RCC, supporting the distinctive nature of the former.

Human Pathology: Case Reports 25 (2021) 200528

Contents lists available at ScienceDirect

Human Pathology: Case Reports

journal homepage: www.elsevier.com/locate/ehpc

Case Report

VCL-ALK renal cell carcinoma in adult patient without sickle cell trait

Ankur R. Sangoi [a,*], Simon Y. Kimm [b], Emily Chan [c]

[a] *El Camino Hospital, Pathology, Mountain View, CA, United States*
[b] *Palo Alto Medical Foundation, Urology, Palo Alto, CA, United States*
[c] *University of California San Francisco, Pathology, San Francisco, CA, United States*

ARTICLE INFO

Keywords:
Kidney
Renal cell carcinoma
ALK
VCL
Sickle cell

ABSTRACT

Anaplastic lymphoma kinase rearrangement-associated renal cell carcinoma (ALK-RCC) is a provisional renal cell carcinoma subtype with a growing list of published fusion partners. *VCL-ALK* gene fusion represents an uncommon fusion partner (only 6 reported cases), almost always associated with sickle cell trait and typically in a pediatric population. Herein, we report only the second case of *VCL-ALK* gene fusion ALK-RCC from a 31-year-old female without associated sickle cell trait, and also only the third reported case occurring in an adult patient. The tumor (measuring 8.5 cm and confined to the kidney) demonstrated mostly solid growth, pleomorphic nuclei, variably rhabdoid to vacuolated cytoplasm, and showed diffuse strong immunoreactivity for both PAX8 and ALK stains. Gene panel sequencing confirmed *VCL-ALK* gene fusion in the tumor. This study expands the clinical framework for diagnostic consideration of this rare tumor with potential targeted pharmacotherapy.

Table 1
Previously published cases of *VCL-ALK* fusion positive ALK-RCC.

Case	Study	Sickle Cell Trait	Age (Y)	Sex	Size (cm)	TNM Stage	Outcome, Follow-Up (Months)
1	Marino-Enriquez et al	yes	6	M	4.6	T1bN0	ANED, 21
2	Debelenko et al	yes	16	M	6.5	T3aN1	ANED, 9
3	Smith et al	yes	6	M	3	T1aN0	ANED, 19
4	Tao et al	yes	22	M	14	T3aN1	AWMD, 31
5	Wangsiricharoen et al	yes	14	F	6	T3aN1	N/A
6	Wang et al	no	57	F	5.5	T1bNx	DOD, 20
7	current study	no	31	F	8.5	T2aNx	ANED, 5

ANED = alive with no evidence of disease.
AWMD = alive with metastatic disease.
DOD = dead of disease.

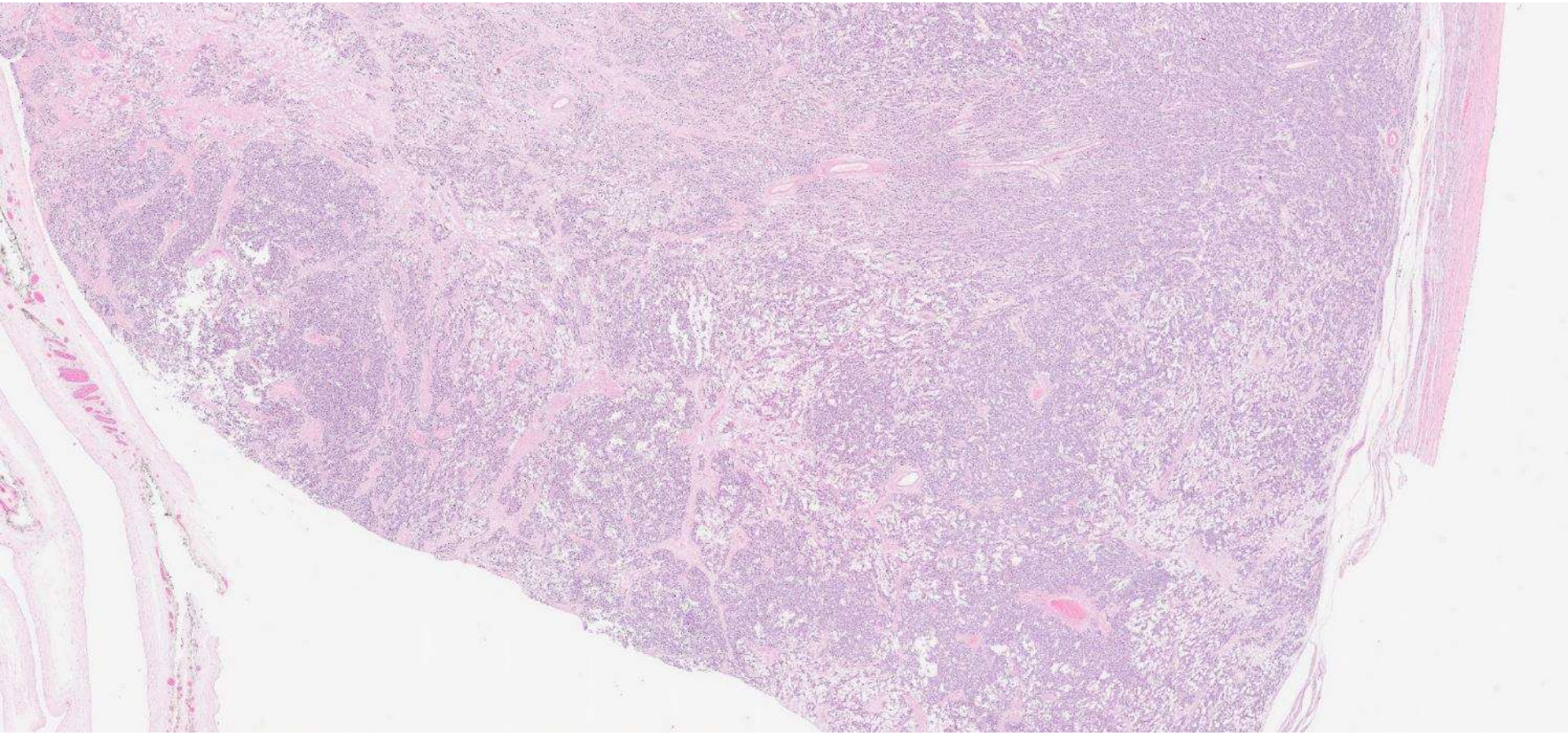
TAKE HOME POINTS

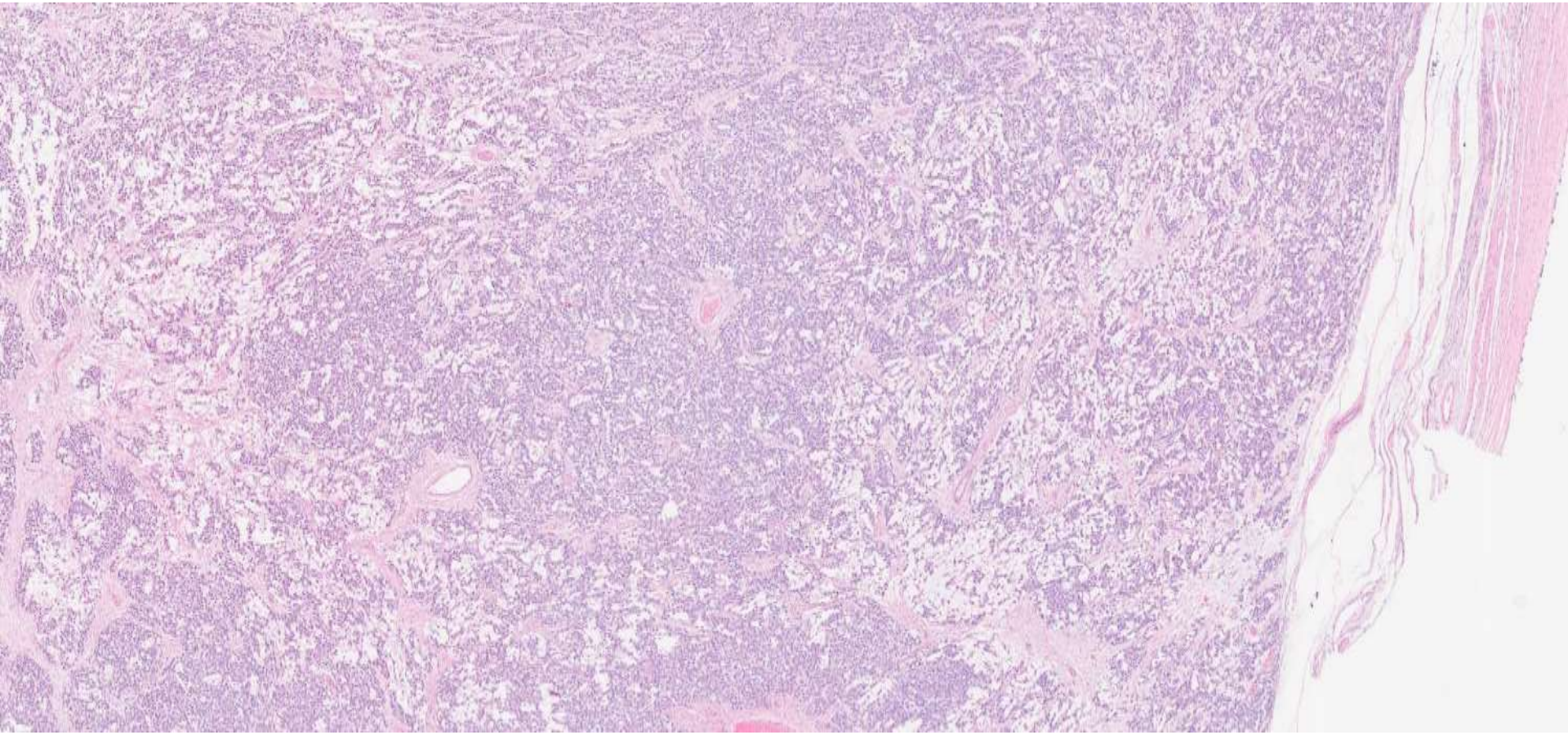
- **Before embarking on "unclassified RCC" Dx**
  - IHC for ALK, FH, SDHB
  - Consider molecular testing
- **ALK RCC histologic clues**
  - Mixed architectural patterns, background mucin
- **VCL-ALK RCC clues**
  - Solid+vacuoles, no mucin
  - Usually (not 100%!) peds+sickle cell trait

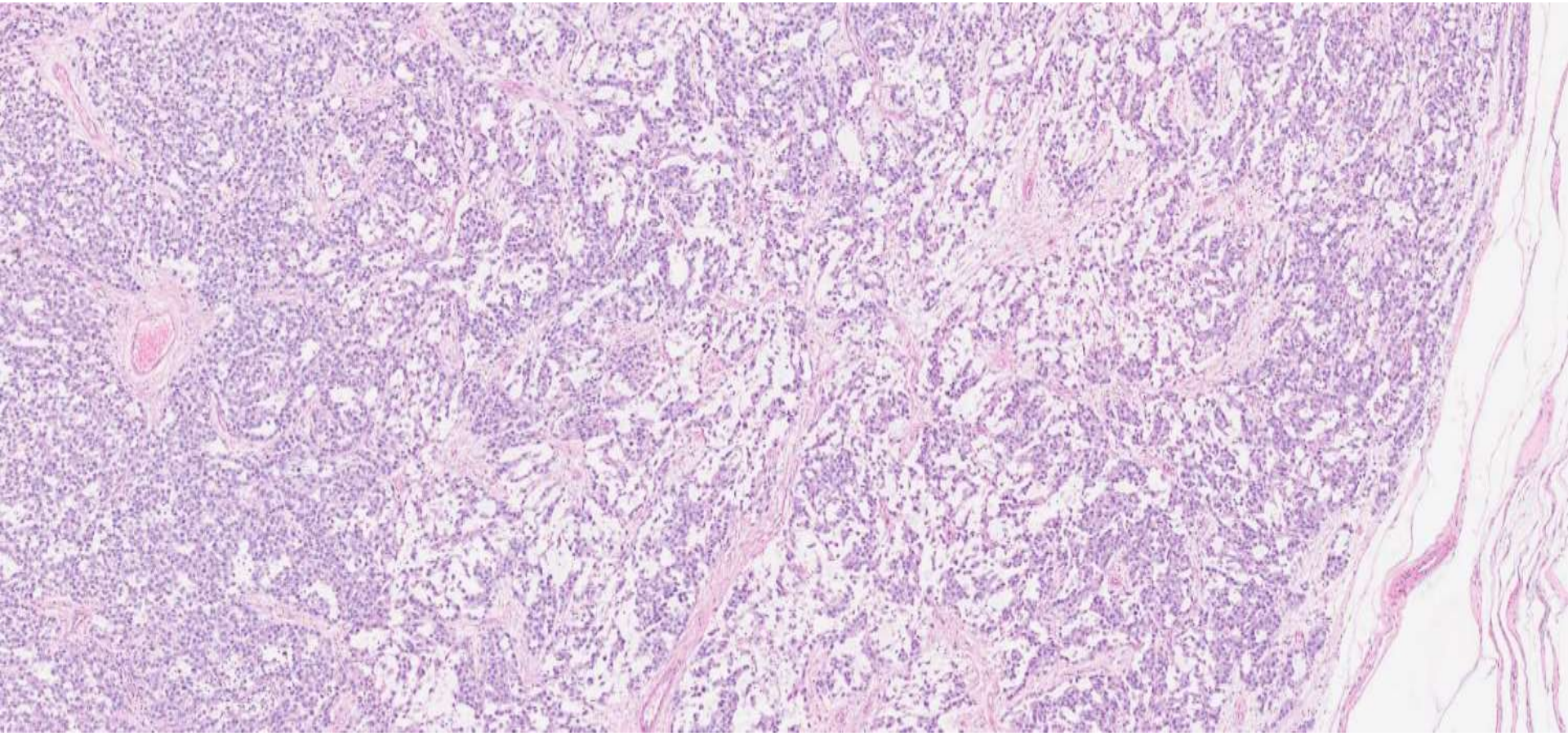
21-0806

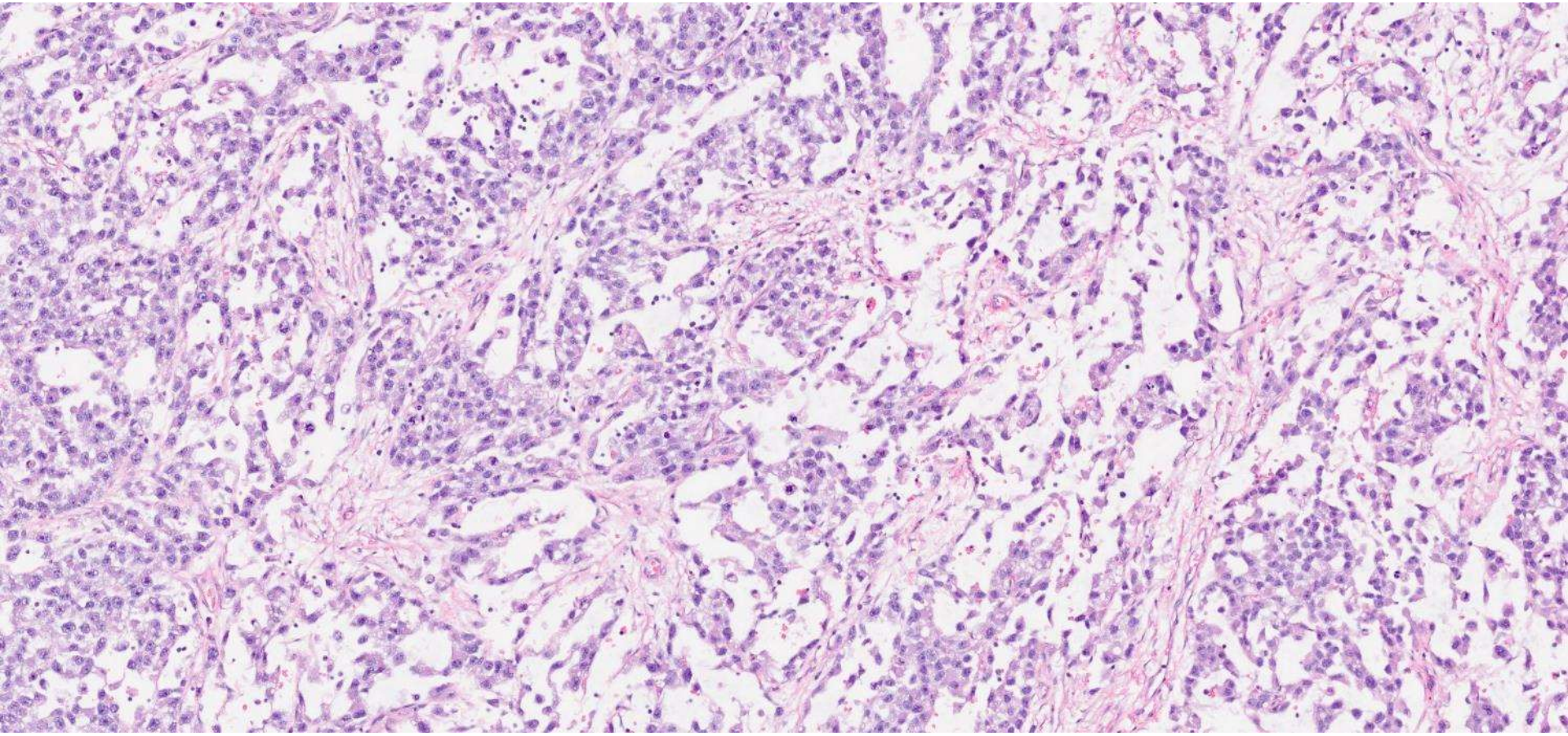
Ankur Sangoi; El Camino Hospital

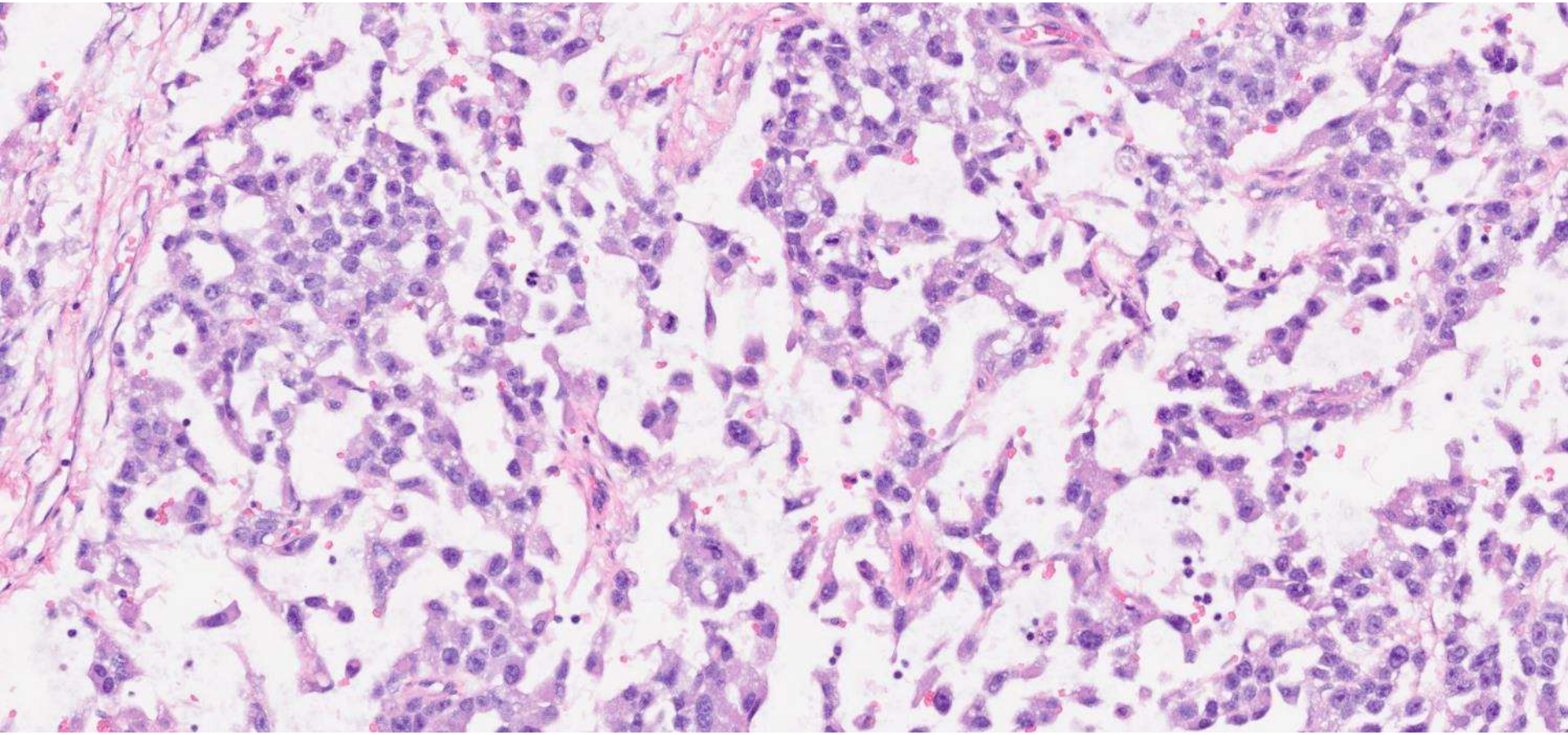
41-year-old M with 5.3cm testicular mass, grossly extending into hilar soft tissue. Section of central mass shown.

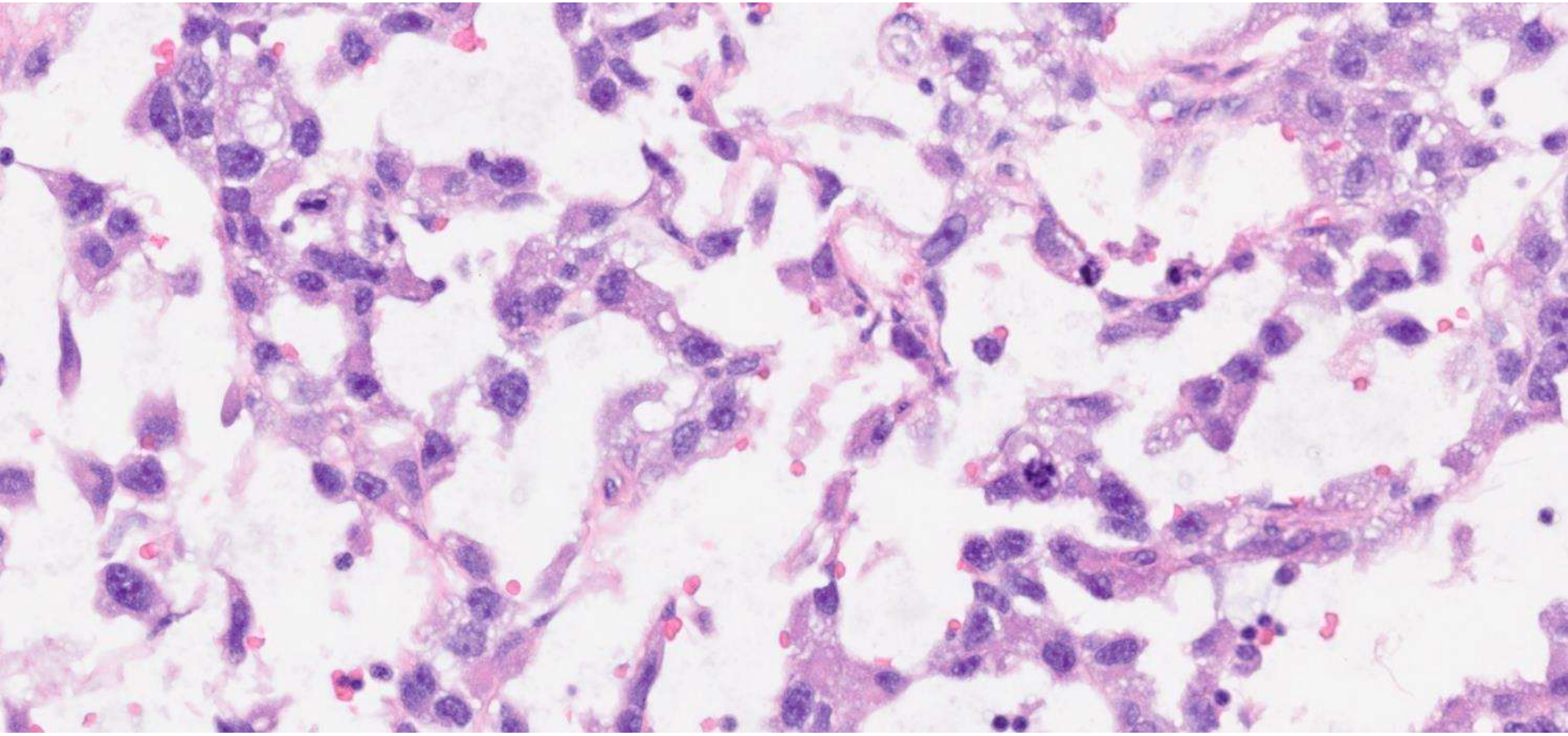












DDx

- **Seminoma**
  - Microcystic pattern
- **Yolk sac tumor**

- **Sex cord stromal tumor**
  - Sertoli cell tumor

Final Dx

- **Pure seminoma**
  - Microcystic pattern

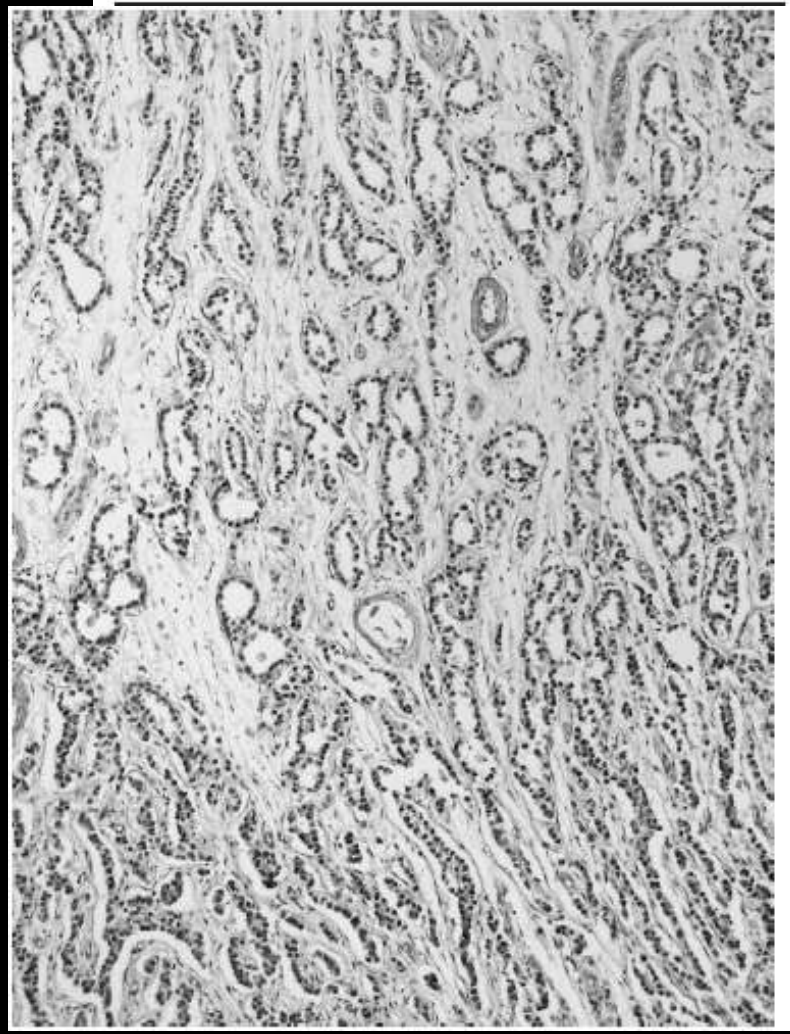
  IHC: OCT3/4 positive, glypican3 neg

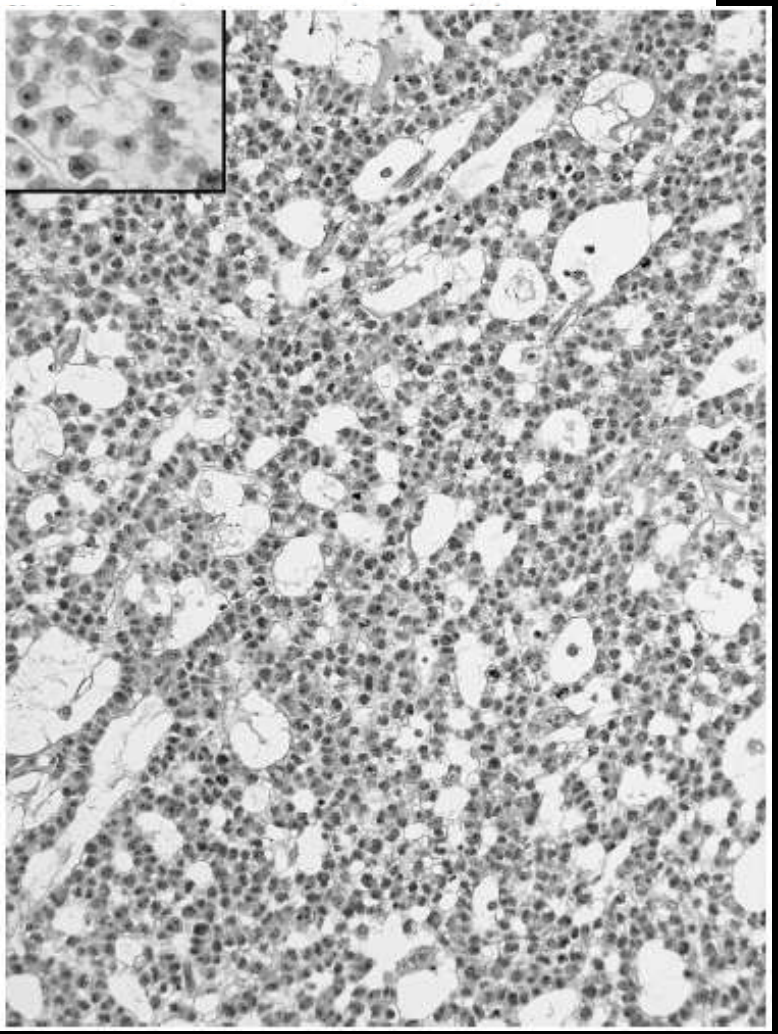
Seminoma With Tubular, Microcystic, and Related Patterns

A Study of 28 Cases of Unusual Morphologic Variants That Often Cause Confusion With Yolk Sac Tumor

Thomas M. Ulbright, MD and Robert H. Young, MD†*

Am J Surg Pathol • Volume 29, Number 4, April 2005





The Most Common, Clinically Significant Misdiagnoses in Testicular Tumor Pathology, and How to Avoid Them

Thomas M. Ulbright, MD

Abstract: Testicular tumors are both increasing in frequency and disproportionately occur in young men; furthermore, different forms of neoplasm require different treatments. These considerations make the accurate diagnosis of testicular tumors especially important. Many of the critical distinctions involve the differentiation of seminoma from one or more potential mimics because seminoma is not only the most common testicular neoplasm but it is also the only malignant testicular tumor that is commonly treated with radiation, which is ineffective in other malignancies of the testis. For the most part, accurate diagnosis can be achieved by careful light microscopic evaluation, although appropriate immunostains can provide diagnostic assistance if doubt persists. This article discusses a number of clinically important differential diagnoses in the testis that are common sources of misinterpretations. These include: seminoma versus embryonal carcinoma, seminoma versus yolk sac tumor, seminoma versus Sertoli cell tumor, seminoma with syncytiotrophoblast cells versus choriocarcinoma, granulomatous seminoma versus granulomatous orchitis, intertubular seminoma versus orchitis, lymphoma versus seminoma or embryonal carcinoma, dermoid cyst versus teratoma, scar versus regressed germ cell tumor, and "anaplastic" spermatocytic seminoma versus usual seminoma or embryonal carcinoma.

Key Words: testicular neoplasms, seminoma, yolk sac tumor, Sertoli cell tumor

(*Adv Anat Pathol* 2008;15:18–27)

TABLE 2. Useful Immunostains for the Differentiation of Seminoma From Yolk Sac Tumor

Stain	Seminoma	Yolk Sac Tumor
AFP	−	+
AE1/AE3	±	+
OCT3/4	+	−
Glypican 3	−	+

TABLE 3. Useful Immunostains for the Differentiation of Seminoma From Sertoli Cell Tumor

Stain	Seminoma	Sertoli Cell Tumor
PLAP	+	−
OCT3/4	+	−
Inhibin	−	±

TAKE HOME POINTS

Microcystic pattern seminoma

- **Main DDx: yolk sac tumor**

  YST: spaces more irregular & frequently anastomose, flattened nuclei lacking prominent nucleoli

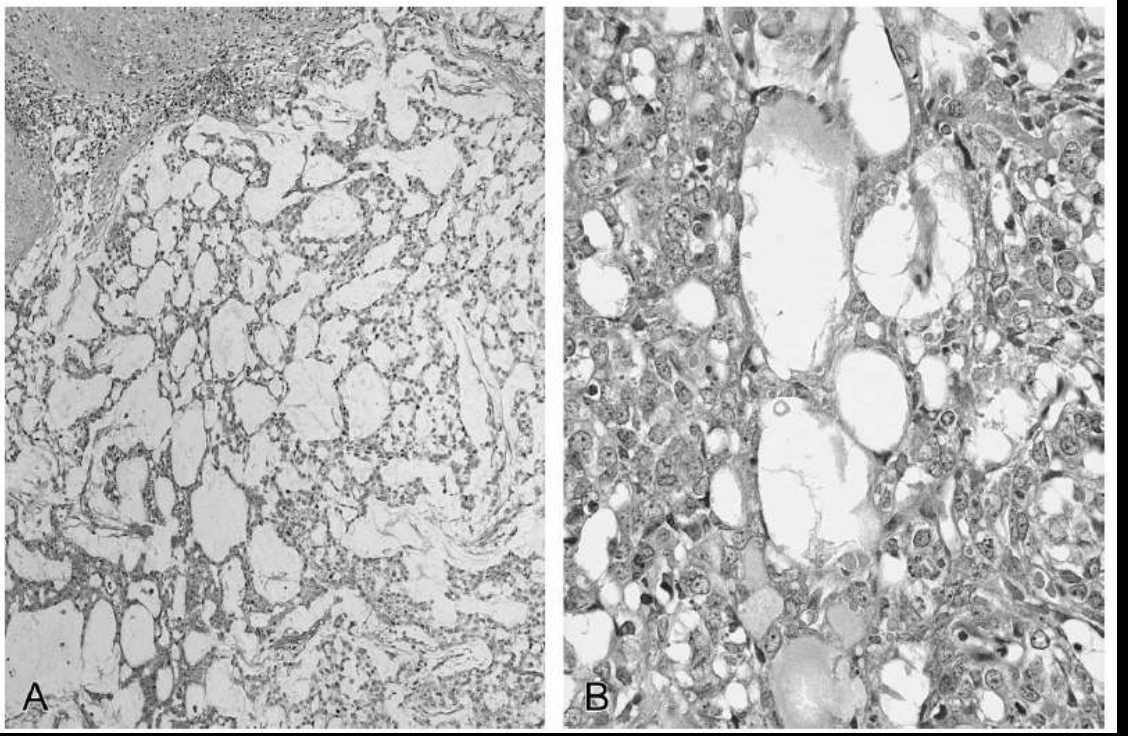
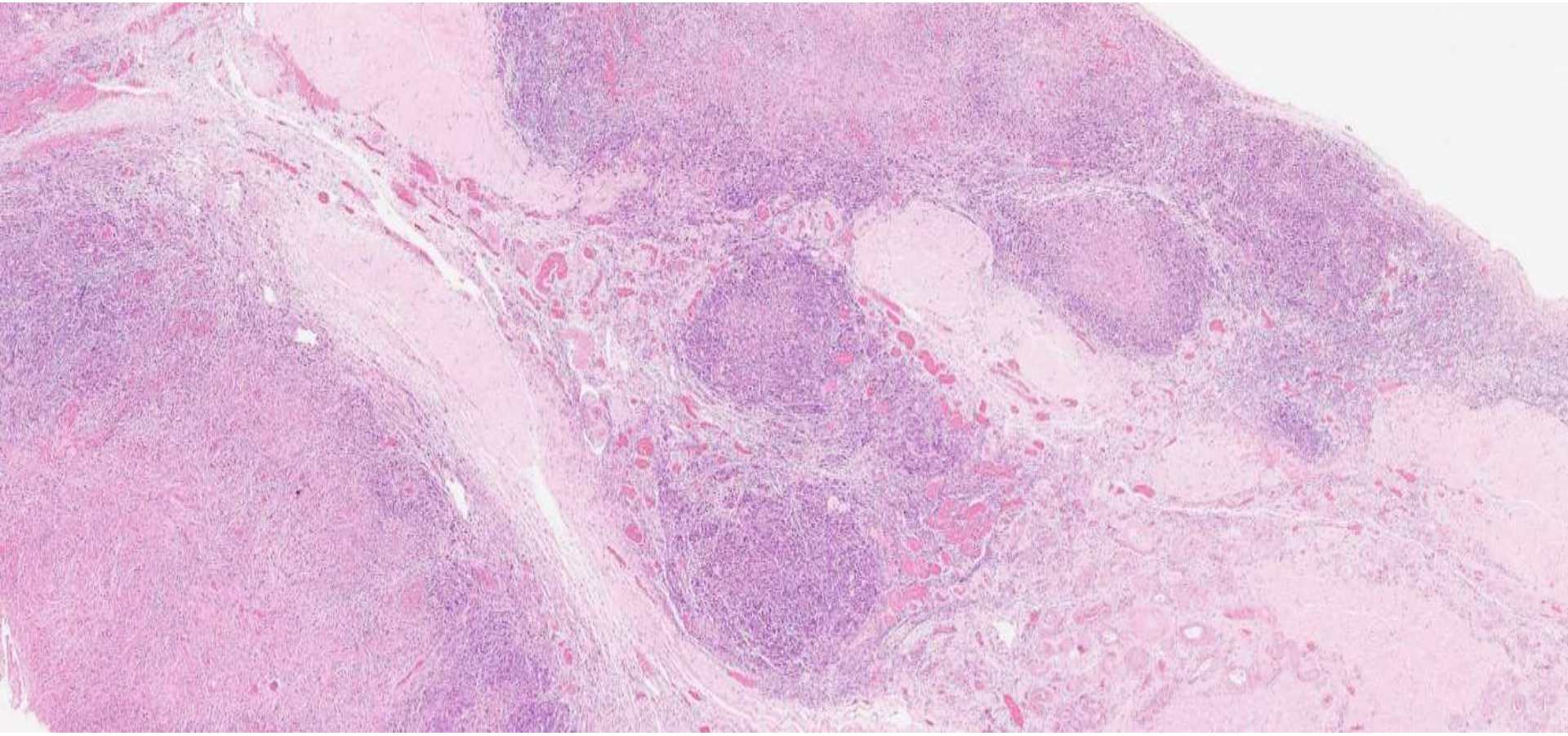


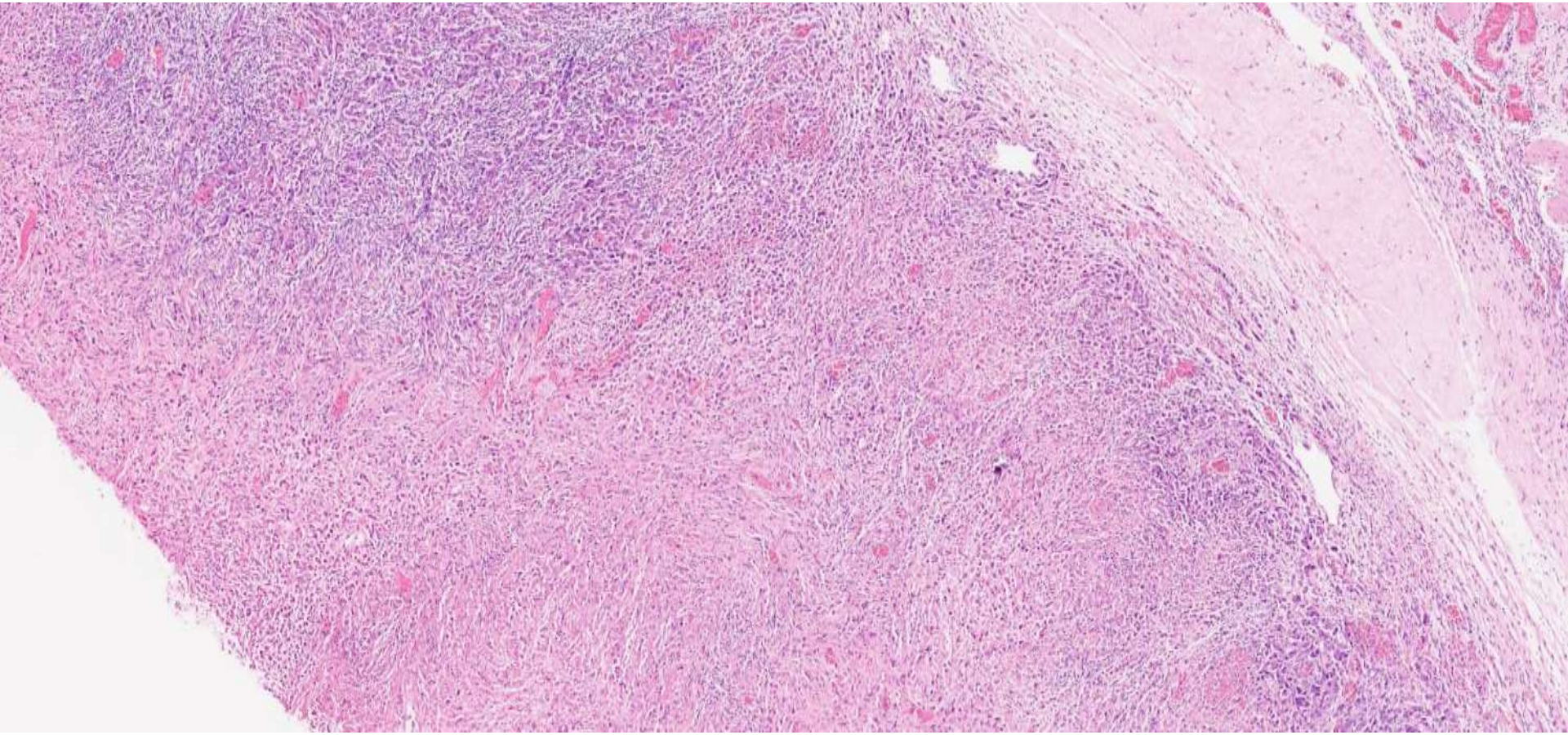
FIGURE 8. Yolk sac tumor. A, The spaces are closely packed and often anastomose. B, The cysts have flattened lining cells and contain pale fluid. The surrounding tumor cells have variably sized and shaped nuclei with small or inconspicuous nucleoli.

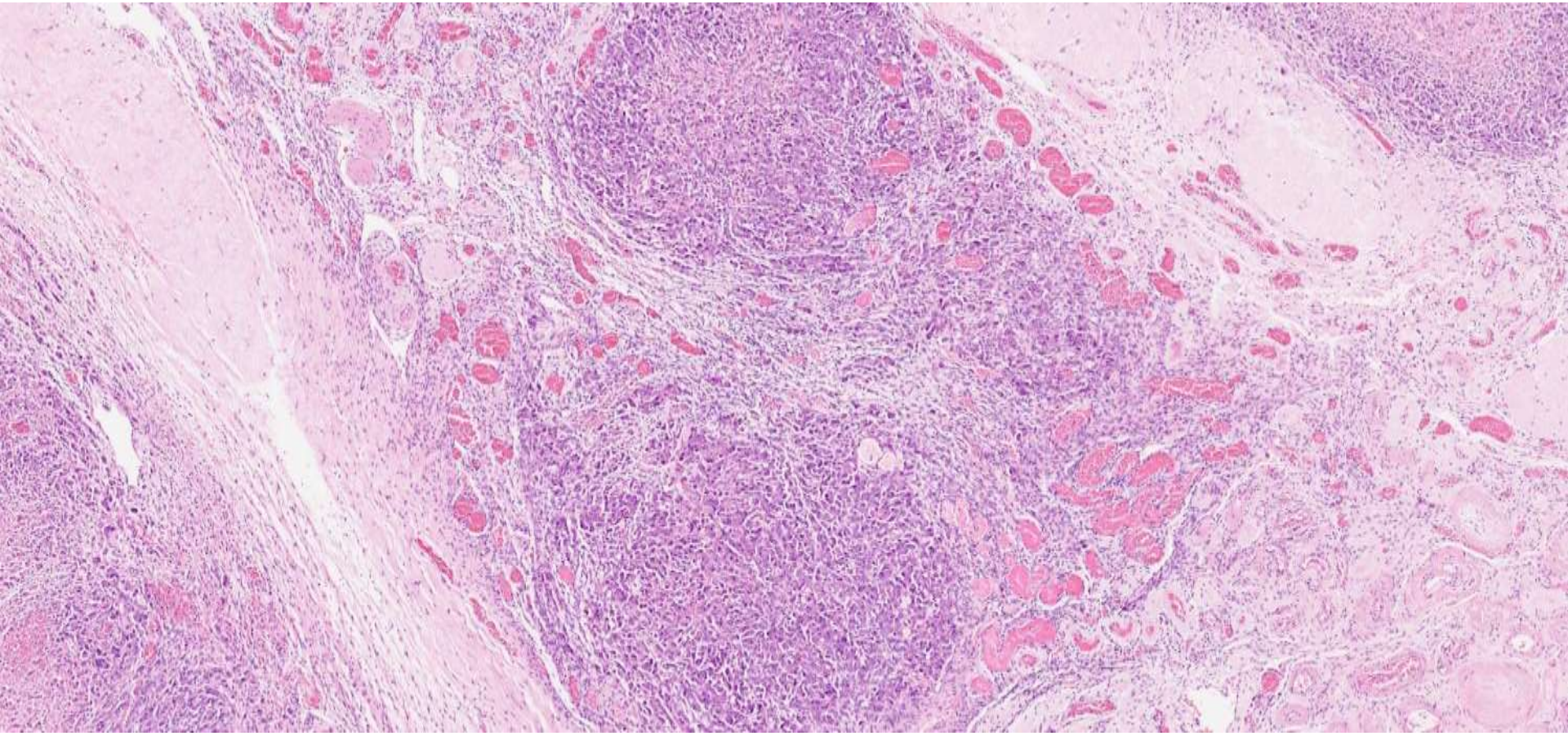
21-0807

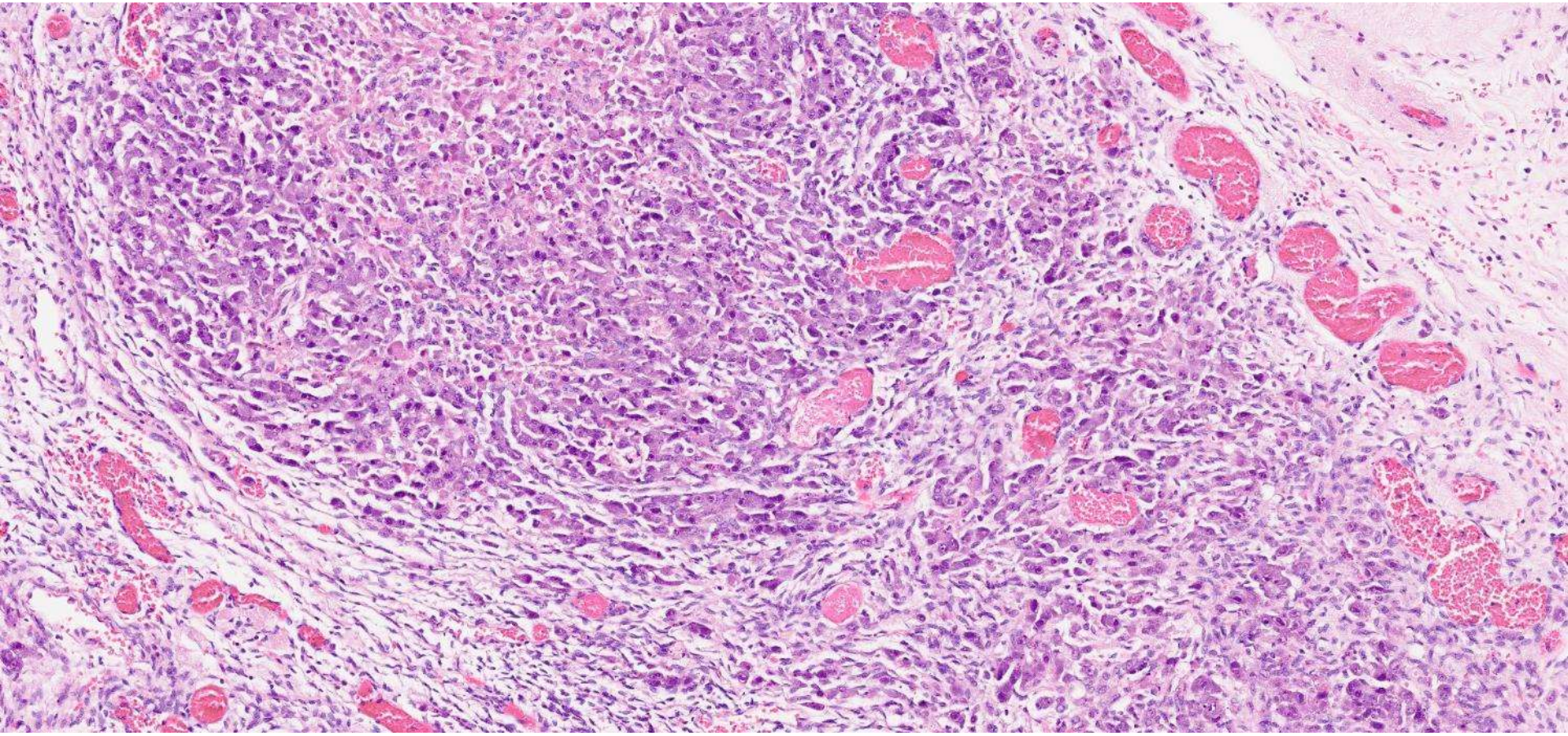
Ankur Sangoi; El Camino Hospital

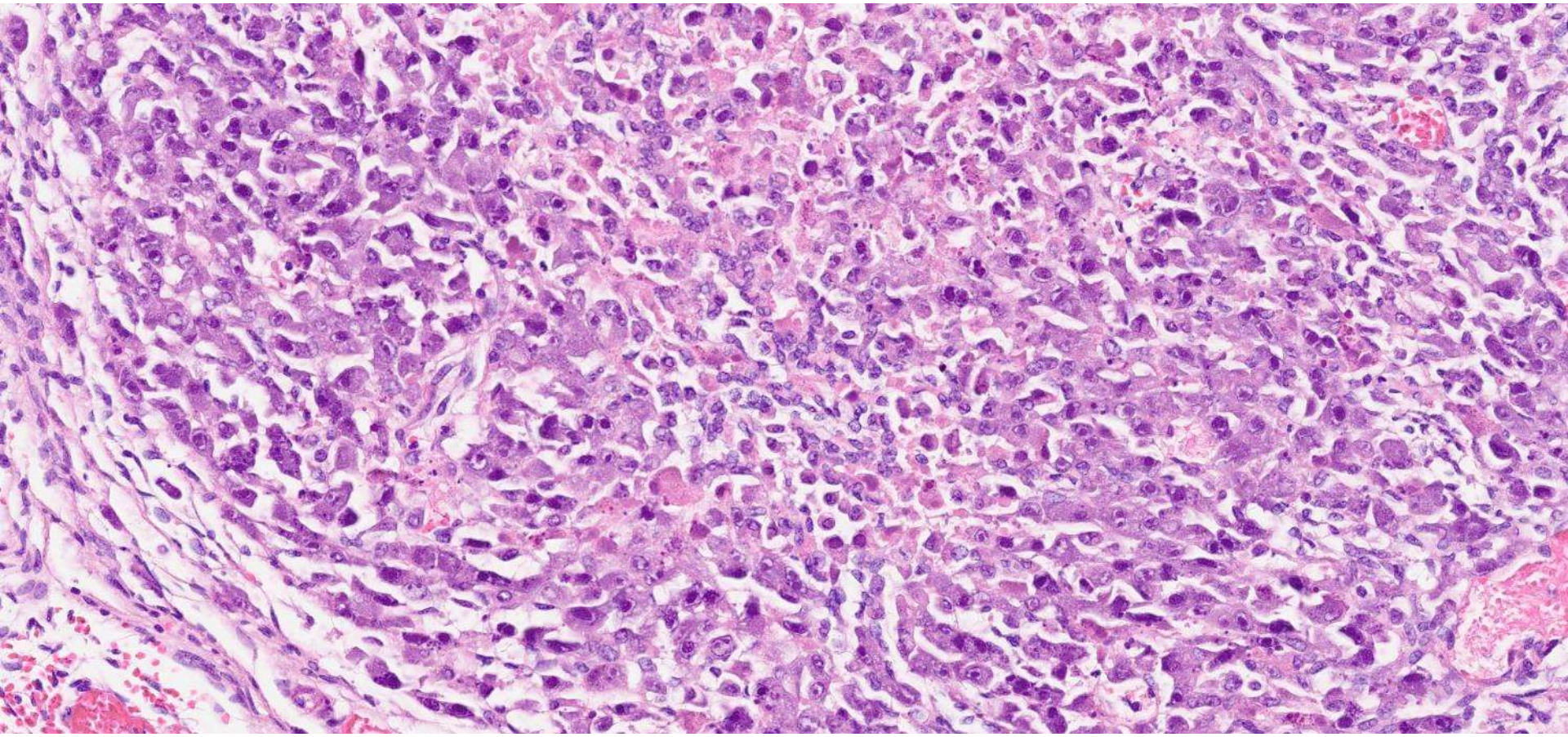
68-year-old F with hypersensitivity pneumonitis with suspected pneumonia and acute hypoxemic failure requiring intubation and subsequent steroids, who presented with acute onset shortness of breath. Despite intubation for worsening respiratory failure and steroids, she died. Section of grossly unremarkable shown.

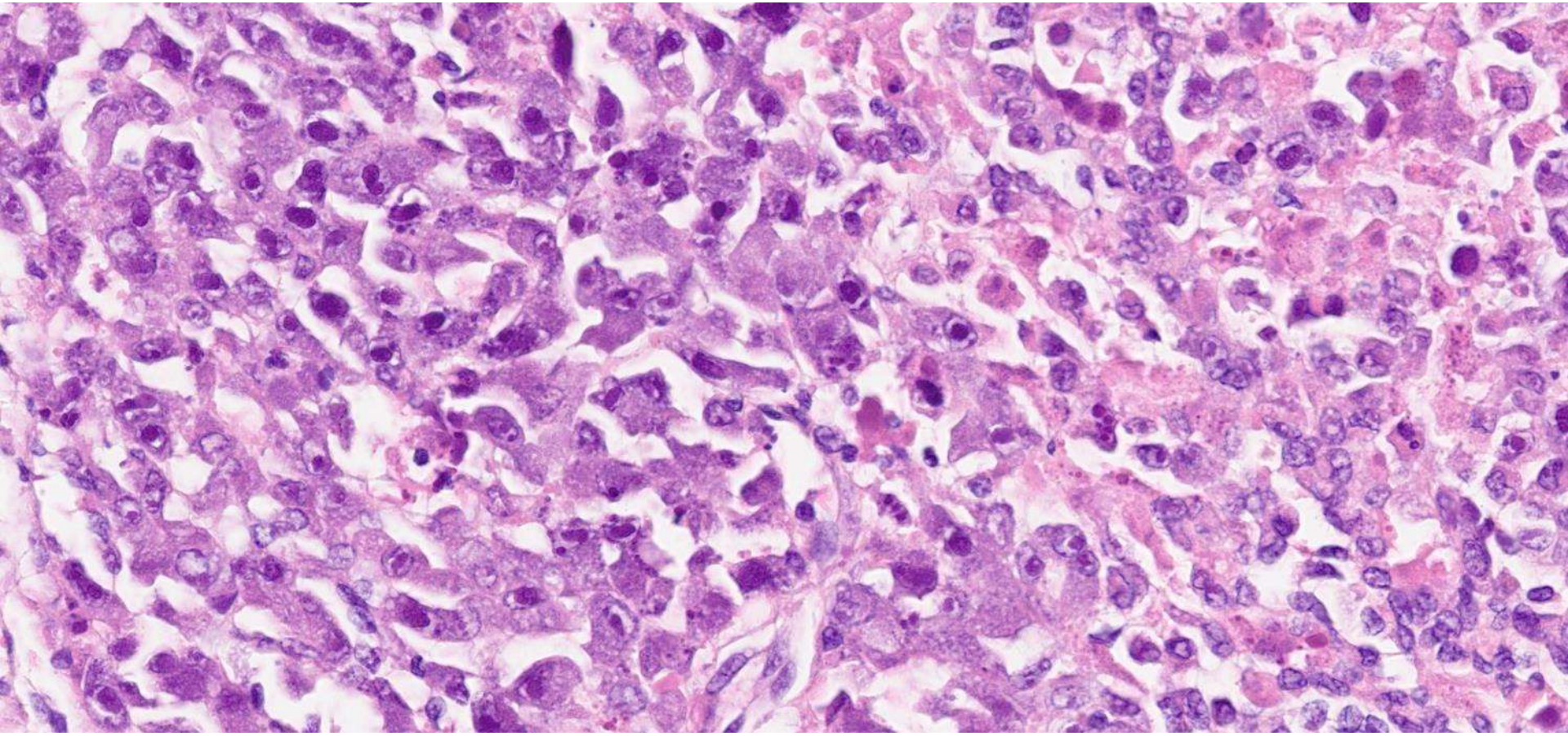


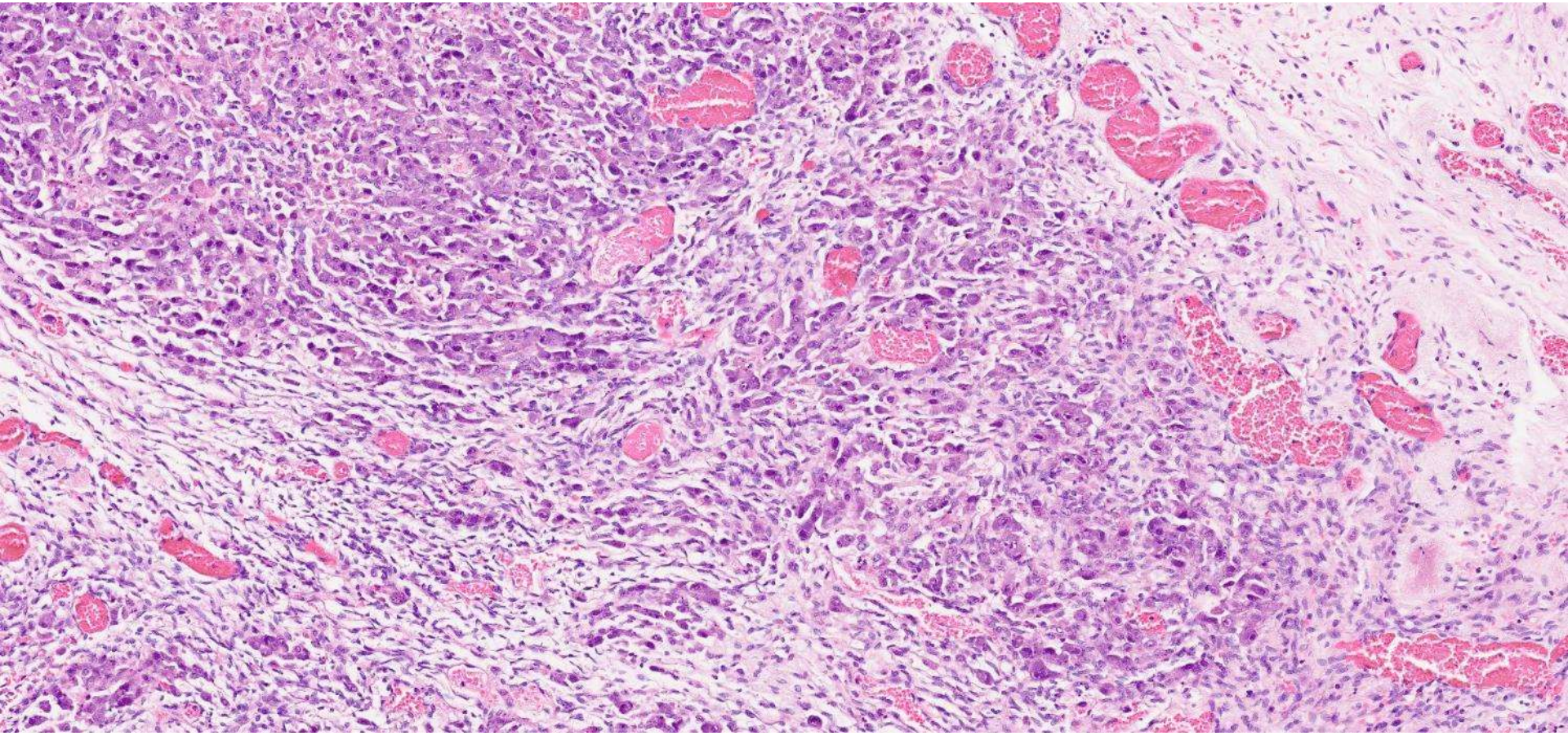


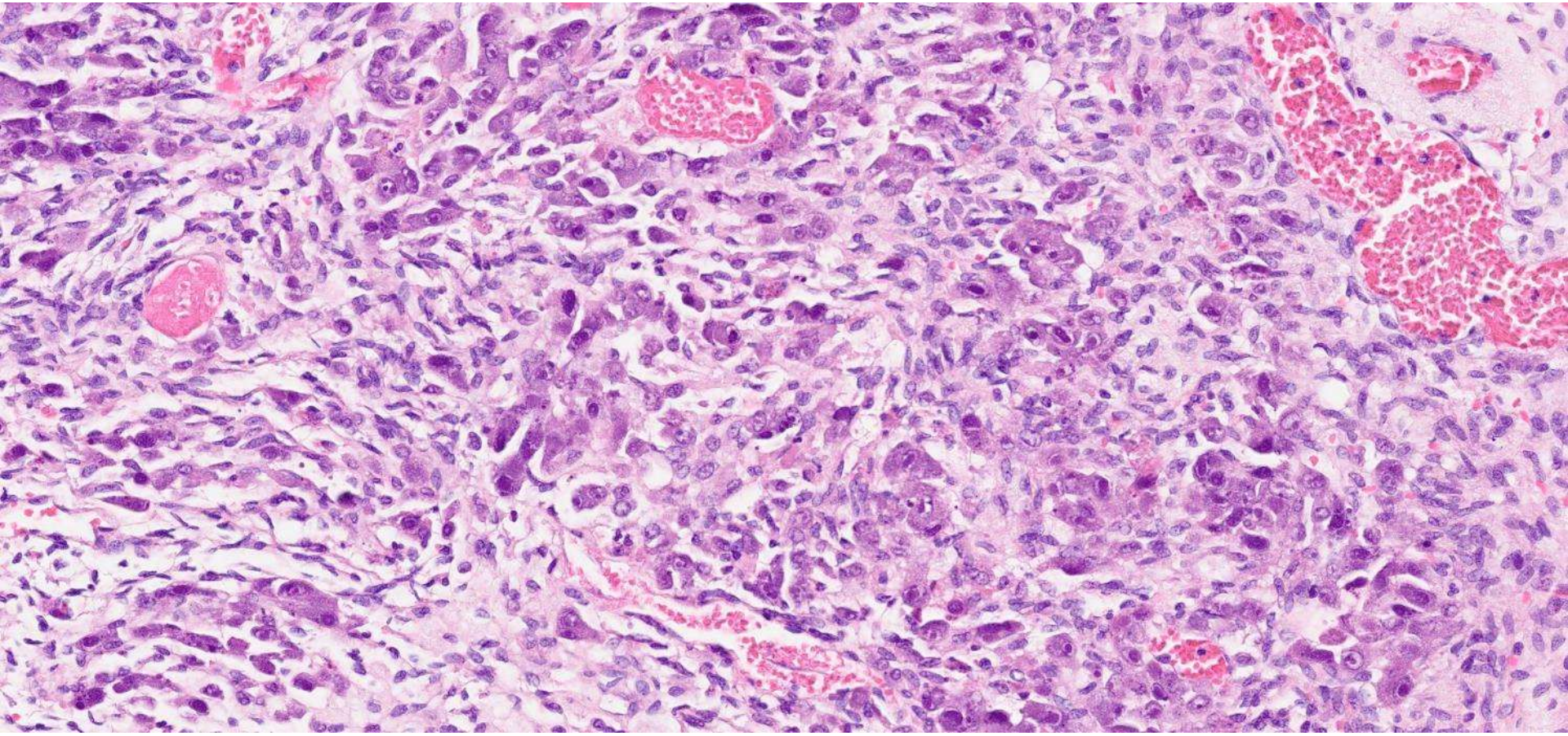






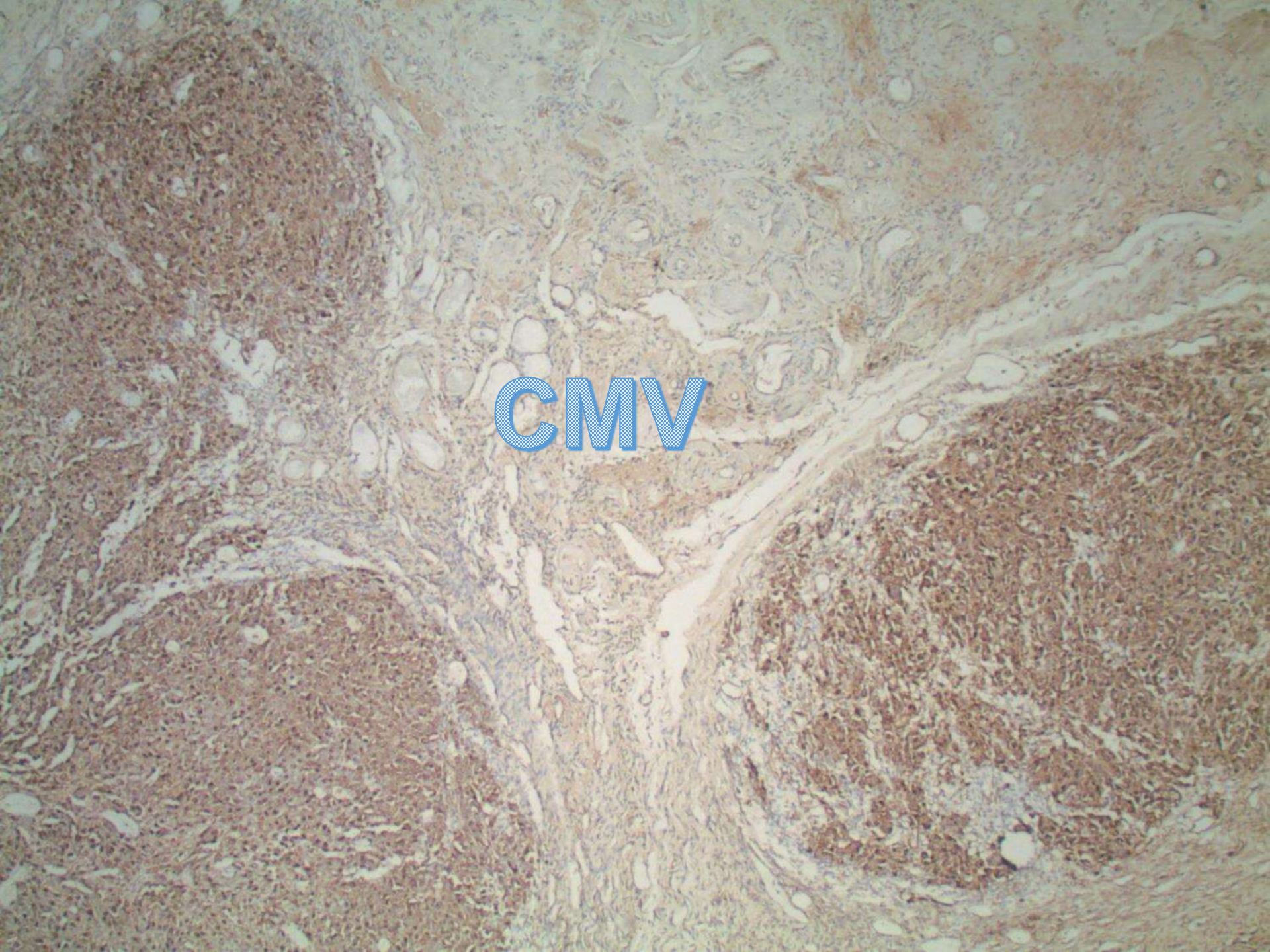


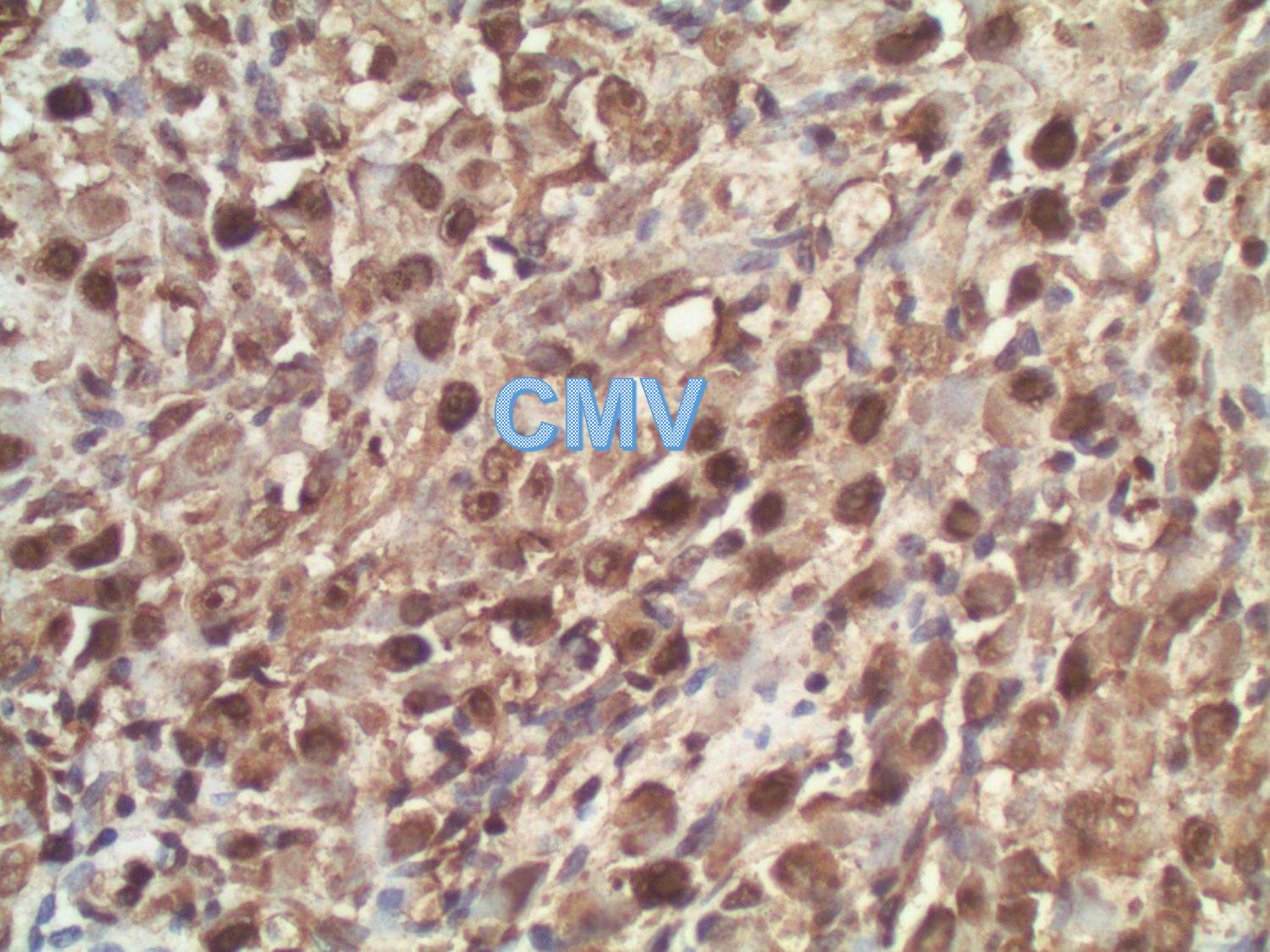


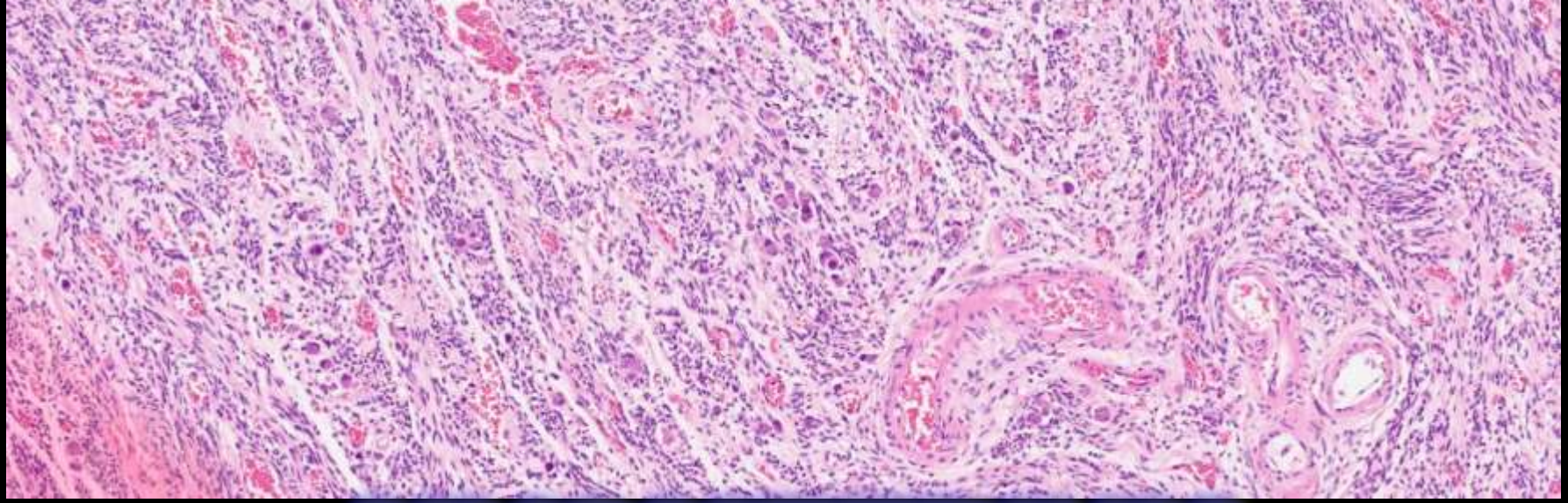


DDx

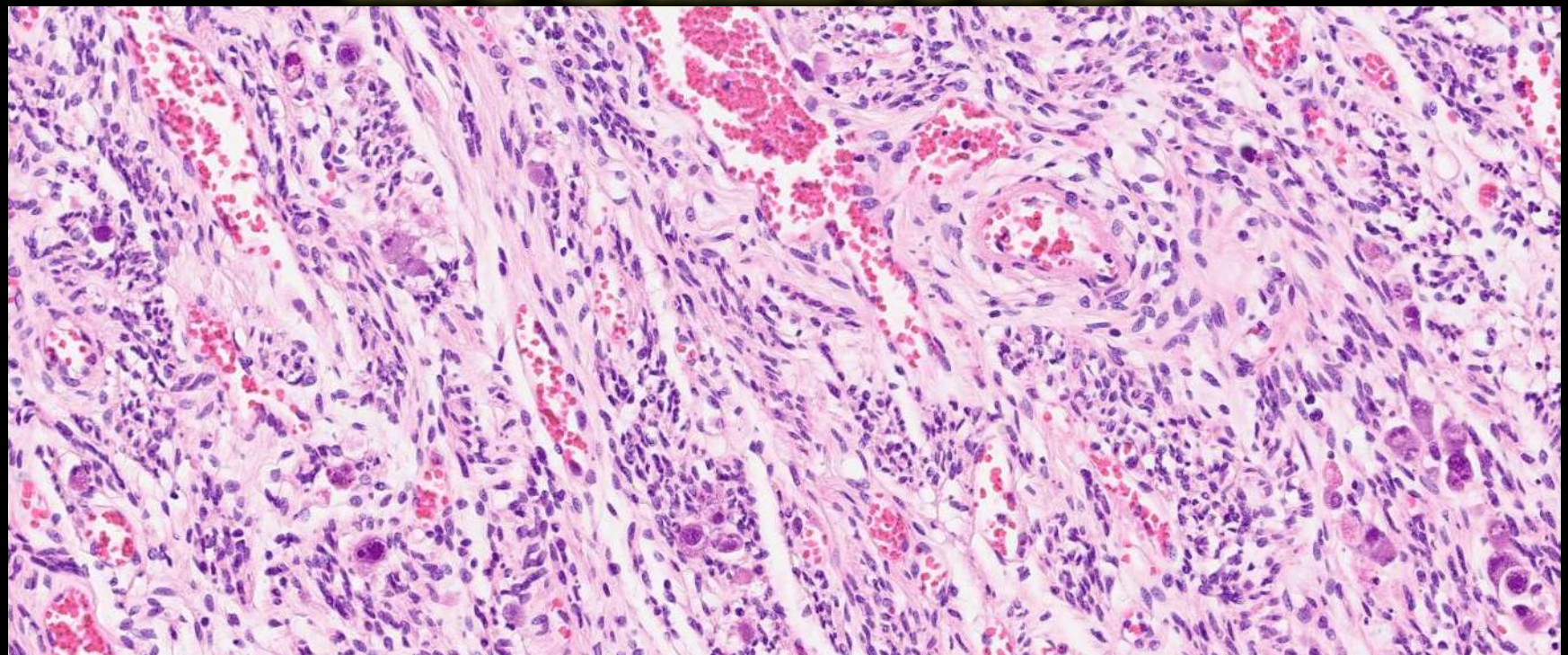
- CMV oophoritis
- Poorly differentiated carcinoma
- High grade lymphoma
- High grade sarcoma

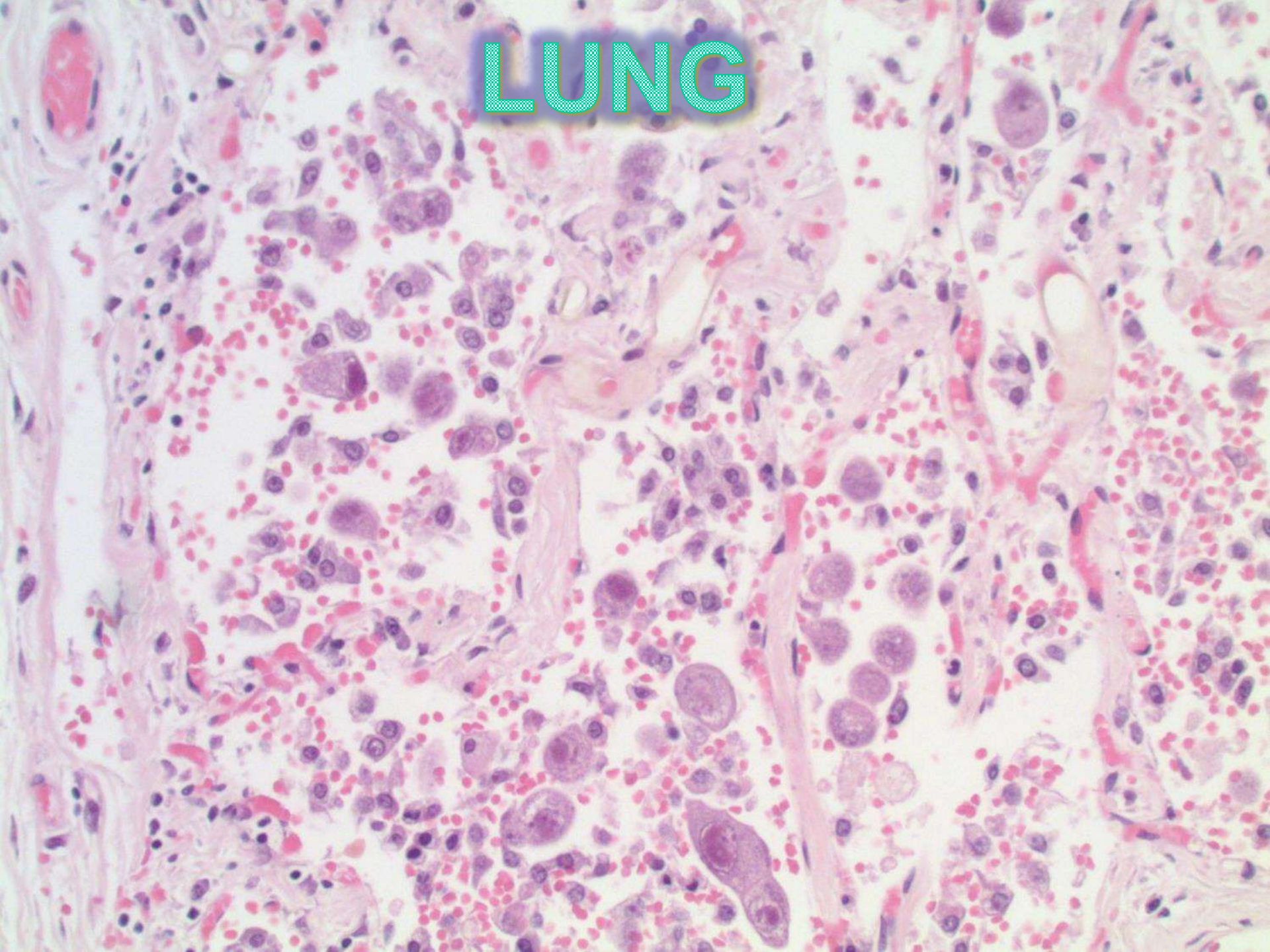

CMV

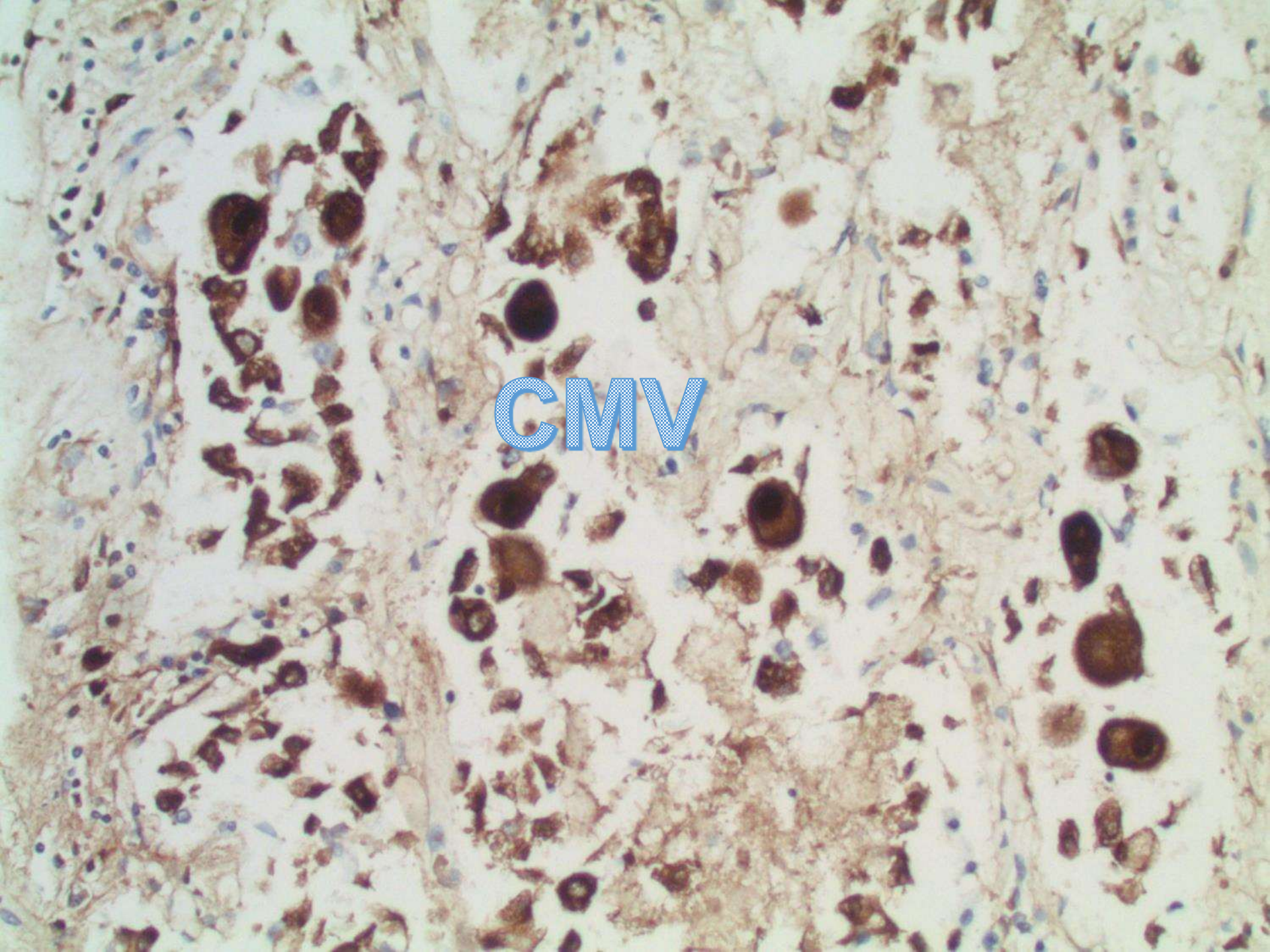

CMV



MYOMETRIUM




LUNG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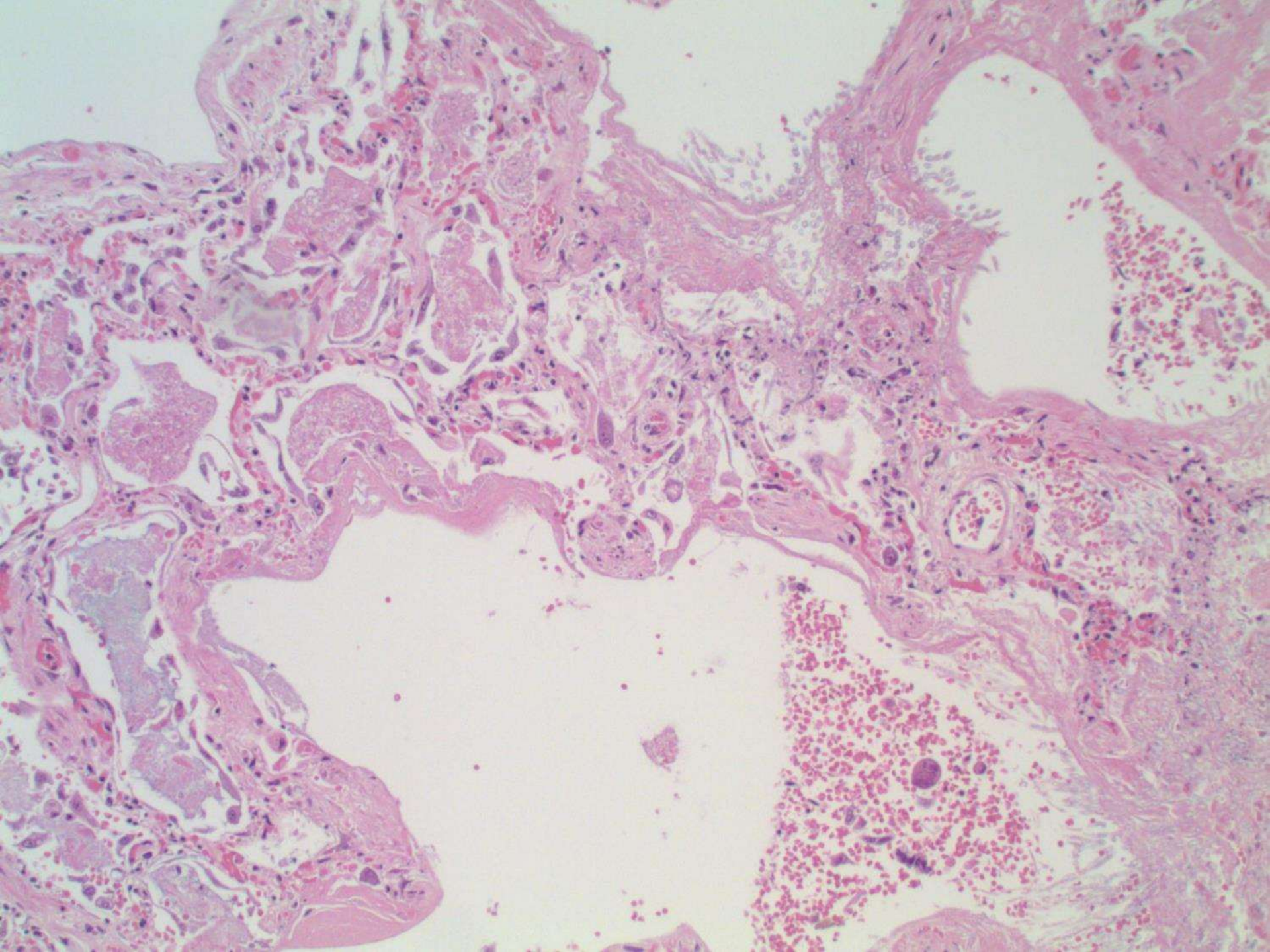
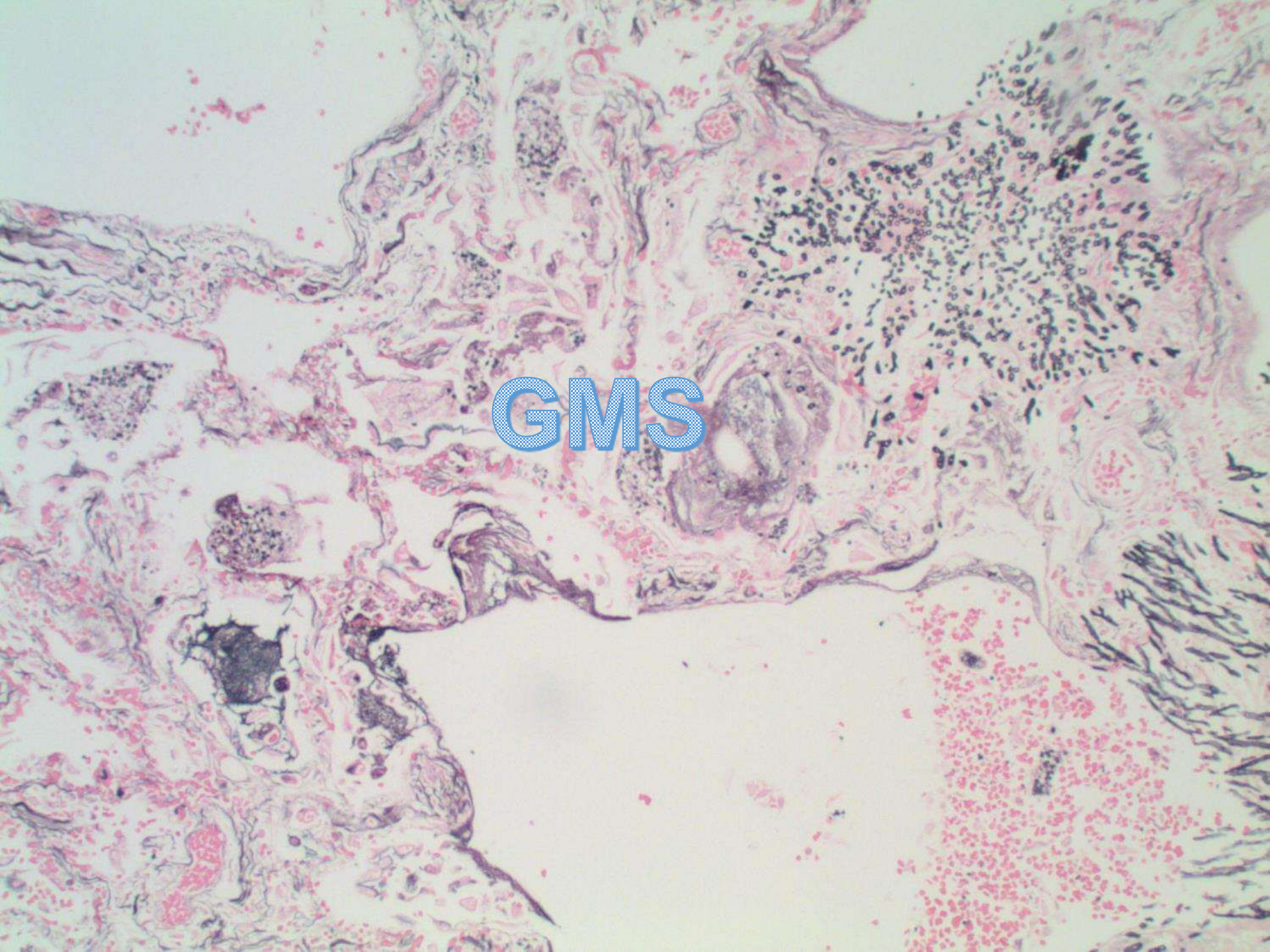
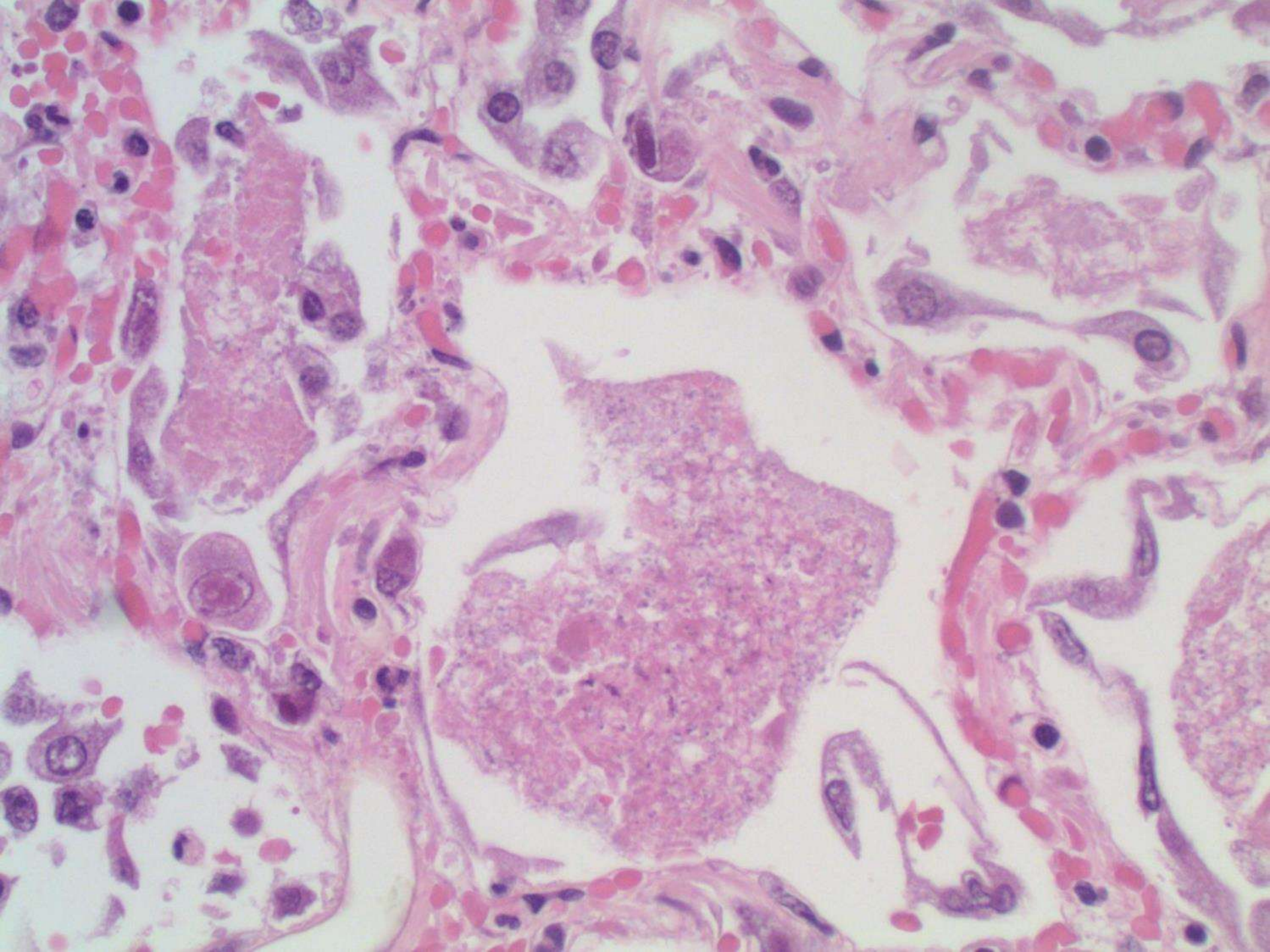
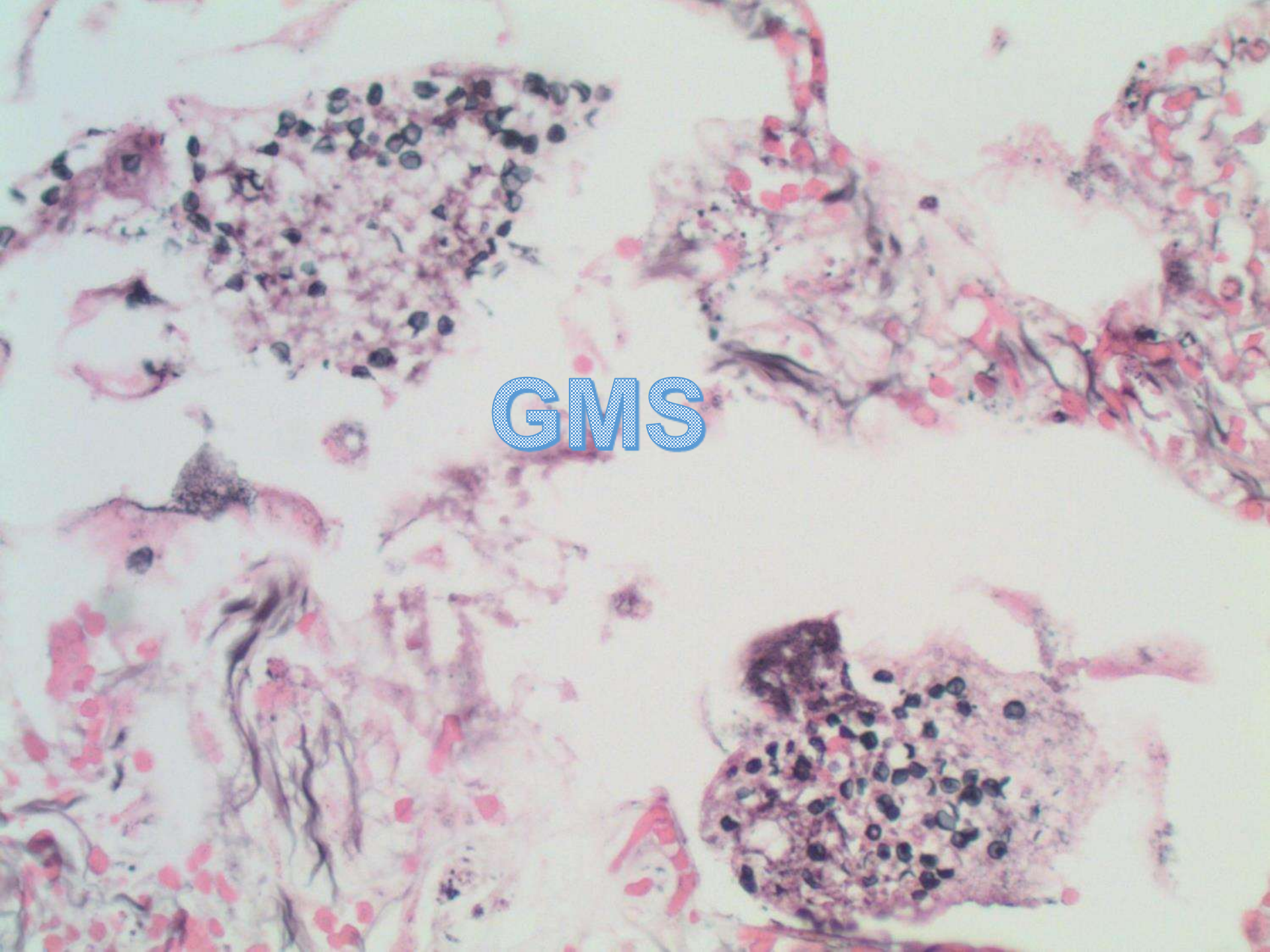



GMS

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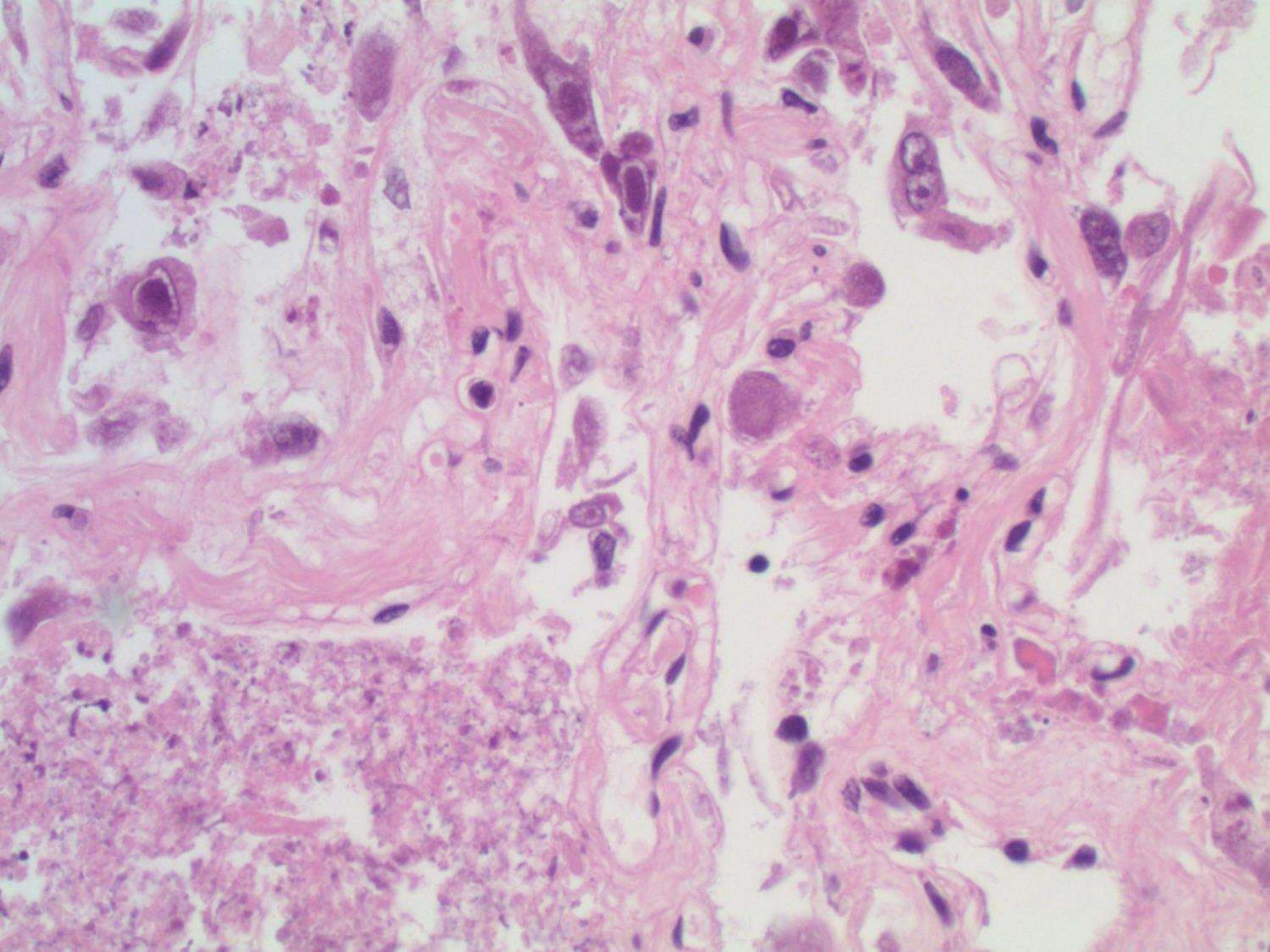
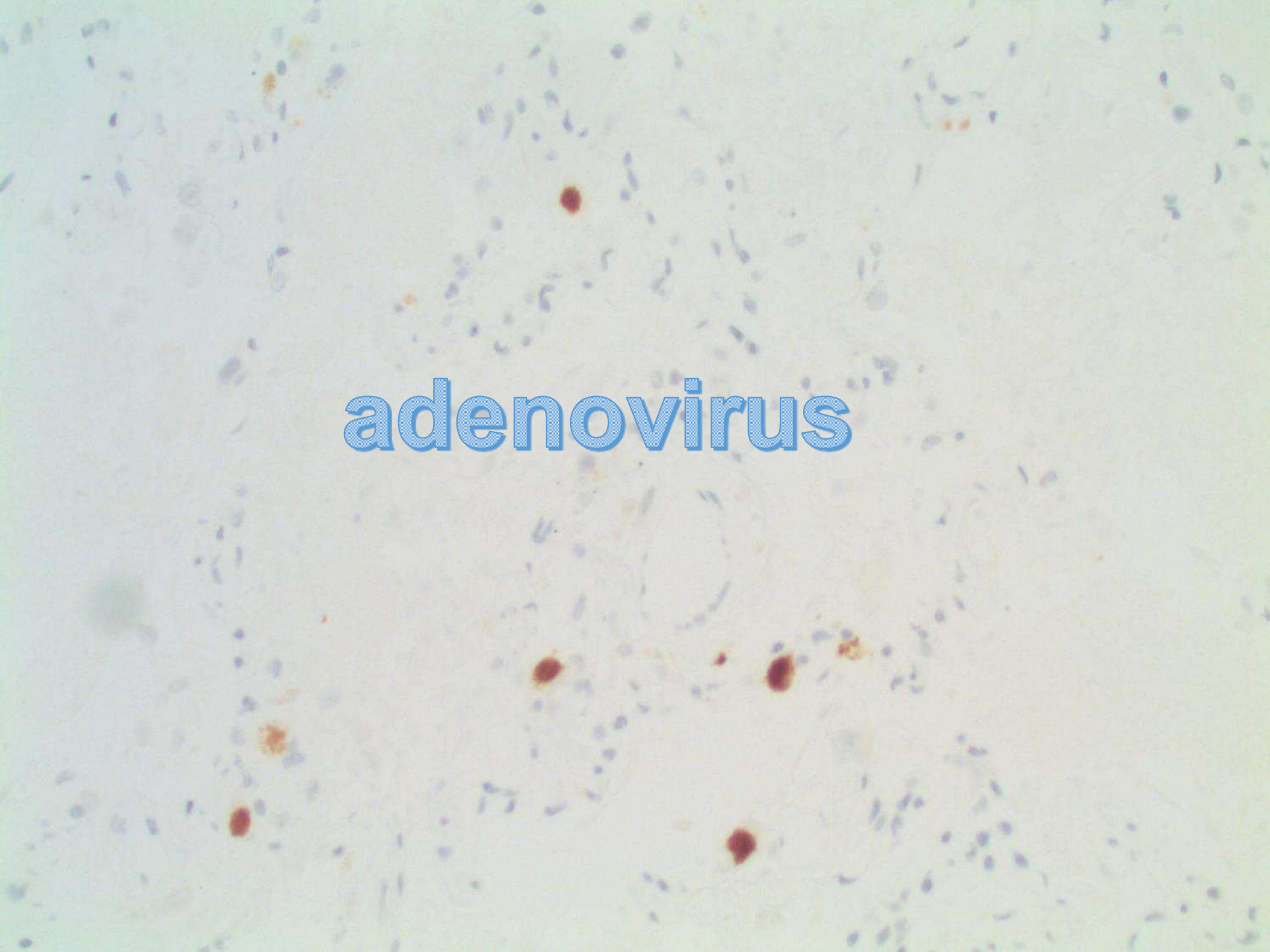



adenovirus

Final Dx

- **Bilateral fungal, CMV, adenovirus, and Pneumocystis pneumonitis**
  - disseminated CMV involving bilateral ovaries, uterus, bilateral adrenals

(p24 stain negative)

Diagnostic Pathology

BioMed

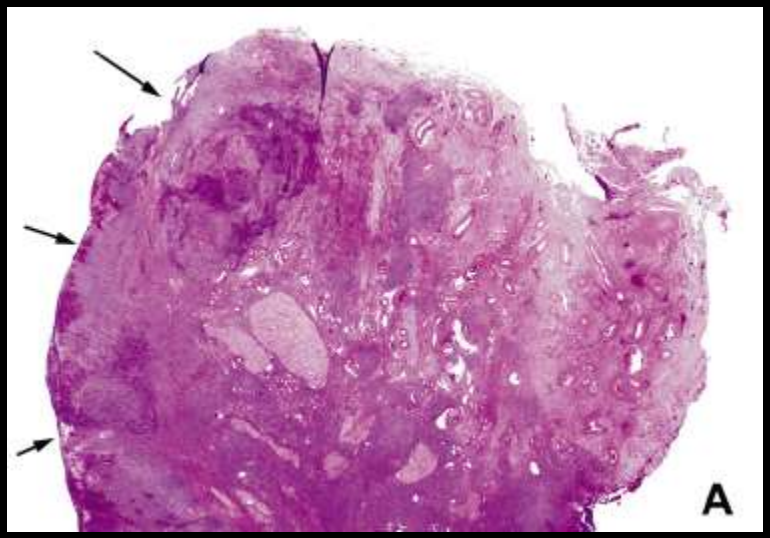
Review

Open A

Bilateral cytomegalovirus (CMV) oophoritis mimicking widely metastatic carcinoma: a case report and review of the literature

Jing Yu[1], Francis X Solano Jr[2] and Raja R Seethala*[1]

Diagnostic Pathology 2007, **2**:50 doi:10.1186/1746-1596-2-50



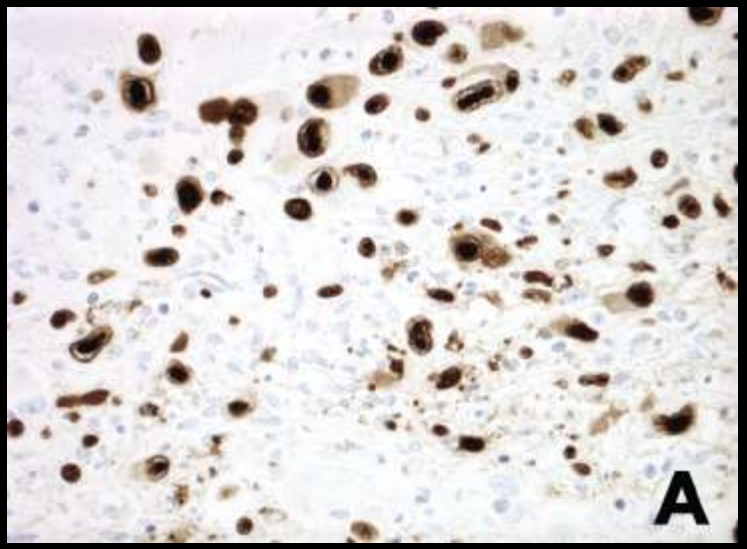


Table 1: Main clinical features of reported CMV oophoritis cases in the English literature

First Author	Age	Menopausal Status	Primary Diagnosis	Prior Immunosuppressive Treatment/State	Documented Systemic CMV infection	Treatment of CMV	Presentatation as Mass lesion	Diagnostic Material
Subietas (1977)	62	Post-menopausal	Astrocytoma	Radiation	Yes (post-mortem)	No	No	Autopsy
Subietas (1977)	40	Post-menopausal	Hodgkin Lymphoma,	Chemotherapy, Steroids, Radiation	Yes (post-mortem)	No	No	Autopsy
Subietas (1977)	67	Post-menopausal	Breast CA	Testosterone, Steroids	No	No	No	Autopsy
Evans (1978)	37	Pre-menopausal	SLE	Steroids	Yes (post-mortem)	No	Yes	Autopsy
LiVolsi (1979)	61	Post-menopausal	Lymphoma	Chemotherapy, Steroids	Yes (post-mortem)	No	No	Autopsy
Iwasaki (1988)	11	Pre-pubertal	ALL	Chemotherapy, Steroids	Yes (pre-mortem)	N/A	No	Autopsy
Williams (1989)	40	Pre-menopausal	Cholangio-CA	Liver Transplant	Yes (post-mortem)	No	Yes	Autopsy
Familiari (1990)	33	Pre-menopausal	AIDS	Anti-retrovirals	Yes (pre-mortem)	Yes	No	Autopsy
Sharma (1994)	50	Post-menopausal	Breast CA	Autologous BMT	No	No	No	Autopsy
Wales (1996)	31	Pre-menopausal	HIV, PID	Anti-retrovirals,	No	No	Yes (limited to left ovary)	Surgical Resection
Nieto (1999)	50	Post-menopausal	Breast CA	Allogenic BMT	Yes (pre-mortem) *	Yes	No	Autopsy
Manfredi (2000)	36	Pre-menopausal	AIDS	Presumed CNS Toxoplasmosis & Lymphoma	No	No	Yes	Autopsy
Current Case (2007)	63	Post-menopausal	Lung CA	Radiation, Steroids	No	No	Yes	Surgical Resection

ALL: acute lymphocytic leukemia; BMT: bone marrow transplantation; CA: carcinoma; CNS: central nervous system; PID: pelvic infectious disease; SLE: systemic lupus erythematosus; N/A: not available; *: pre-mortem systemic CMV infection but post-mortem isolated oophoritis

Histopathology 2010, **56**, 530–541. DOI: 10.1111/j.1365-2559.2010.03513.x

Identifying HIV infection in diagnostic histopathology tissue samples – the role of HIV-1 p24 immunohistochemistry in identifying clinically unsuspected HIV infection: a 3-year analysis

Mufaddal T Moonim,[1] Lida Alarcon,[1] Janet Freeman,[1] Ula Mahadeva,[1] Jon D van der Walt[1] & Sebastian B Lucas[1,2]

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Moonim M T, Alarcon L, Freeman J, Mahadeva U, van der Walt J D & Lucas S B (2010) *Histopathology* **56**, 530–541

Identifying HIV infection in diagnostic histopathology tissue samples – the role of HIV-1 p24 immunohistochemistry in identifying clinically unsuspected HIV infection: a 3-year analysis

Aims: Because of the clinical difficulty in identifying the early stages of human immunodeficiency virus (HIV) infection, the histopathologist often has to consider the diagnosis of HIV in tissue samples from patients with no previous suspicion of HIV infection. The aim was to investigate the practicality and utility of routine HIV-1 p24 immunohistochemistry on tissue samples received at a London histopathology laboratory.

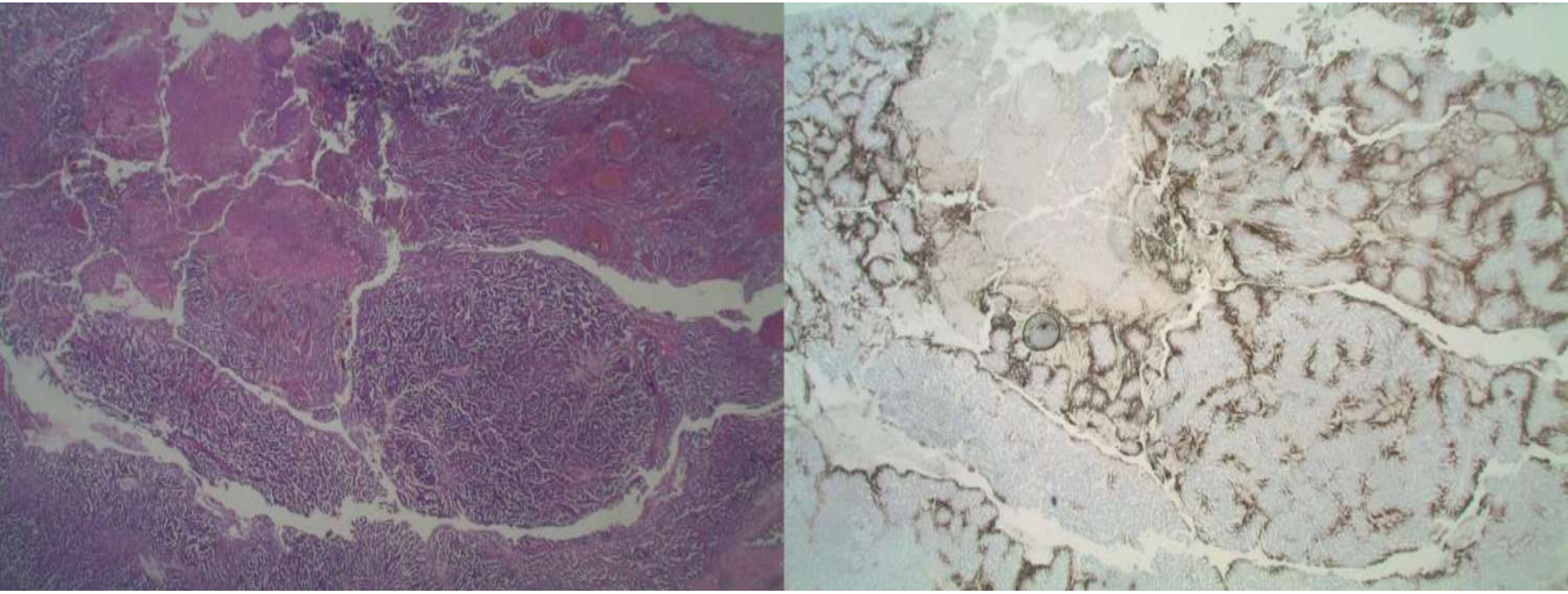
Methods and results: Over a 3-year period, HIV-1 p24 was evaluated immunohistochemically on 123 cases. Of these, 37 (30%) showed positive expression of p24 in lesional follicular dendritic cells (FDCs). Of these 37 cases, 11 were not clinically suspected to be HIV+ and had no prior serological evidence of HIV infection. These cases represented lymph node biopsies, tonsillar and nasopharyngeal biopsies and a parotid excision. In addition to expression on FDCs, in 22 cases (60%), p24 also highlighted mononuclear cells and macrophages. p24 was also useful in confirming the presence of HIV in lymphoid tissue in non-lymphoid organs such as the lung, anus, salivary gland and brain. Immunonegativity occurred in occasional known HIV+ cases, probably related to treatment or tissue processing.

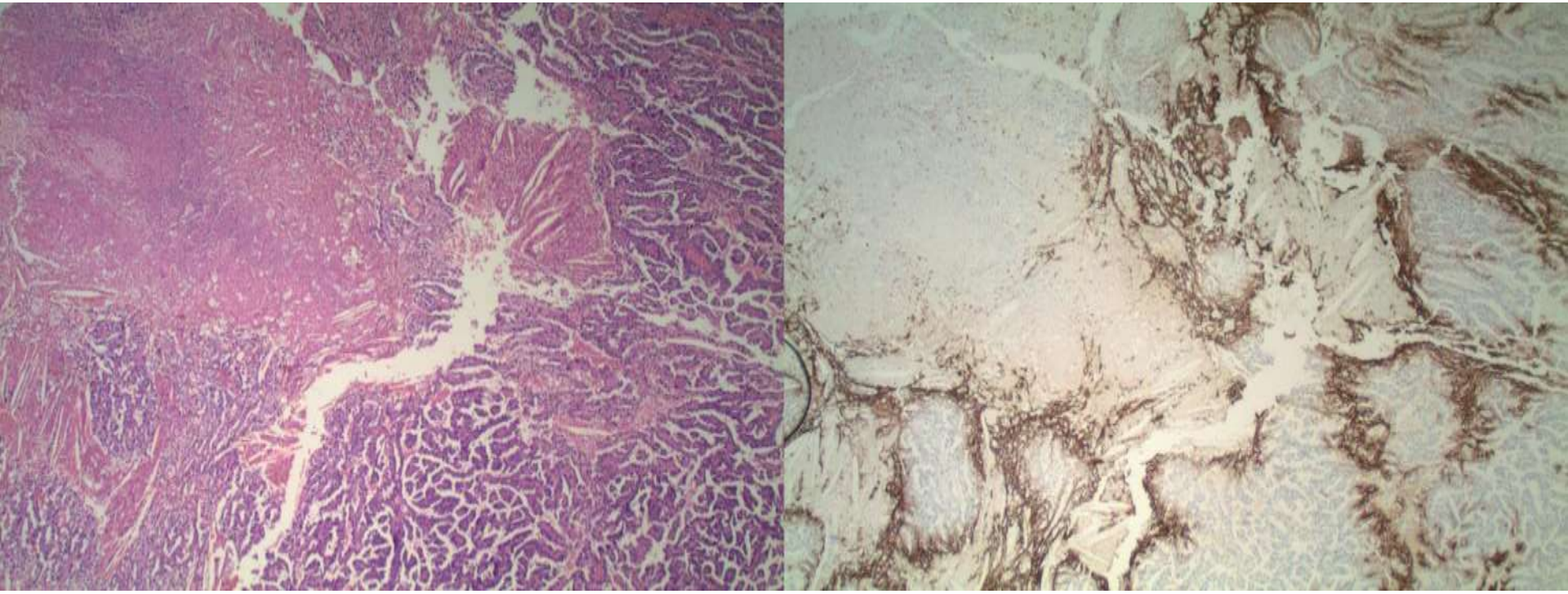
Conclusions: This study confirms the usefulness of this technique in detecting unsuspected HIV infection in lymphoid and non-lymphoid organs on histopathological material and should be part of routine evaluation of lymph nodes and lymphoid tissue in other organs if morphological or clinical features suggest HIV infection.

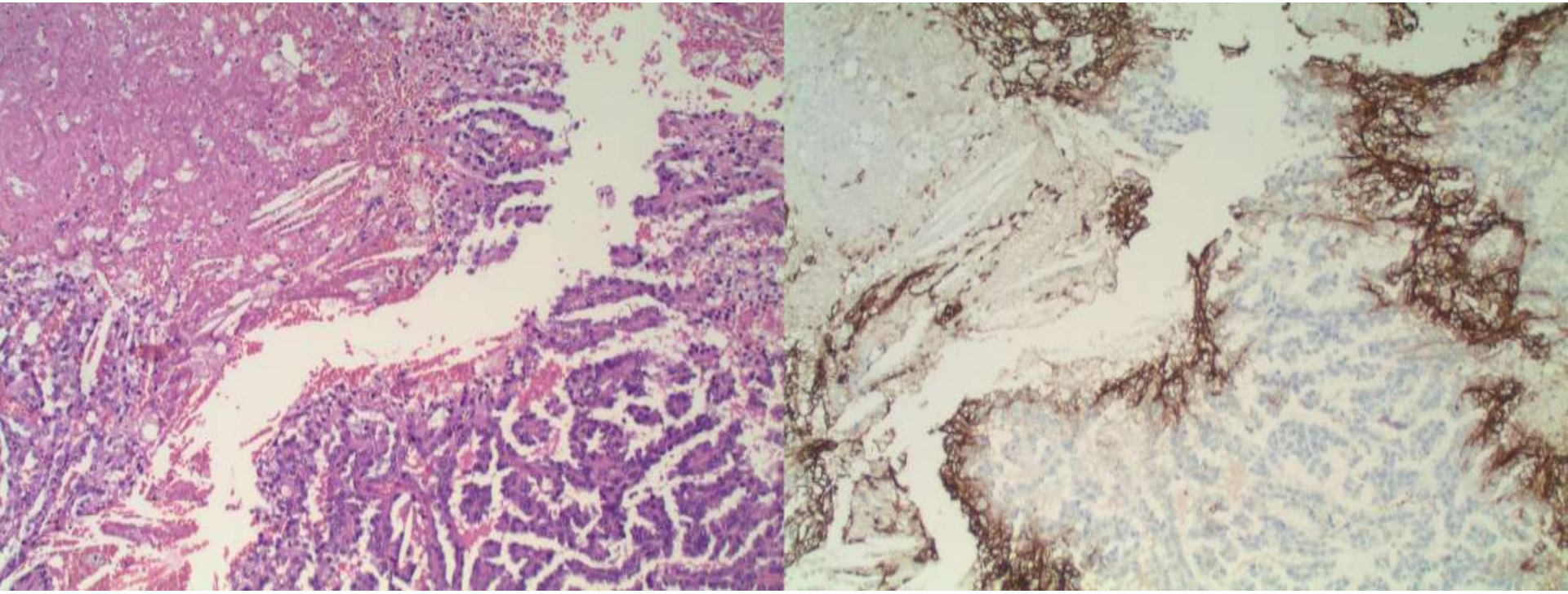
21-0808

Ankur Sangoi; El Camino Hospital

Adult human undergoes radical nephrectomy. Representative section of renal mass shown. What is the immunostain shown here?







Immunohistochemical Reevaluation of Carbonic Anhydrase IX (CA IX) Expression in Tumors and Normal Tissues

Adelina Luong-Player, MD,[1] Haiyan Liu, MD,[1] Hanlin L. Wang, MD, PhD,[2] and Fan Lin, MD, PhD[1]

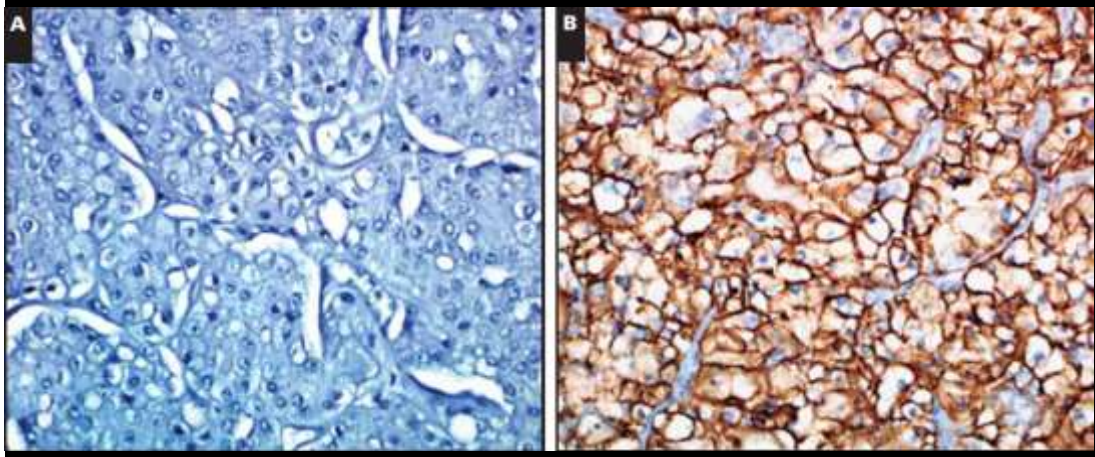
ABSTRACT

Objectives: *To immunohistochemically evaluate the carbonic anhydrase IX (CA IX) expression on 1,551 cases of tumors and normal tissues from various organs.*

Methods: *Immunohistochemical evaluation of the expression of CA IX was performed on 1,125 malignant tumors, 69 benign neoplasms, and 322 normal tissues on tissue microarray sections and 18 intrahepatic cholangiocarcinomas (ICCs) and 17 hepatocellular carcinomas (HCCs) on routine sections.*

Results: *There was overexpression of CA IX in clear cell renal cell carcinoma (CRCC) (88%, 68/77). Twenty-six (90%) of 29 ICCs were positive. In contrast, only 5 (15%) of 34 HCCs were focally positive. No staining was seen in chromophobe renal cell carcinoma (ChRCC), oncocytoma, seminoma, or carcinomas of the breast, thyroid, or prostate. All normal renal tubules except one case showed no staining.*

Conclusions: *These data demonstrate the diagnostic utility of CA IX in (1) differentiating CRCC from ChRCC and oncocytomas, (2) distinguishing low-grade CRCC from normal renal tubules in small samples, (3) separating ICC from HCC, and (4) identifying metastatic CRCC from other metastases with clear cell features.*



CAIX utility in RCC subtypes

- **Clear cell RCC**
  → strong complete membranous pattern (box-like)
- **Clear cell papillary (tubulopapillary) RCC**
  →cup-like staining pattern
- **Chromophobe RCC, MiTF RCC**
  → typically negative
- **Papillary RCC**
  → variable staining

CAIX TAKE HOME POINTS

- CAIX is under control of the hypoxia inducible factor 1 (HIF1)
  - overexpressed in hypoxia
- **MEMBRANOUS staining pattern key**
  - disregard cytoplasmic
- **Can be helpful in confirming clear cell RCC subtype in metastasis**
  - NOT SPECIFIC for RCC!