MISTERY SLIDES SESSION
- CYTOLOGY -

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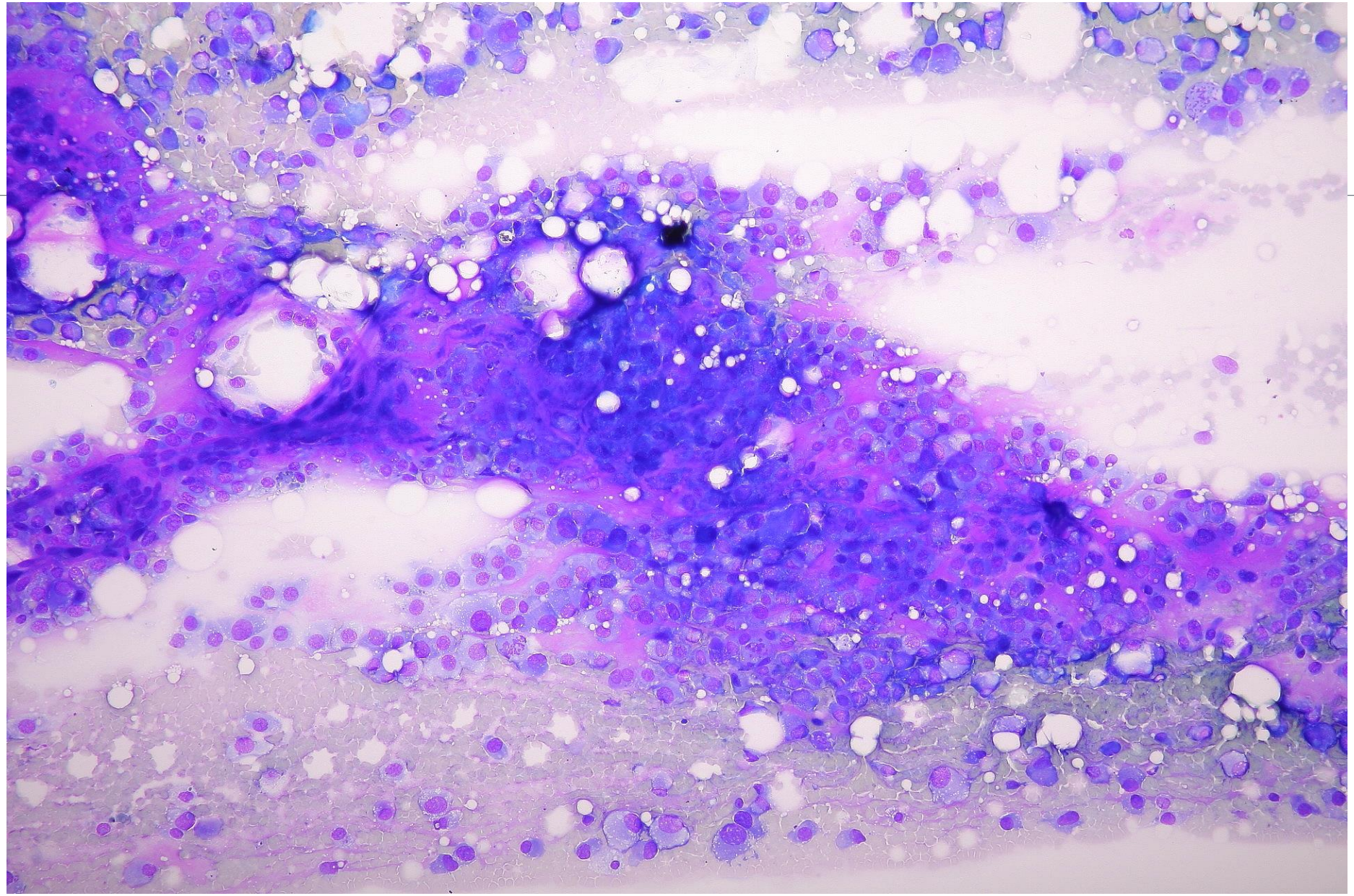
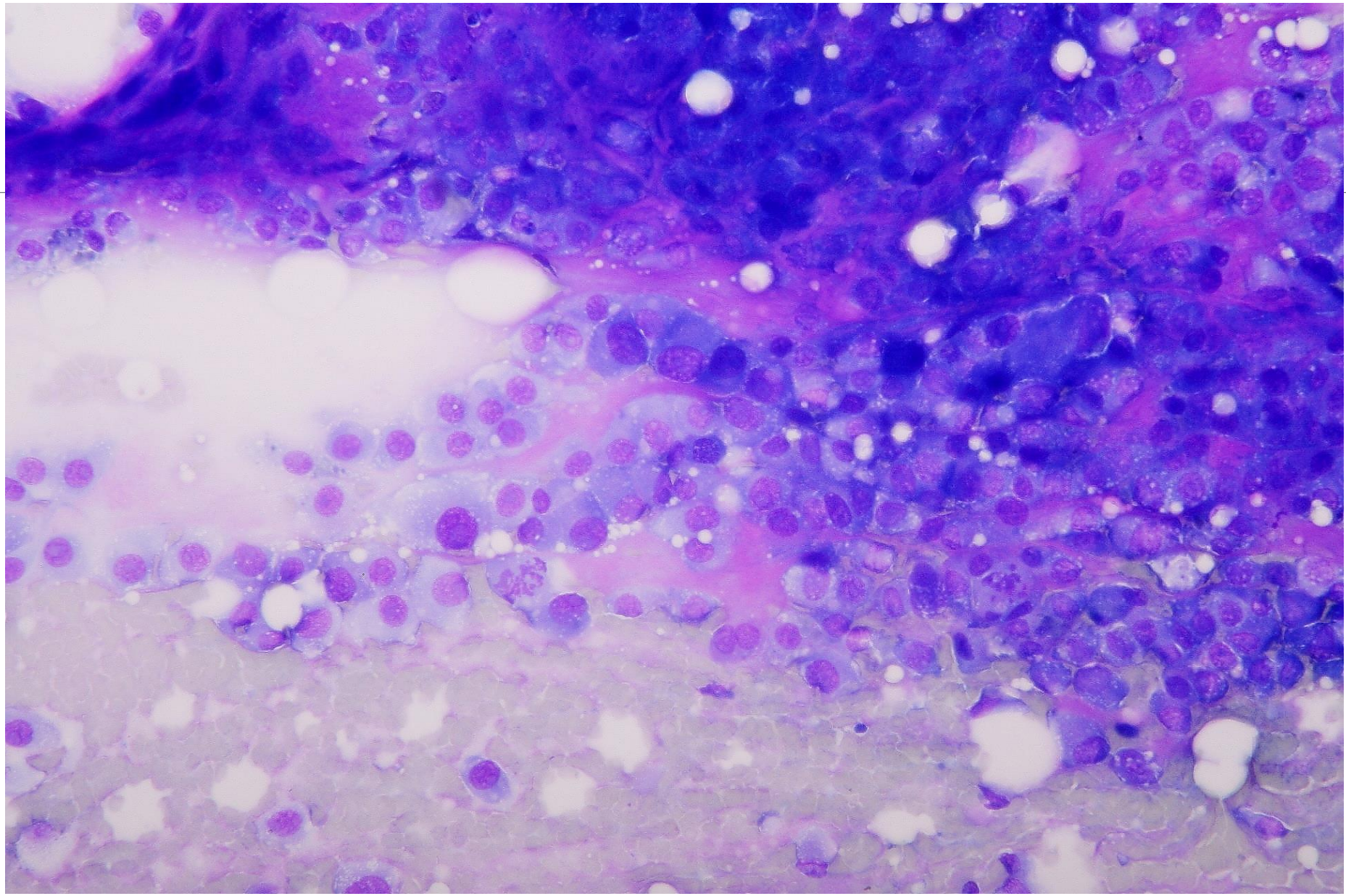
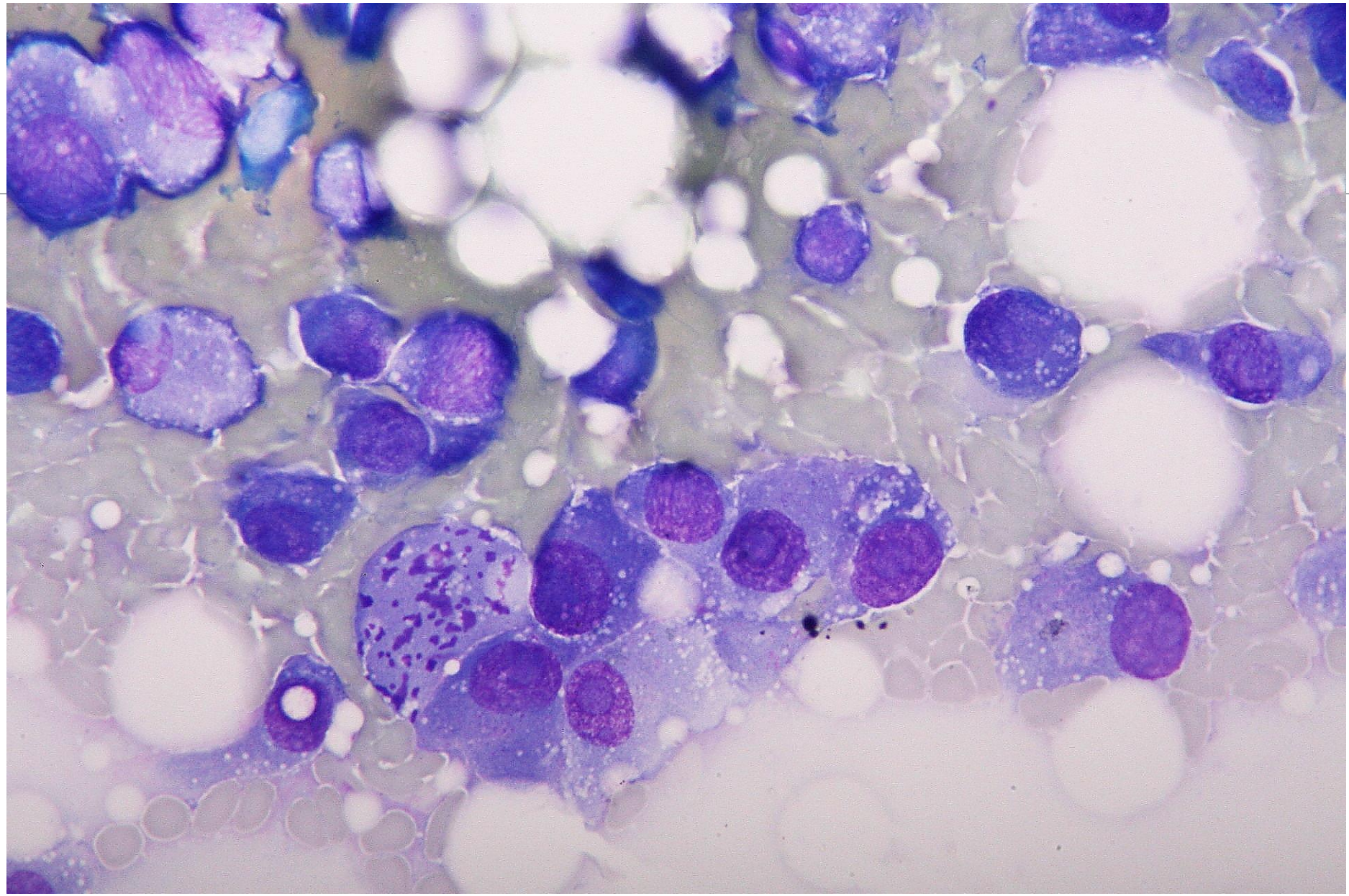
Brescia

Case #1

- Dog, mongrel, 12-yers-old, male;
- Mass on the ventral neck
  - FNCS of the mass
  - MGG stain







Cytologic findings

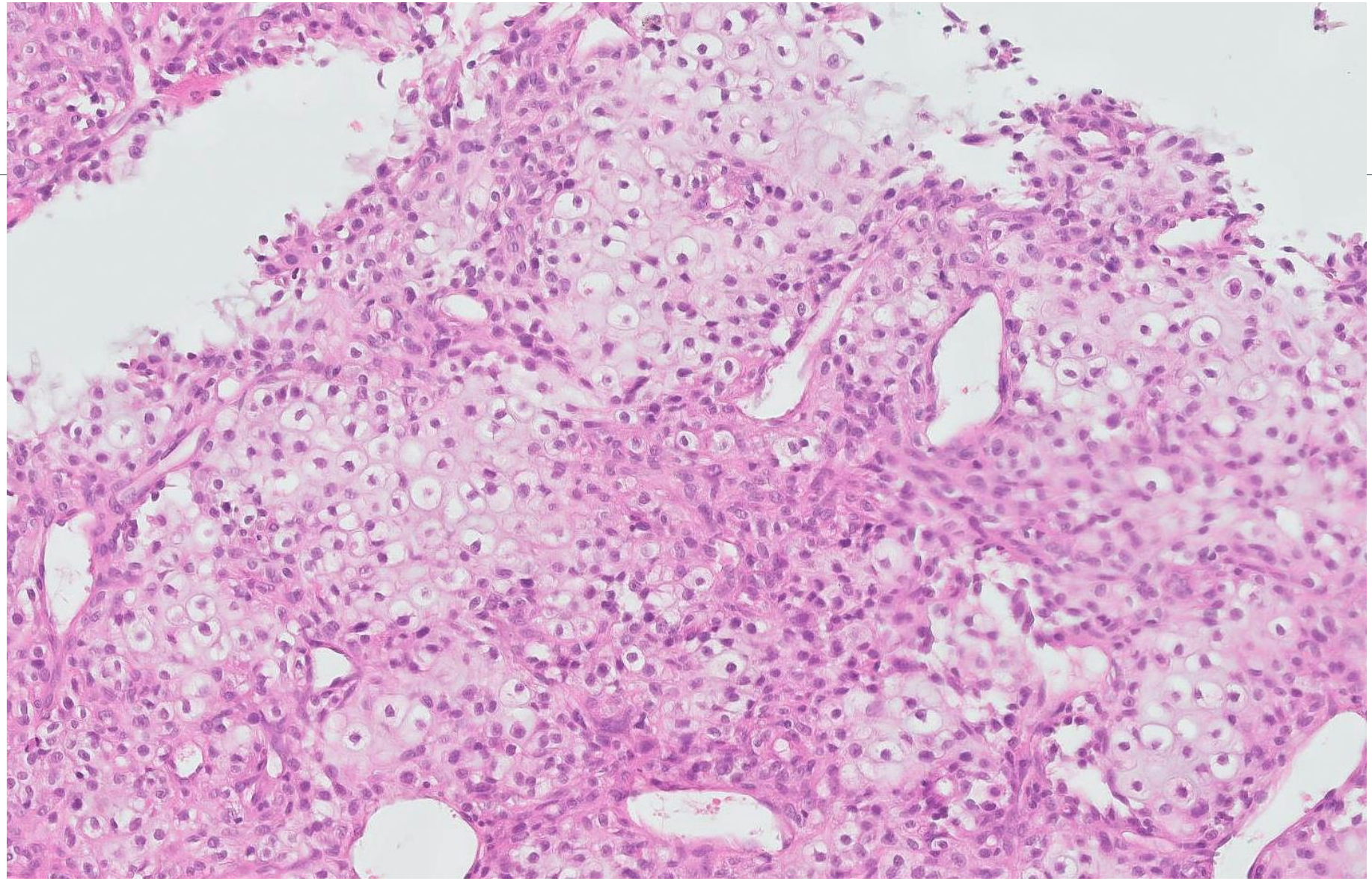
- Round to spindle malignant cells
- Chondroid differentiation
  - Dense eosinophilic matrix
  - Inclusion of cells into the matrix

Diagnosis

- Cytologic diagnosis: chondrosarcoma

- DD:
  - Chondrosarcoma of larynx/trachea
  - Chondrosarcomatous metaplasia of a ST sarcoma
  - Chondrosarcoma of hyoid bone
  - Chondrosarcoma of thyroid

- Tomographic diagnosis:
  - **Chondrosarcoma of thyroid**

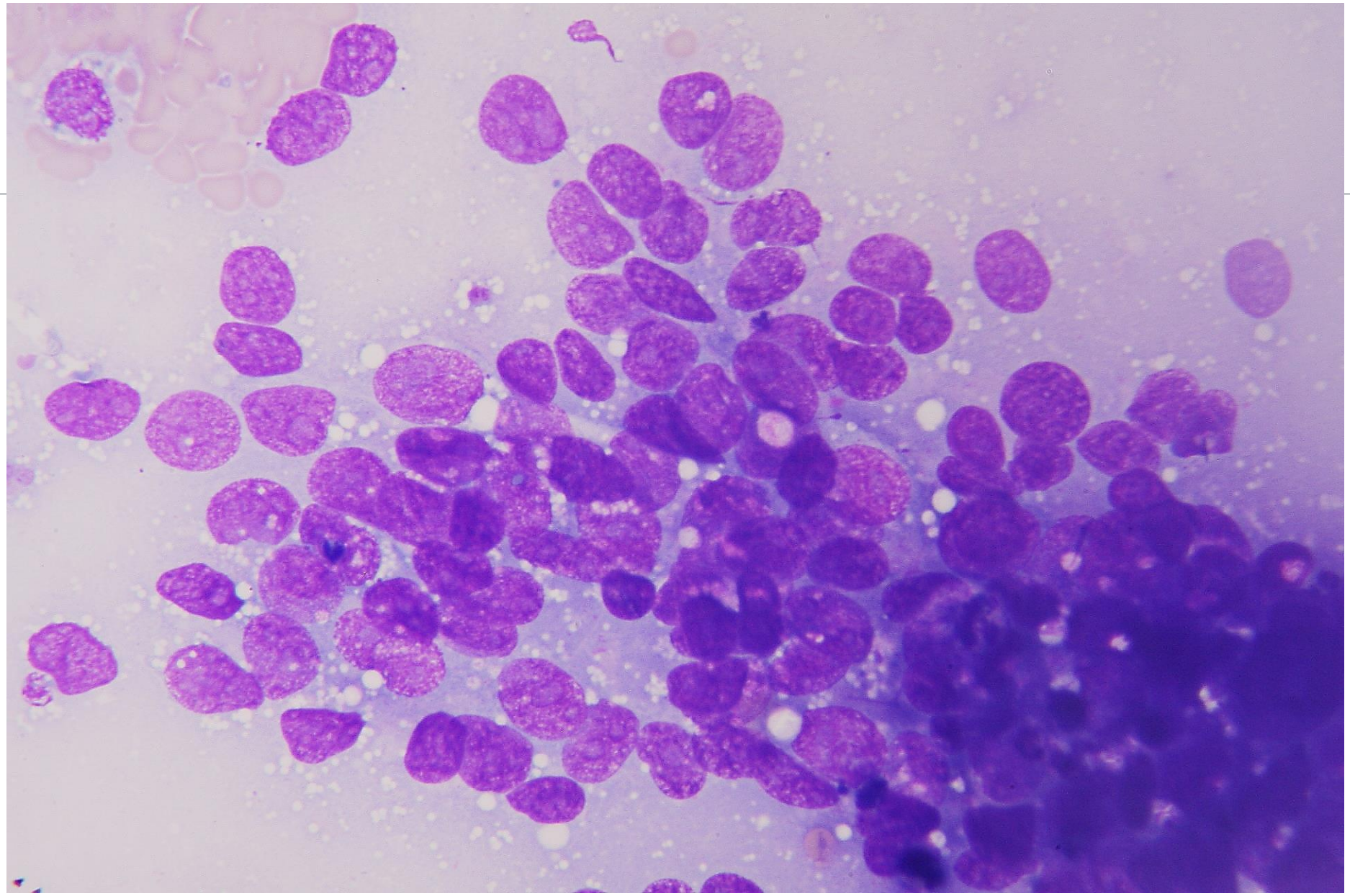


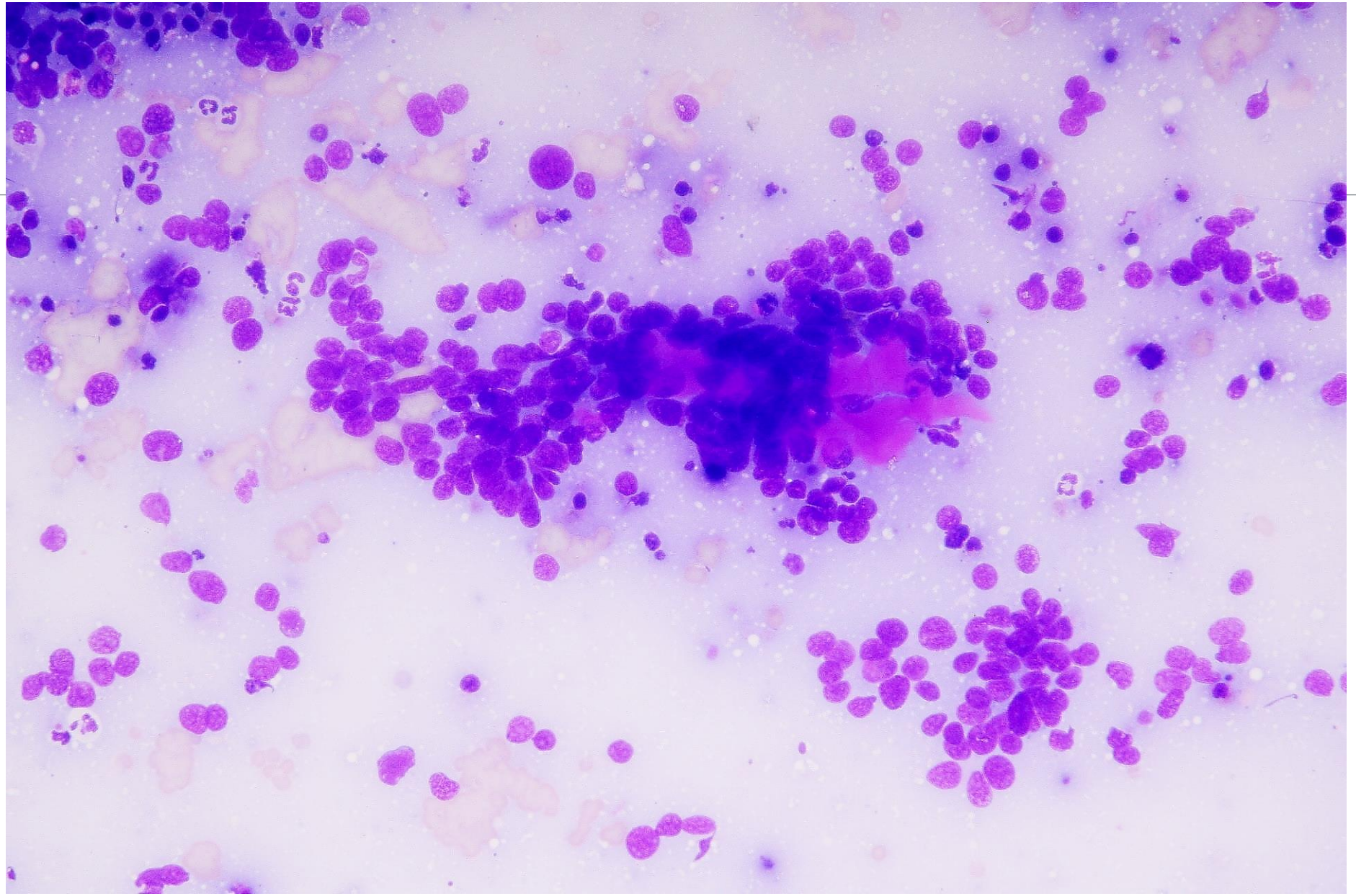
- Vet Pathol. 1981 Jan;18(1):13-20.
- **Multifocal myxedema and mixed thyroid neoplasm in a dog.**
- Johnson JA, Patterson JM.
- **Abstract**
- An Old English Sheepdog developed multiple tumor-like masses bilaterally on the head, back, elbows, and hocks, and severe swelling of all digital pads. The gross lesions were the result of accumulation of myxedematous connective tissue in the dermis. Abundant glycosaminoglycan-rich ground substance was confirmed by colloidal iron, toluidine blue and alcian blue stains. The dog also had a mixed follicular-compact cellular carcinoma in the left thyroid gland. The right thyroid had a tumor composed of anaplastic mesenchymal cells forming myxomatous matrix and **islands of abnormal cartilage** closely integrated, and possibly contiguous, with a follicular-compact cellular carcinoma. The cellular atypism and numerous aberrant mitotic figures in the mesenchymal areas suggested malignancy, although pulmonary metastases derived only from the thyroid carcinoma. Clinically, the dog showed no signs of hypo- or hyperthyroidism, although a resting serum T-4 was slightly below normal.

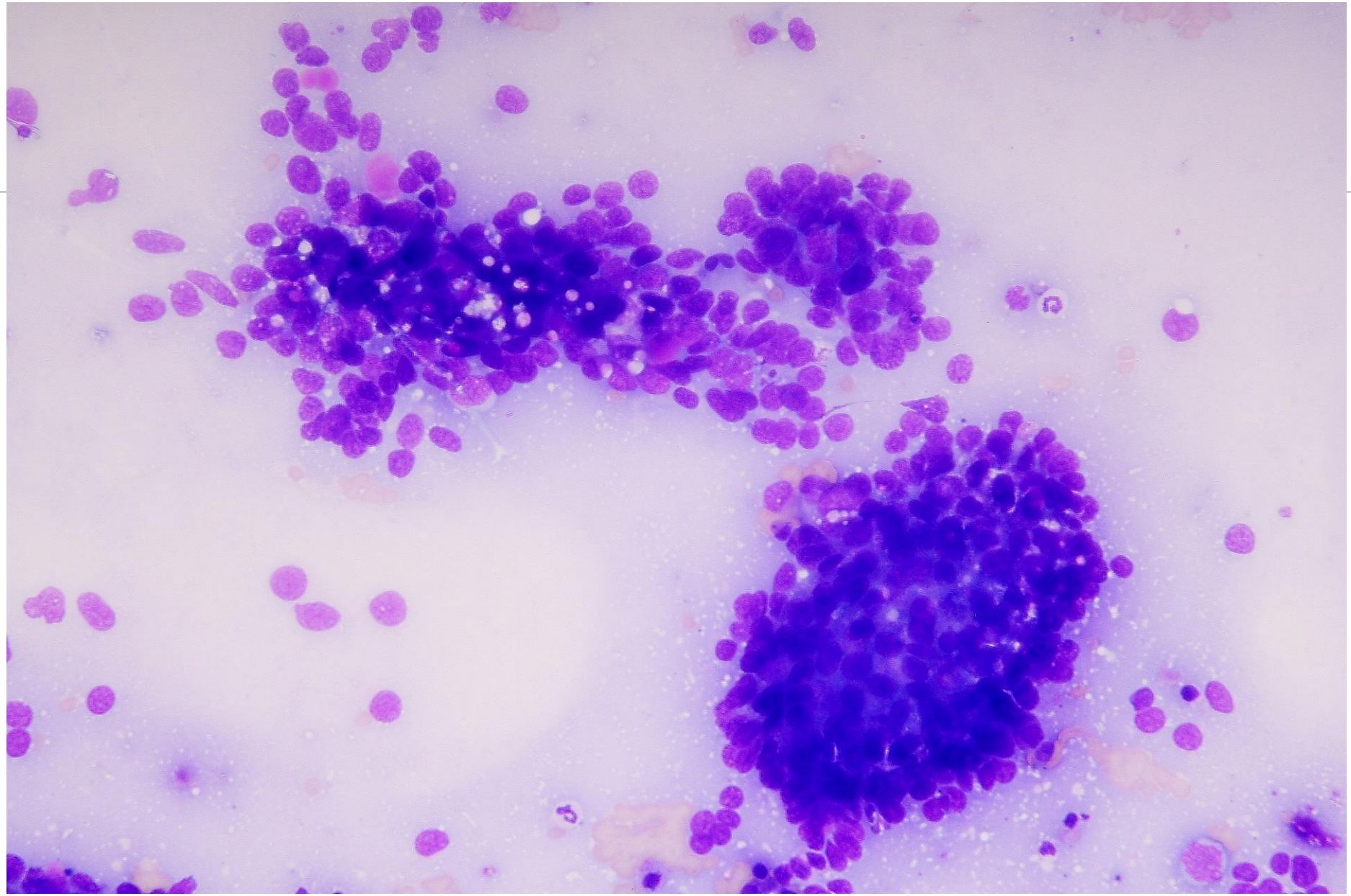
- Bull World Health Organ. 1974;50(1-2):35-42.
- **Tumours of the thyroid gland.**
- von Sandersleben J, Hänichen T.
- **Abstract**
- The epithelial tumours of the thyroid are divided into benign, malignant, and C-cell categories. The malignant tumours are described under the following names: follicular carcinoma, solid and solid-follicular carcinoma, papillary carcinoma, squamous cell carcinoma, and anaplastic carcinoma. The malignant mesenchymal tumours are described as fibrosarcoma, osteosarcoma, and **chondrosarcoma**. There are also coexistent tumours and carcinosarcomas.

Case #2

- Dog, Rottweiler, 7-years-old, female
- Mass in submandibolar region
  - FNCS of the mass
  - MGG stain







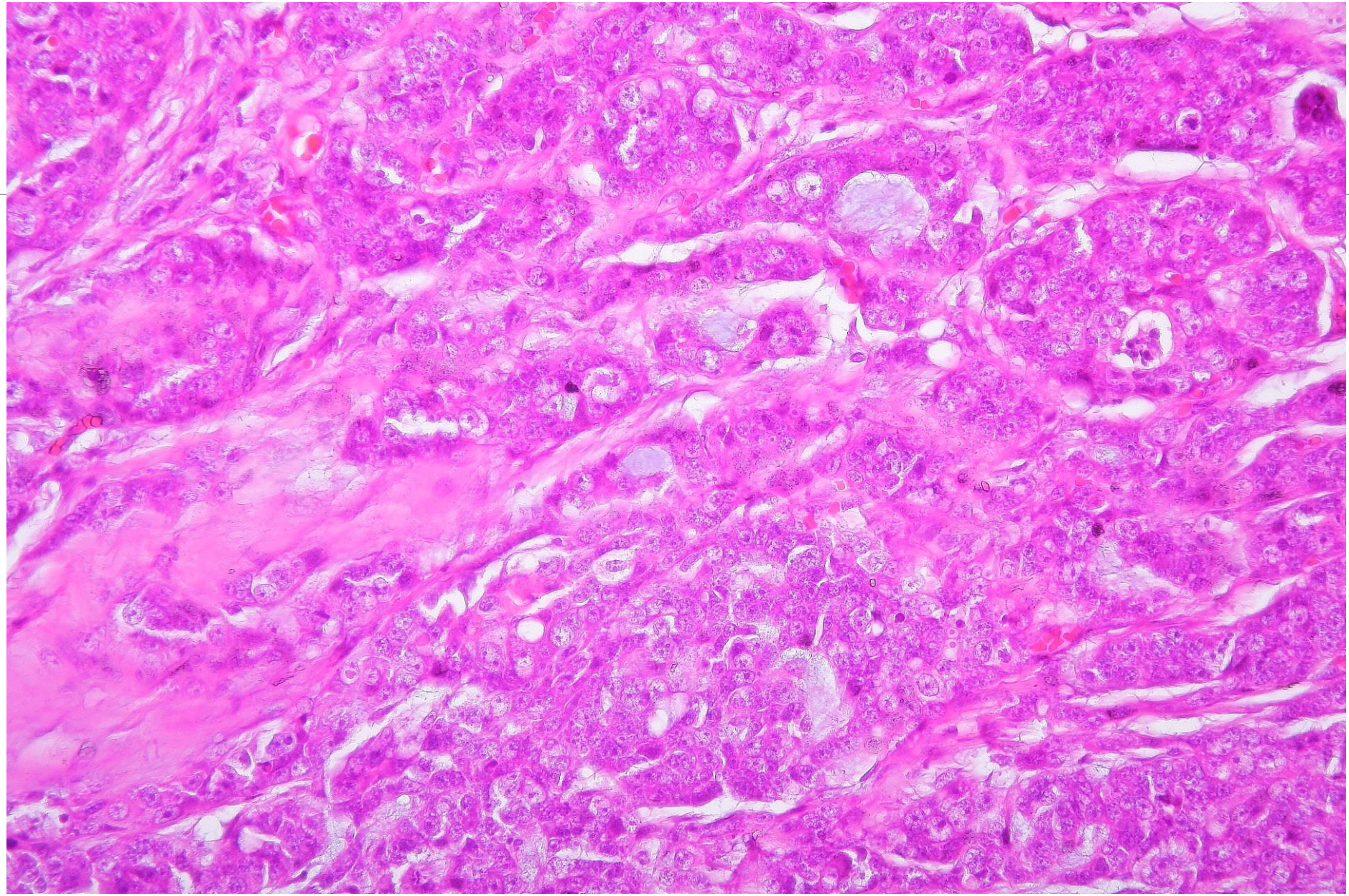
Cytologic findings

- Malignant epithelial cells
- Many microacinar arrangements
- Secretory activity
  - Eosinophilic material into the acinar structures

Diagnosis

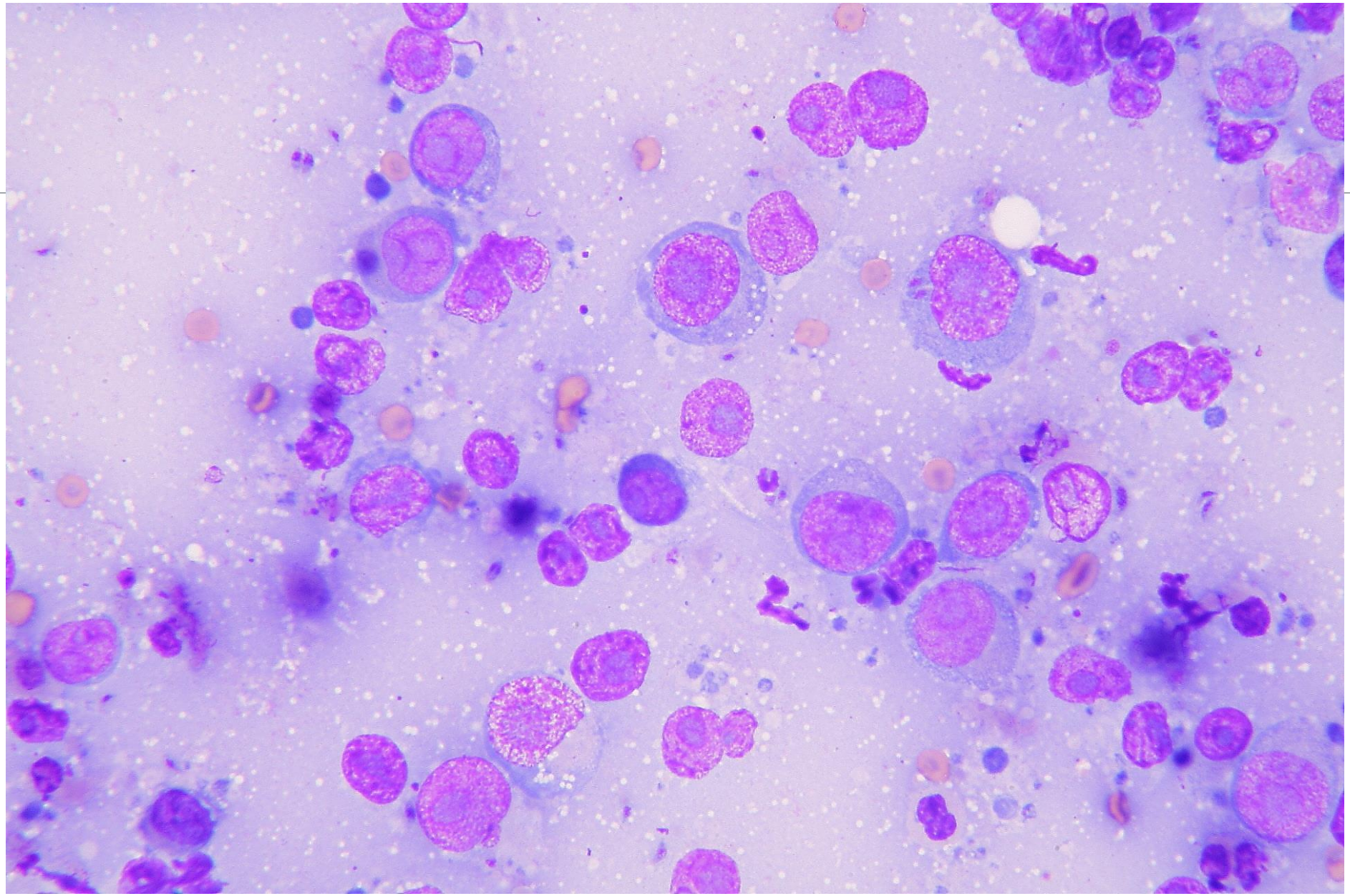
- Cytologic diagnosis:
- Adenocarcinoma of salivary glands

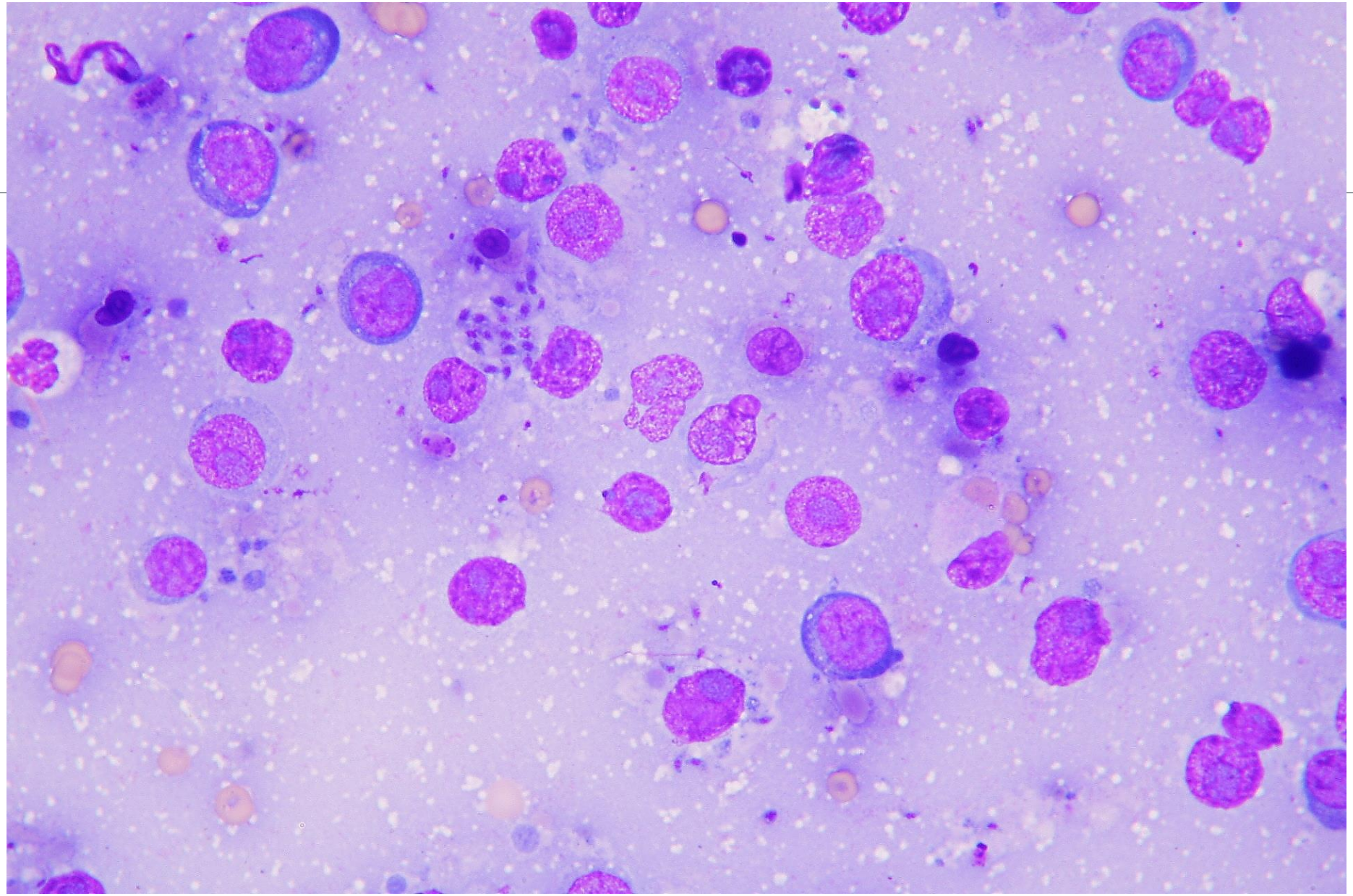
- Histologic diagnosis:
- Adenocarcinoma of salivary gland

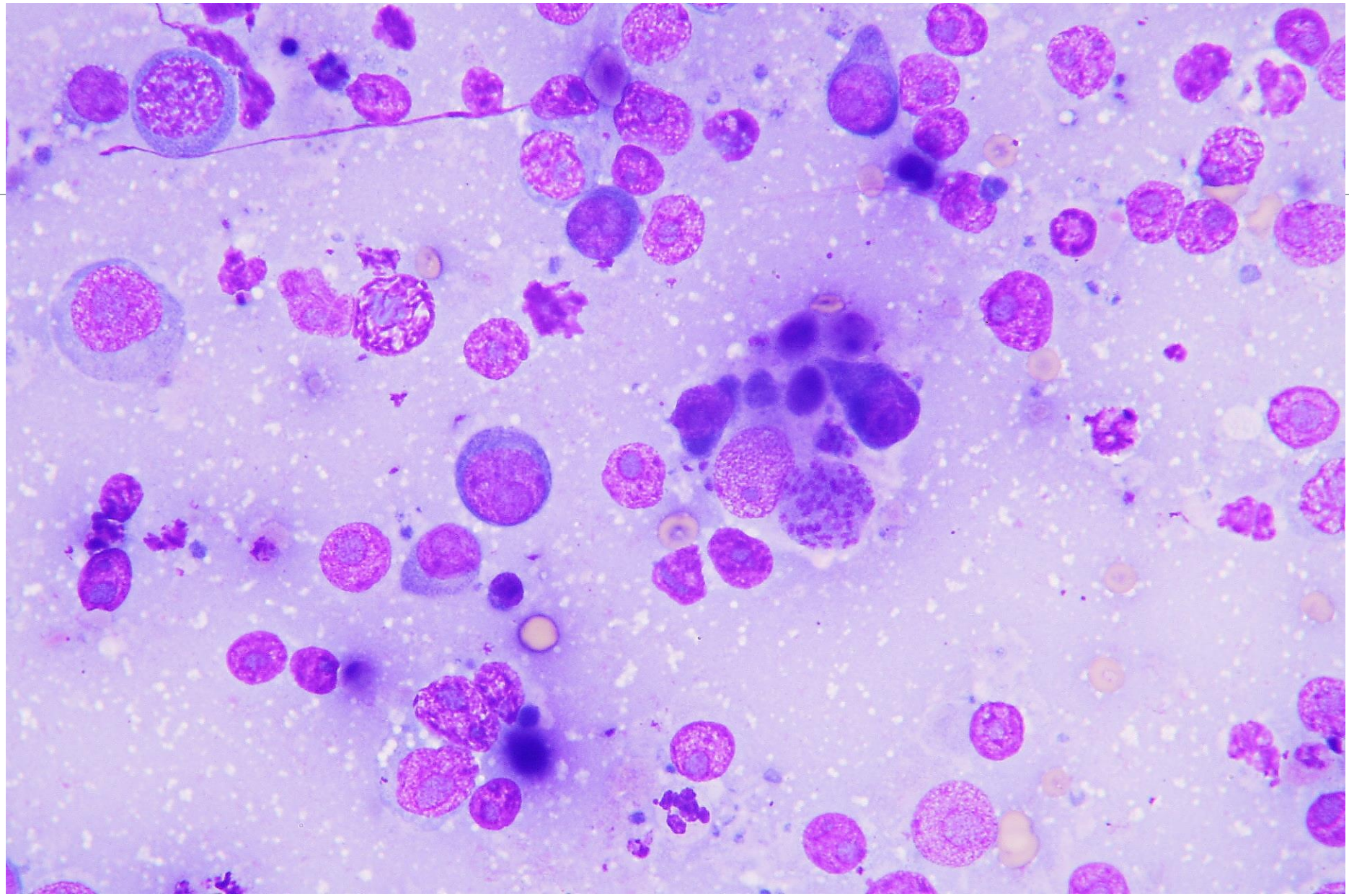


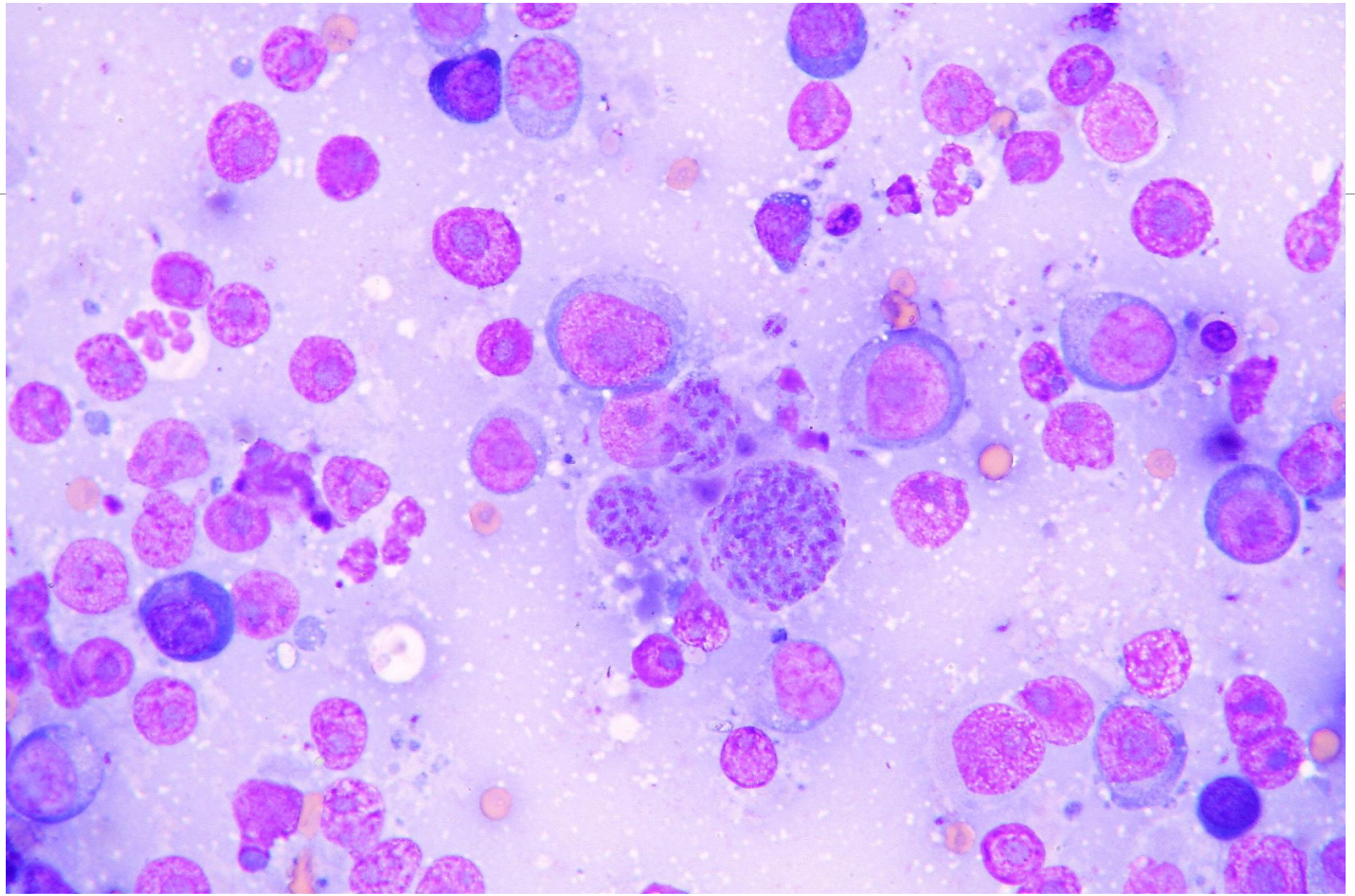
Case #3

- Cat, DSH, 8-years-old, male
- Generalized lymphomegaly
  - FIV negative
  - FeLV negative
  - FNCS of the lymphnode
  - MGG stain









Cytologic findings

- Large atypical immature lymphoid cells
  - Large size
  - Large amount of basophilic cytoplasm
  - Large nuclei
    - Clumped chromatin
    - Macronucleoli
- Elongated structures «banana-shaped»
  - Toxoplasma spp.
  - Neospora spp
- Macrophagic phagocytosis

Cytologic diagnosis

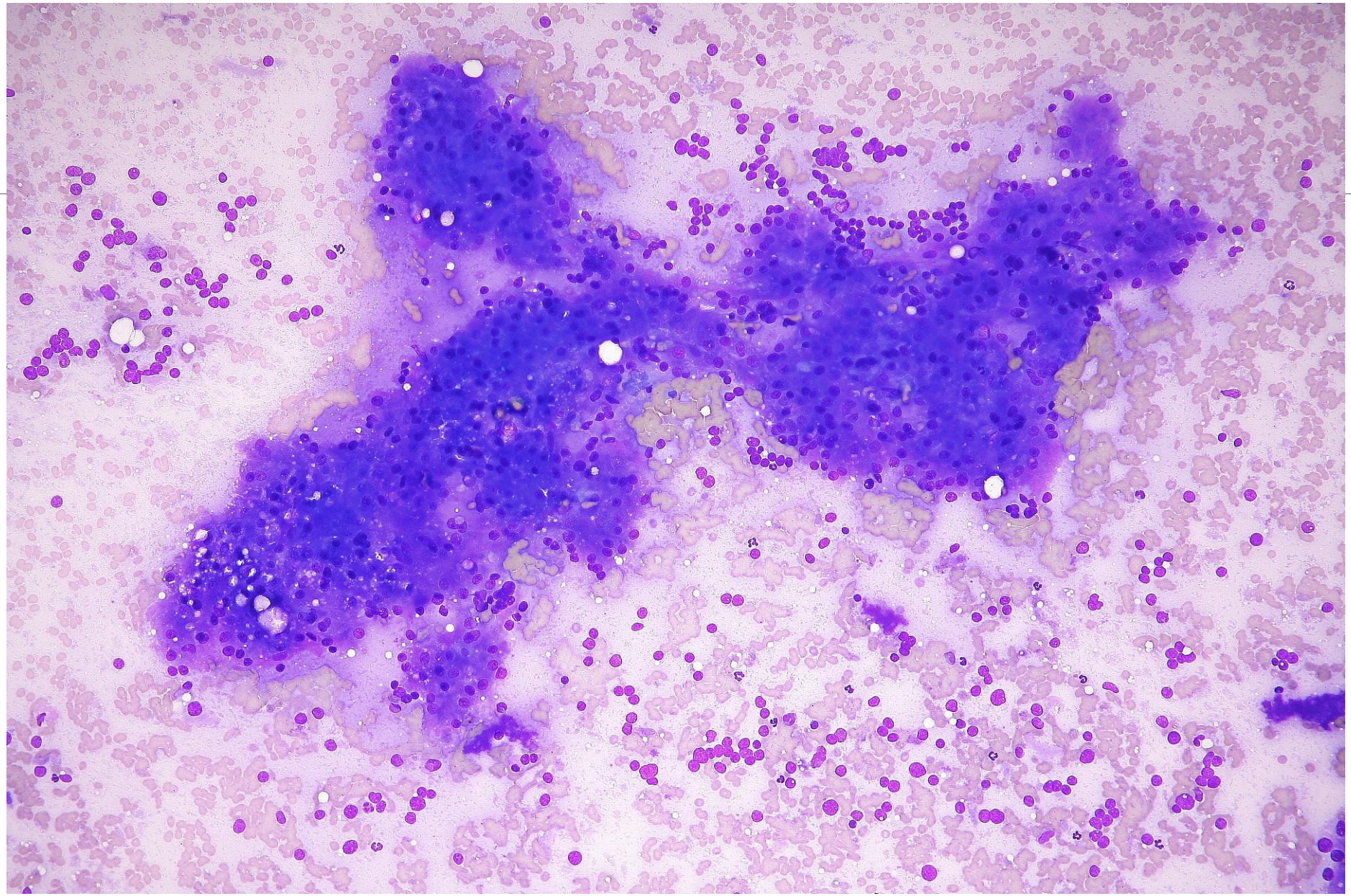
- Large cell lymphoma with Toxoplasma spp. infection
- DD: large cells lymphoma with Neospora spp. infection

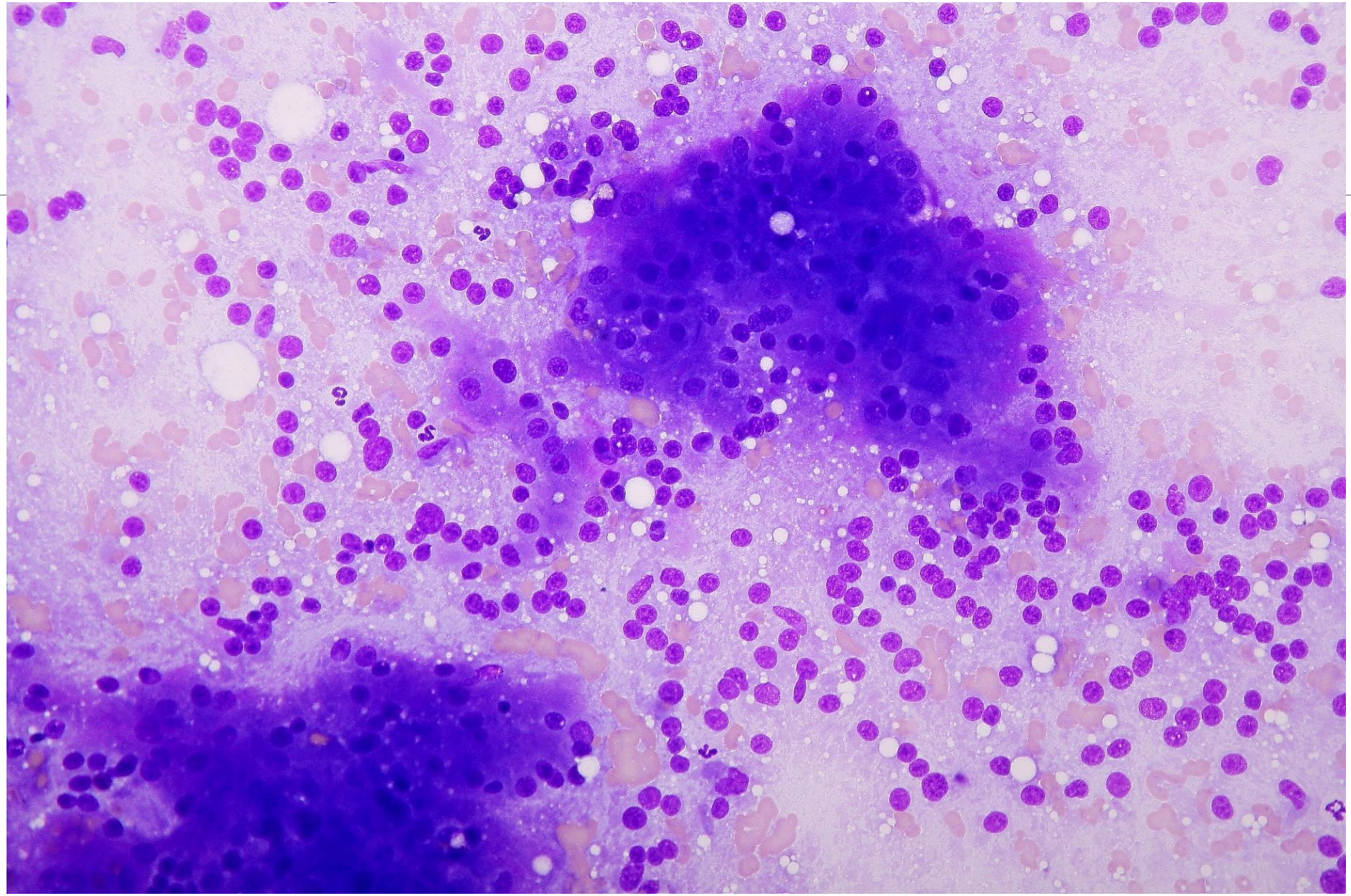
Follow-up

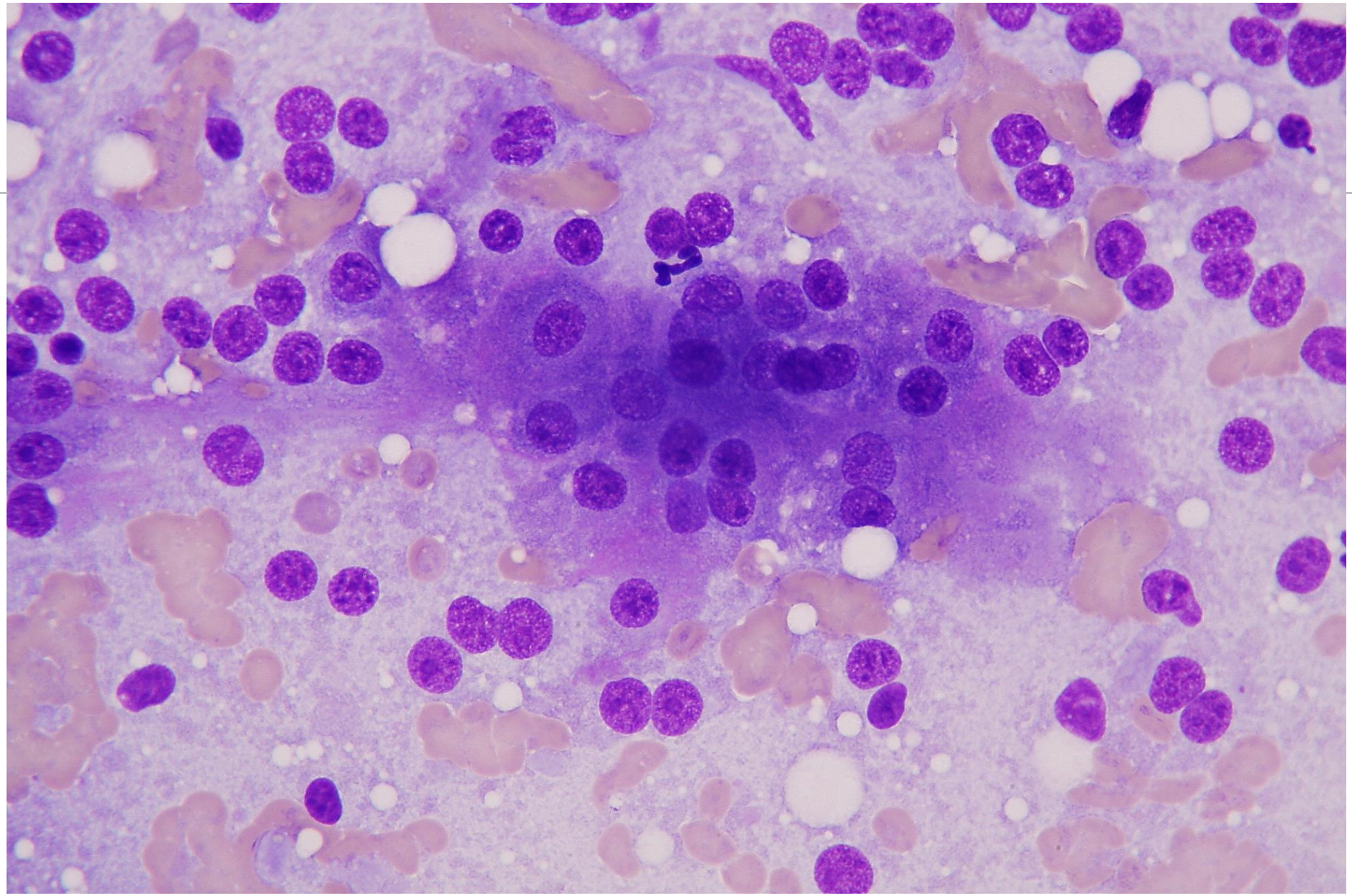
- IgG Toxoplasma: positive 1:1280
- No involvement of splancnic tissues other than lymphnodes
- Late splenic and hepatic enlargement

Case #4

- Dog, Cocker spaniel, 11-years-old, male
- Hepatic mass
  - Ultrasound-guided FNCS of the mass
  - MGG stain







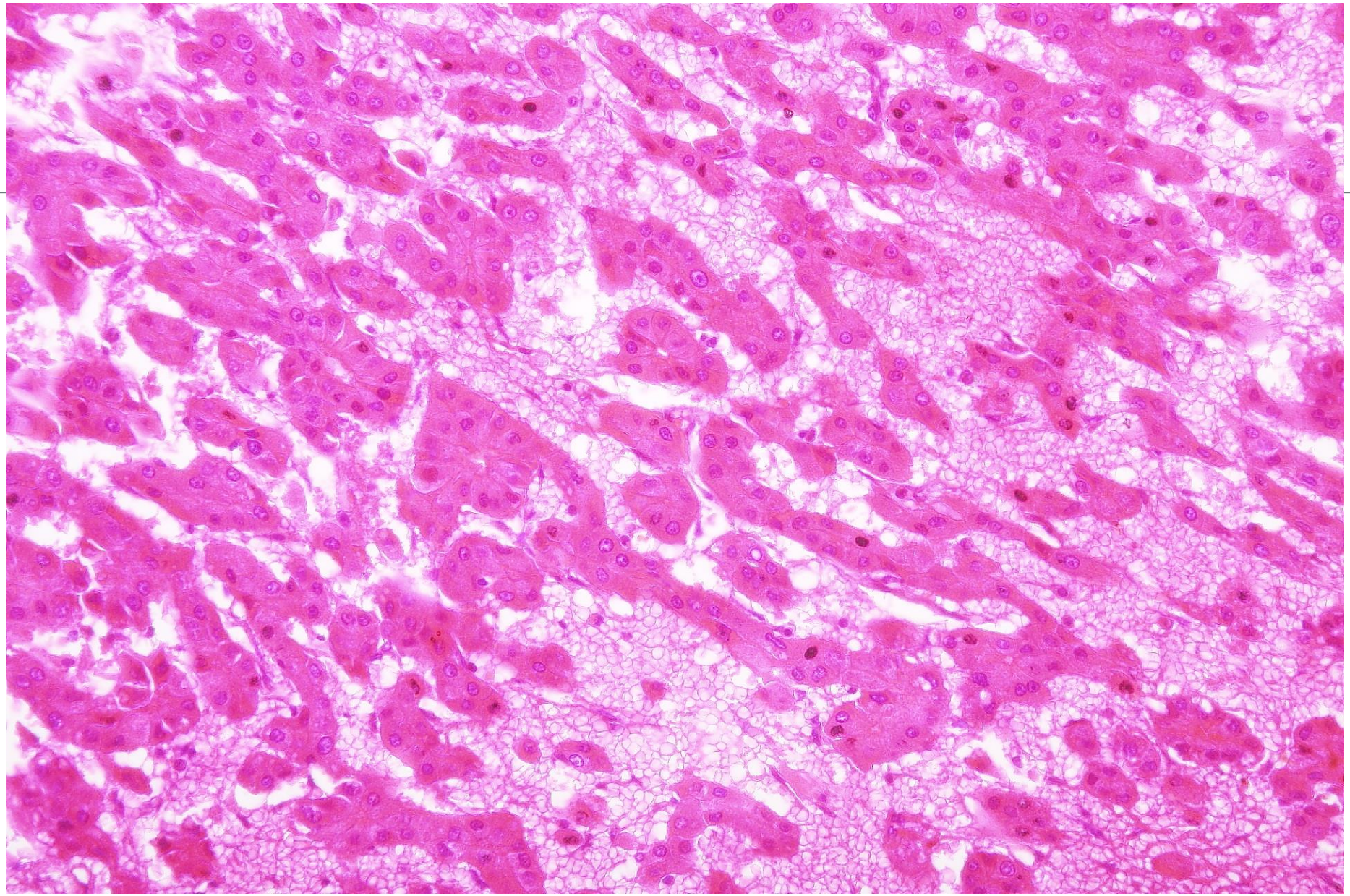
Cytologic findings

- Hepatocytes with little malignancy features
- Slight anysokaryosis
- Granular chromatin

- Many naked nuclei crowded around the cell clusters

Cytologic diagnosis

- Well-differentiated hepatocellular carcinoma
- Histologic diagnosis after mass excision:
  - Well-differentiated trabecular hepatocellular carcinoma



ORIGINAL RESEARCH

Retrospective study of cytologic features of well-differentiated hepatocellular carcinoma in dogs

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Vet Clin Pathol 0/0 (2012) 1–9

Table 2. Scores for 33 cytologic features evaluated in fine-needle aspirates of 15 hepatocellular carcinomas and 15 samples from non-neoplastic, non-nodular liver in dogs.

Cytologic Feature	Diagnosis	Score 0	1	2	3	*U**	*P*†
Proteinaceous debris	WD-HCC	3 (20%)	5 (33.3%)	6 (40%)	1 (6.7%)	54.5	**.01**
	Control	7 (46.7%)	8 (53.3)	0	0		
Blood in background	WD-HCC	0	4 (26.7%)	11 (73.3%)	0	107	.775
	Control	0	4 (26.7%)	10 (66.7%)	1 (6.7%)		
Bile casts	WD-HCC	12 (80%)	1 (6.7%)	2 (13.3%)	0	103	.543
	Control	13 (86.7%)	2 (13.3%)	0	0		
Necrosis	WD-HCC	10 (66.7%)	4 (26.7%)	1 (6.7%)	0	75	**.016**
	Control	15 (100%)	0	0	0		
Cellularity	WD-HCC	0	0	5 (33.3%)	10 (66.7%)	110	.9
	Control	0	1 (6.7%)	4 (26.7%)	10 (66.7%)		
Trabecular arrangements	WD-HCC	0	5 (33.3%)	6 (40%)	4 (26.7%)	111.5	.964
	Control	0	3 (20%)	10 (66.7%)	2 (13.3%)		
Rows of cuboidal cells	WD-HCC	3 (20%)	5 (33.3%)	6 (40%)	1 (6.7%)	82.5	.189
	Control	5 (33.3%)	7 (46.7%)	2 (13.3%)	1 (6.7%)		
Acinar arrangements	WD-HCC	11 (73.3%)	3 (20%)	1 (6.7%)	0	82.5	.035
	Control	15 (100%)	0	0	0		
Palisading arrangements	WD-HCC	7 (46.7%)	7 (46.7%)	1 (6.7%)	0	52.5	**.001**
	Control	15 (100%)	0	0	0		
Dissociation	WD-HCC	0	6 (40%)	9 (60%)	0	16.5	**.000**
	Control	12 (80%)	2 (13.3%)	1 (6.7%)	0		
	Control	15 (100%)	0	0	0		
Fibrosis	WD-HCC	8 (53.3%)	5 (33.3%)	1 (6.7%)	1 (6.7%)	79.5	.098
	Control	12 (80%)	3 (20%)	0	0		
Capillaries	WD-HCC	10 (66.7%)	3 (20%)	1 (6.7%)	1 (6.7%)	75	**.016**
	Control	15 (100%)	0	0	0		
Cytoplasmic basophilia	WD-HCC	10 (66.7%)	5 (33.3%)	0	0	90	.277
	Control	7 (46.7%)	8 (53.3%)	0	0		
Lipofuscin	WD-HCC	7 (46.7%)	8 (53.3%)	0	0	43	**.002**
	Control	2 (13.3%)	5 (33.3%)	7 (46.7%)	1 (6.7%)		
Lipidosis	WD-HCC	8 (53.3%)	5 (33.3%)	2 (13.3%)	0	84	.155
	Control	12 (80%)	2 (13.3%)	0	1 (6.7)		
Vacuolar change (glycogen type)	WD-HCC	8 (53.3%)	5 (33.3%)	2 (13.3%)	0	67.5	.047
	Control	3 (20%)	7 (46.7%)	3 (20%)	2 (13.3%)		
Cytoplasmic inclusions	WD-HCC	12 (80%)	1 (6.7%)	2 (13.3%)	0	90	.073
	Control	15 (100%)	0	0	0		
Anisocytosis	WD-HCC	5 (33.3%)	7 (46.7%)	3 (20%)	0	67.5	.038
	Control	10 (66.7%)	5 (33.3%)	0	0		
Increased N:C ratio	WD-HCC	3 (20%)	2 (13.3%)	9 (60%)	1 (6.7%)	27.5	**.000**
	Control	13 (86.7%)	2 (13.3%)	0	0		
Anisokaryosis	WD-HCC	5 (33.3%)	10 (66.7%)	0	0	45	**.004**
	Control	14 (93.3%)	1 (6.7%)	0	0		
Chromatin pattern	WD-HCC	0	12 (80%)	3 (20%)	0	90	.073
	Control	0	15 (100%)	0	0		
Irregular nuclear shapes	WD-HCC	11 (73.3%)	4 (26.7%)	0	0	90	.148
	Control	14 (93.3%)	1 (6.7%)	0	0		
Nuclear pseudoinclusions	WD-HCC	12 (80%)	3 (20%)	0	0	105	.671
	Control	11 (73.3%)	4 (26.7%)	0	0		
Nuclear eccentricity	WD-HCC	7 (46.7%)	8 (53.3%)	0	0	75	.126
	Control	2 (13.3%)	13 (86.7%)	0	0		
Multiple nuclei (3 or more)	WD-HCC	6 (40%)	7 (46.7%)	2 (13.3%)	0	45	**.000**
	Control	15 (100%)	0	0	0		
Mitotic figures	WD-HCC	13 (86.7%)	2 (13.3%)	0	0	97.5	.15
	Control	15 (100%)	0	0	0		

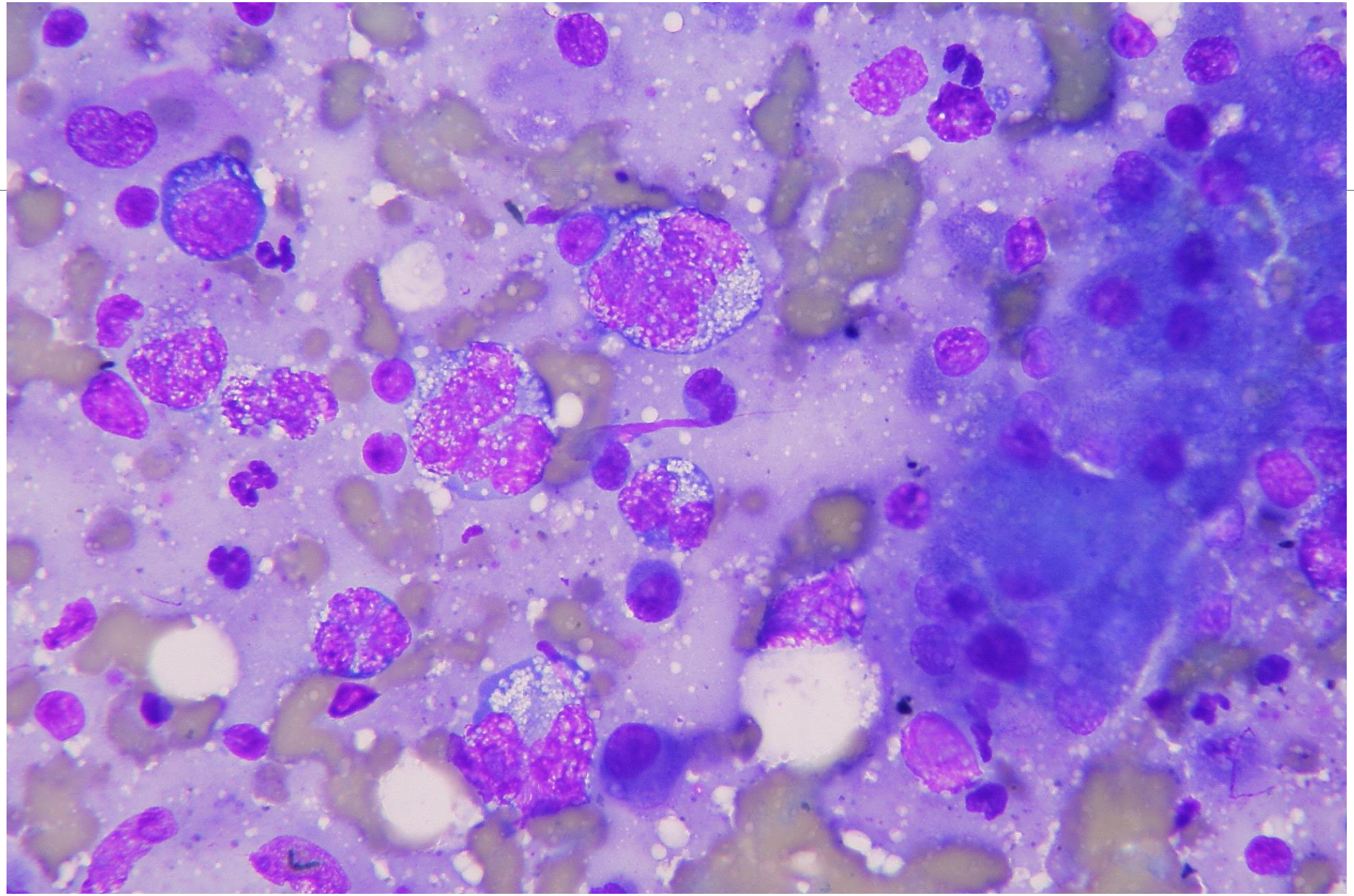
(continued)

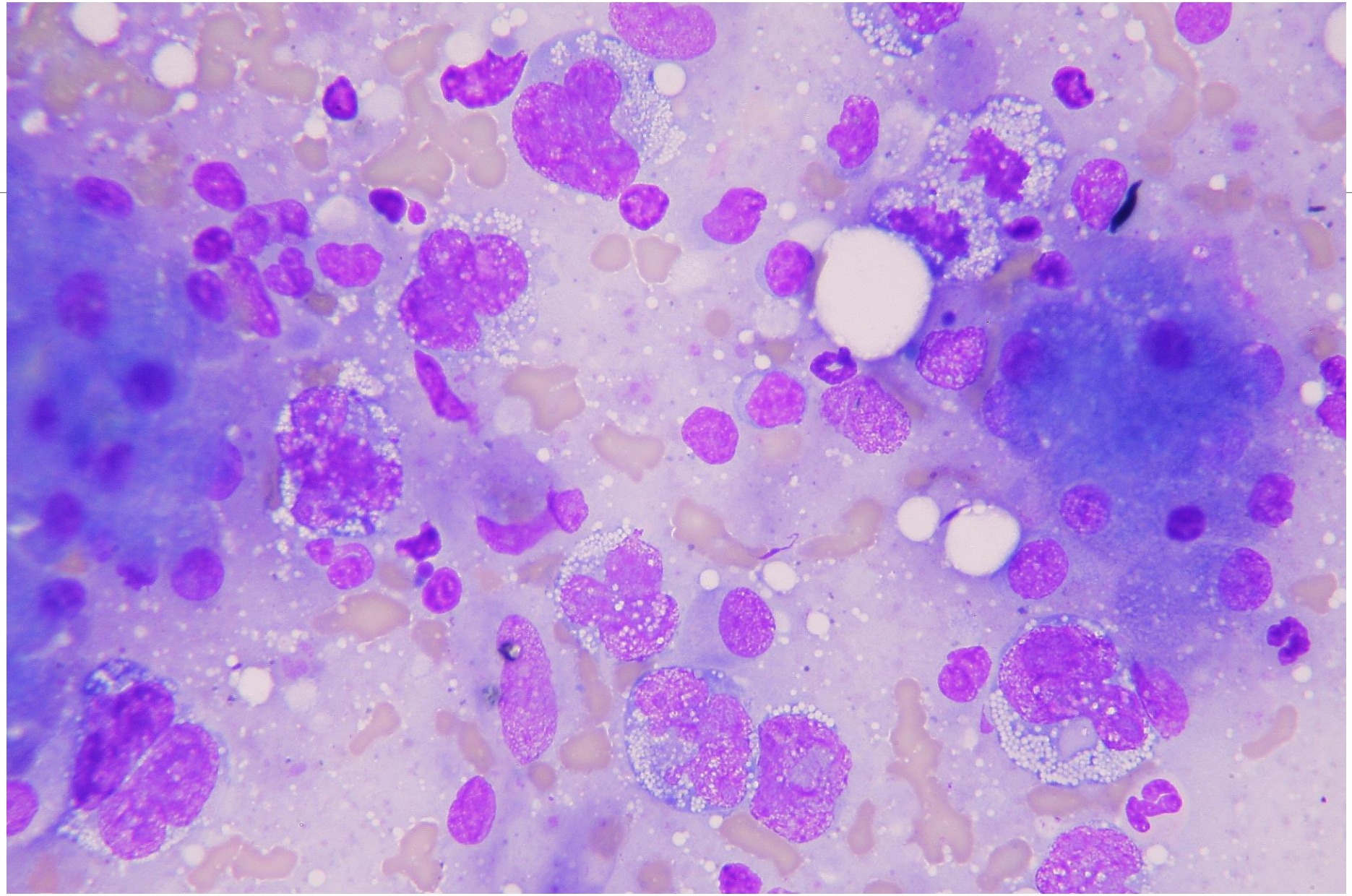
Table 2 (continued)

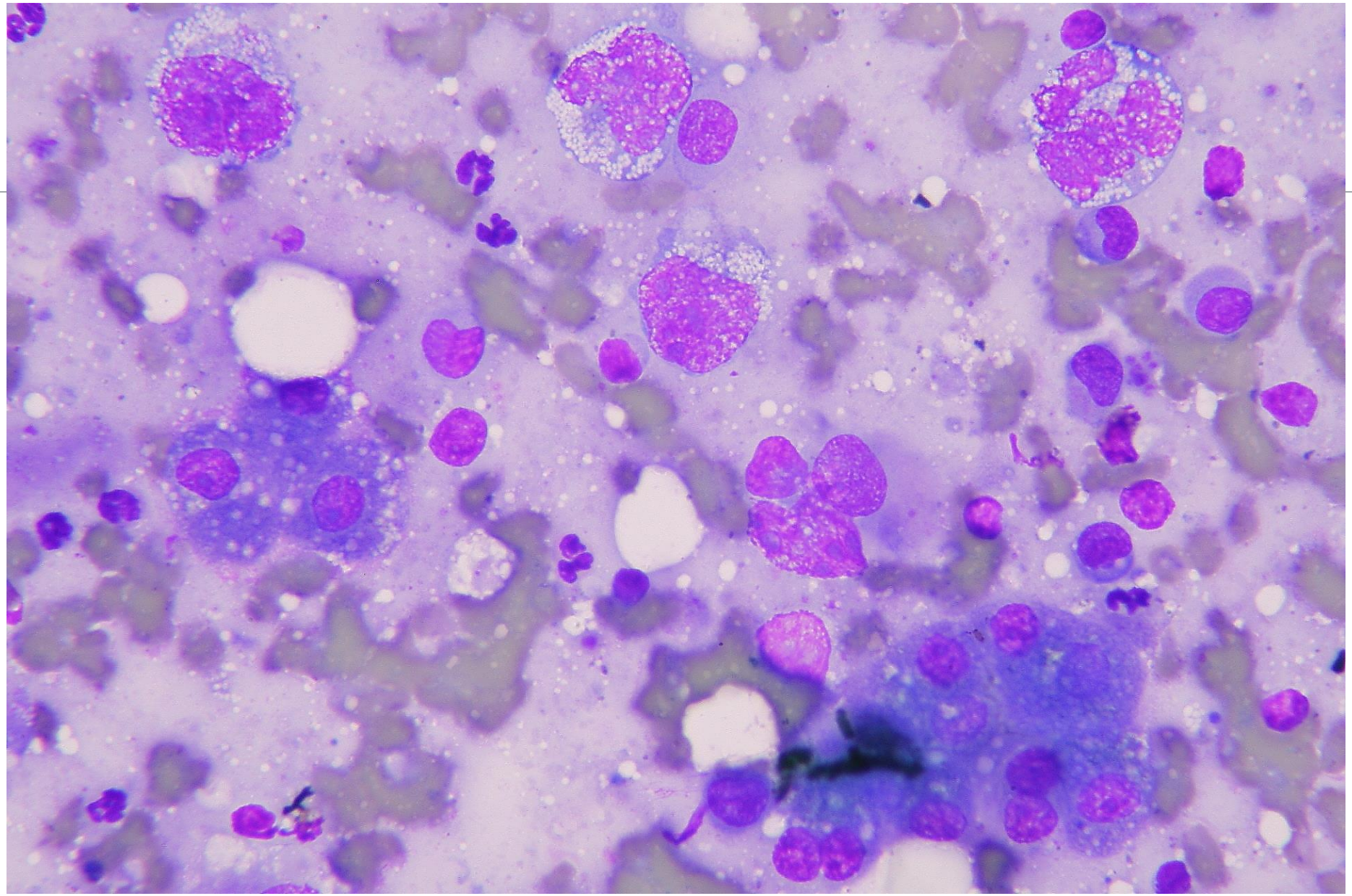
Cytologic Feature	Diagnosis	Score 0	1	2	3	*U**	*P*†
Nucleoli	WD-HCC	7 (46.7%)	2 (13.3%)	6 (40%)	0	66	.024
	Control	12 (80%)	3 (20%)	0	0		
Naked nuclei	WD-HCC	0	4 (26.7%)	5 (33.3%)	6 (40%)	2	**.000**
	Control	14 (93.3%)	1 (6.7%)	0	0		
Neutrophilic inflammation	WD-HCC	7 (46.7%)	8 (53.3%)	0	0	55	**.008**
	Control	2 (13.3%)	8 (53.3%)	5 (33.3%)	0		
Macrophagic inflammation	WD-HCC	3 (20%)	12 (80%)	0	0	96	.406
	Control	6 (40%)	8 (53.3%)	1 (6.7%)	0		
Lymphoplasmacytic inflammation	WD-HCC	10 (66.7%)	4 (26.7%)	1 (6.7%)	0	84.5	.19
	Control	6 (40%)	8 (53.3%)	1 (6.7%)	0		
Eosinophilic inflammation	WD-HCC	13 (86.7%)	2 (13.3%)	0	0	105	.55
	Control	14 (93.3%)	1 (6.7%)	0	0		
Mast cells	WD-HCC	11 (73.3%)	4 (26.7%)	0	0	60	**.017**
	Control	15 (100%)	0	0	0		

Case #5

- Dog, mongrel, 9-years-old
- Liver enlargement
  - Ultrasound-guided FNCS of the mass
  - MGG stain





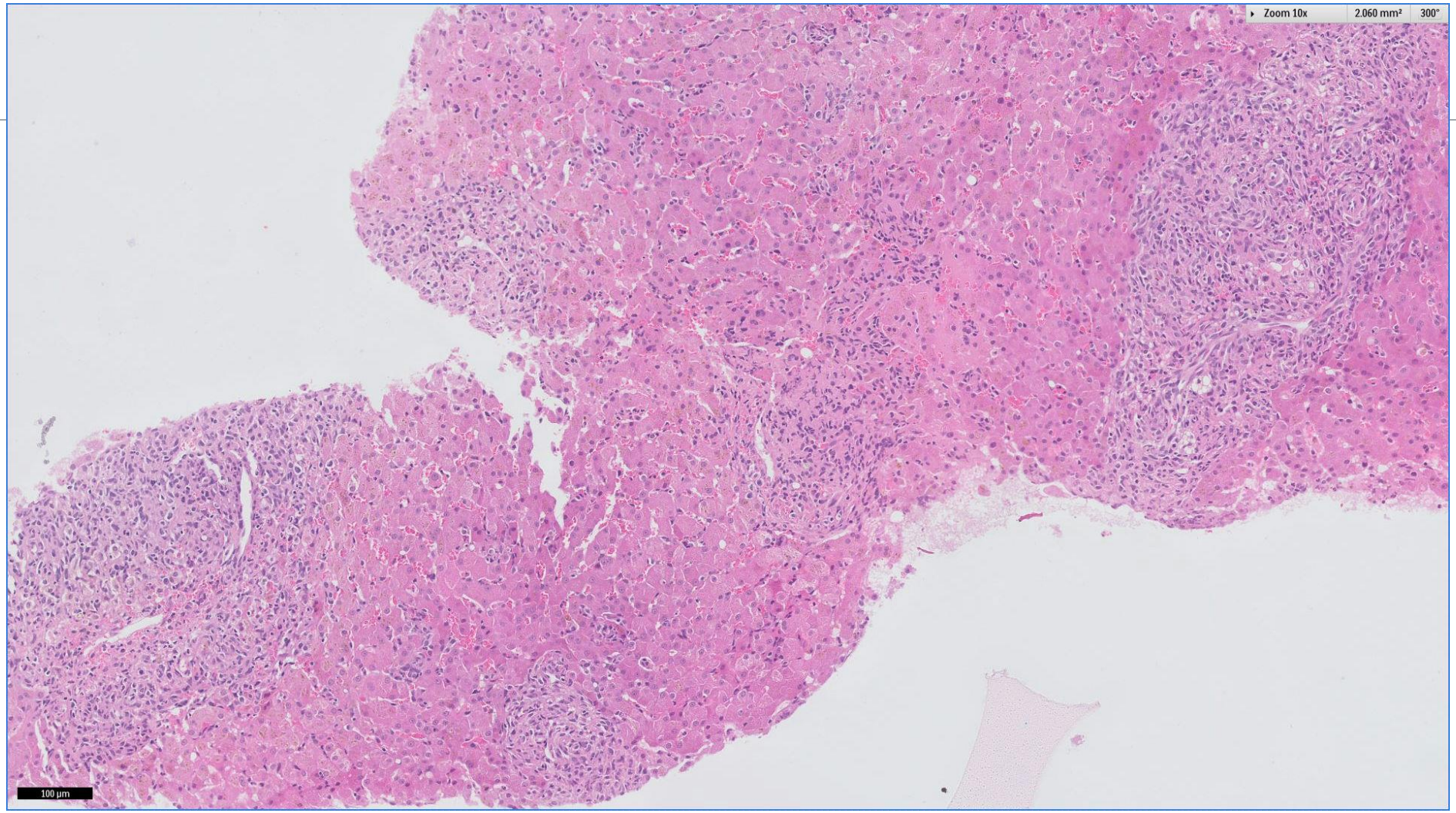


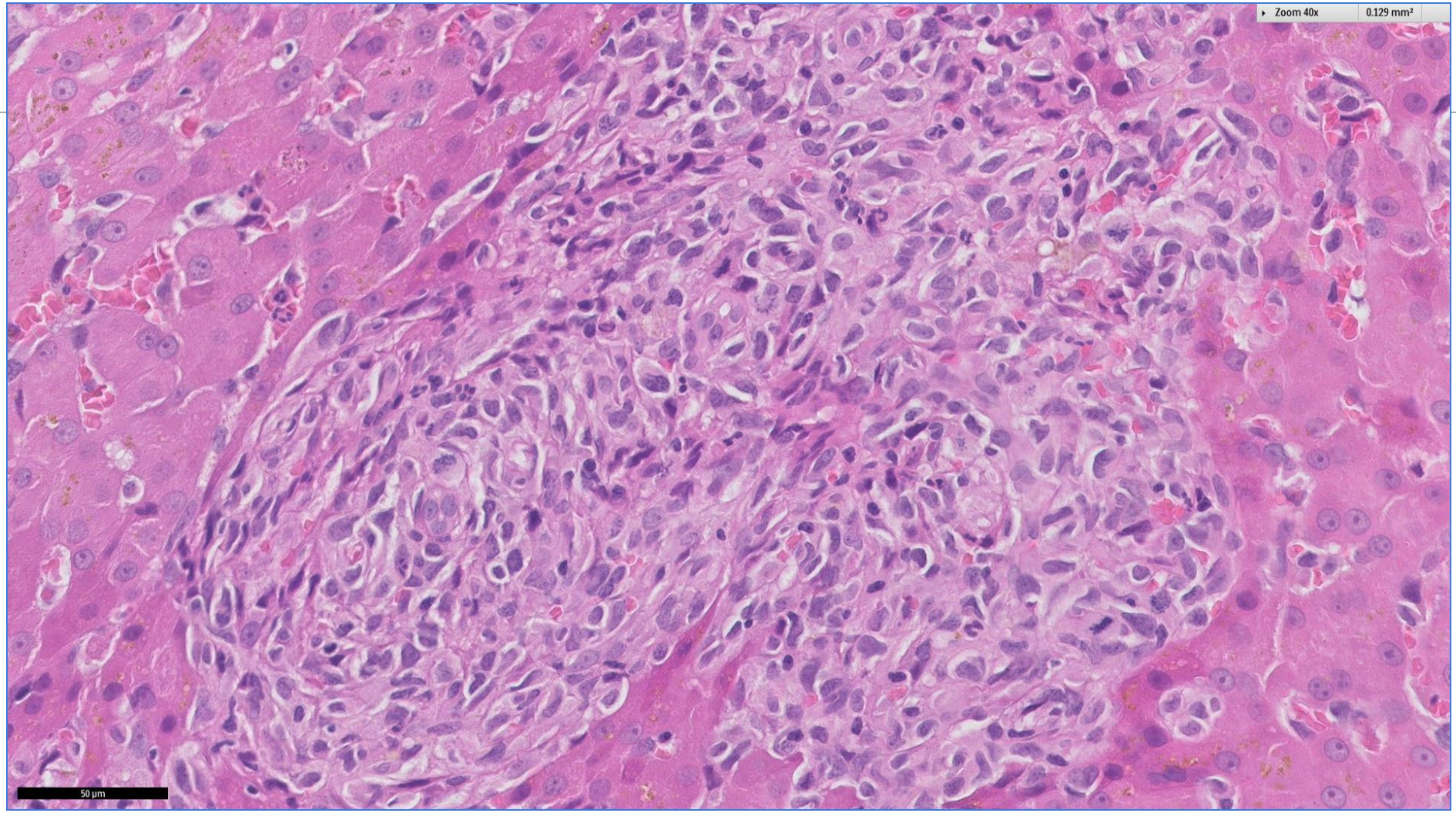
Cytologic findings

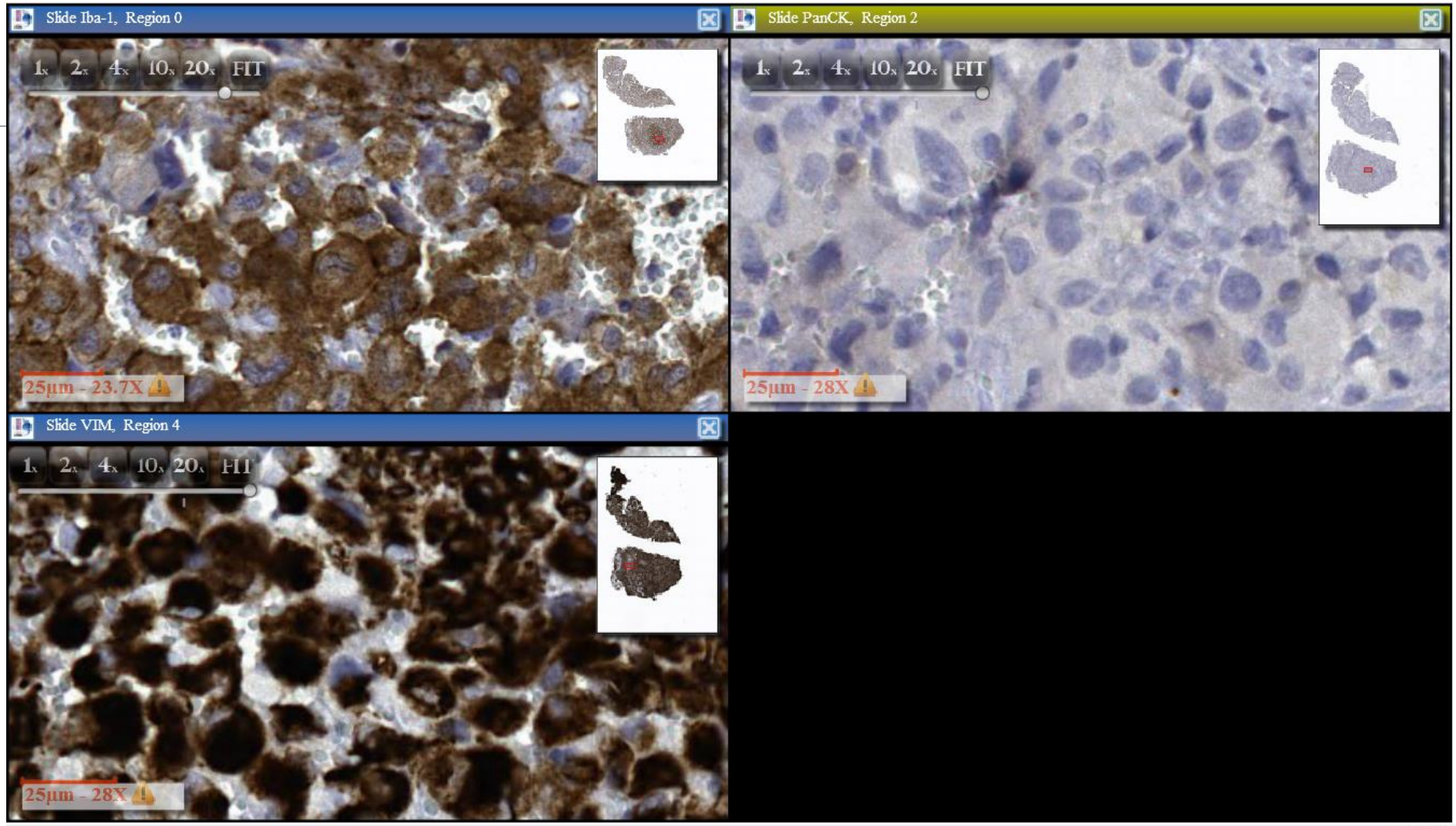
- Large round atypical cells
  - Basophilic cytoplasm
    - Microvacuoles
  - Large nucleus
    - Irregularly lobulated shape
    - Multiple nuclei
    - Clumped chromatin
    - Macronucleoli
- Biliary casts among hepatocytes (cholestasis)
- Slight reversible non specific hepatic damage

Cytologic diagnosis

- Round cell malignant neoplasm, histiocytic origin, with liver involvement
- Histologic diagnosis:
  - Malignant histiocytosis, with hepatic, splenic and lymphnodal involvement

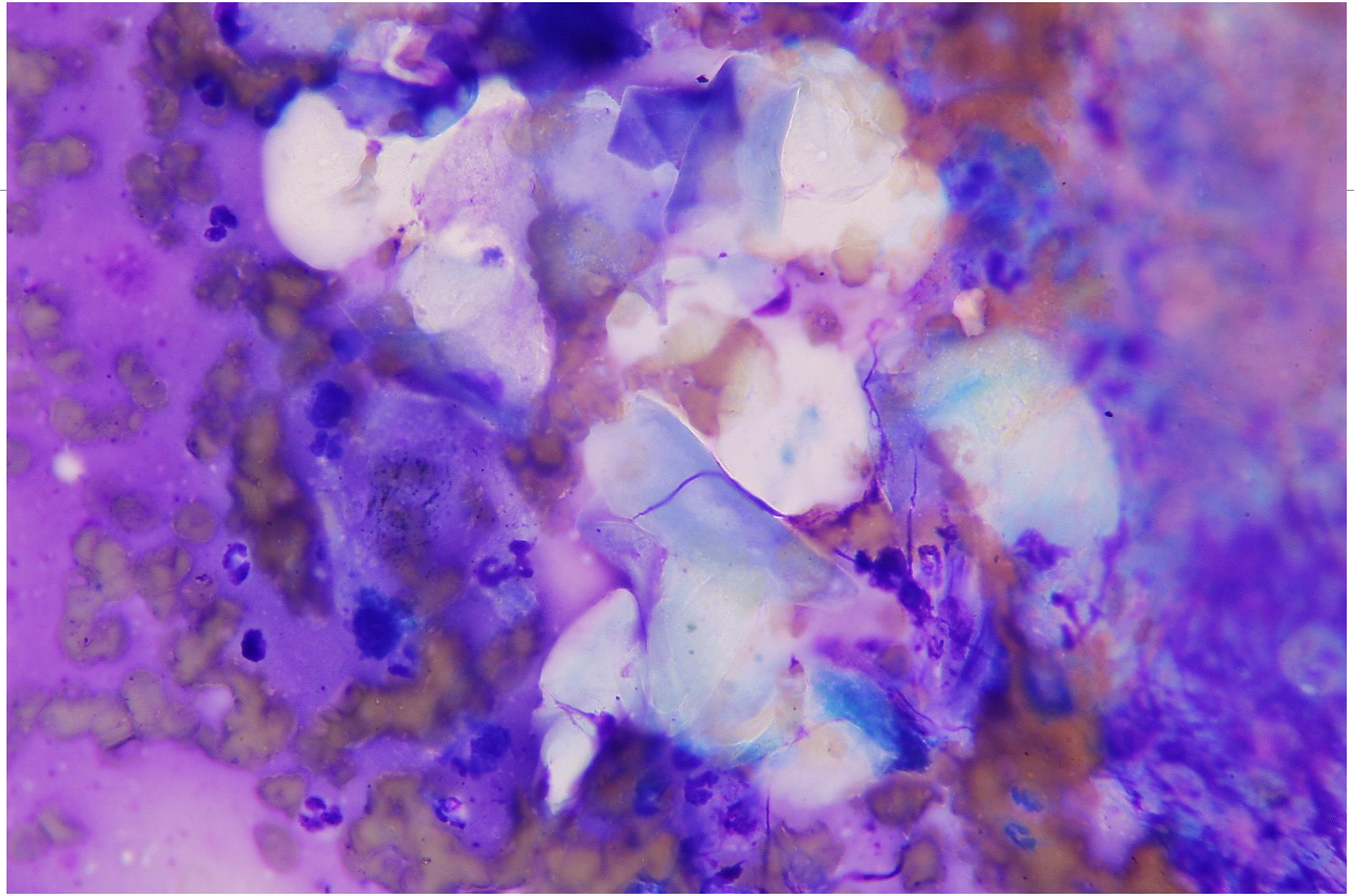

Zoom 10x
2.060 mm²
300°
100 µm

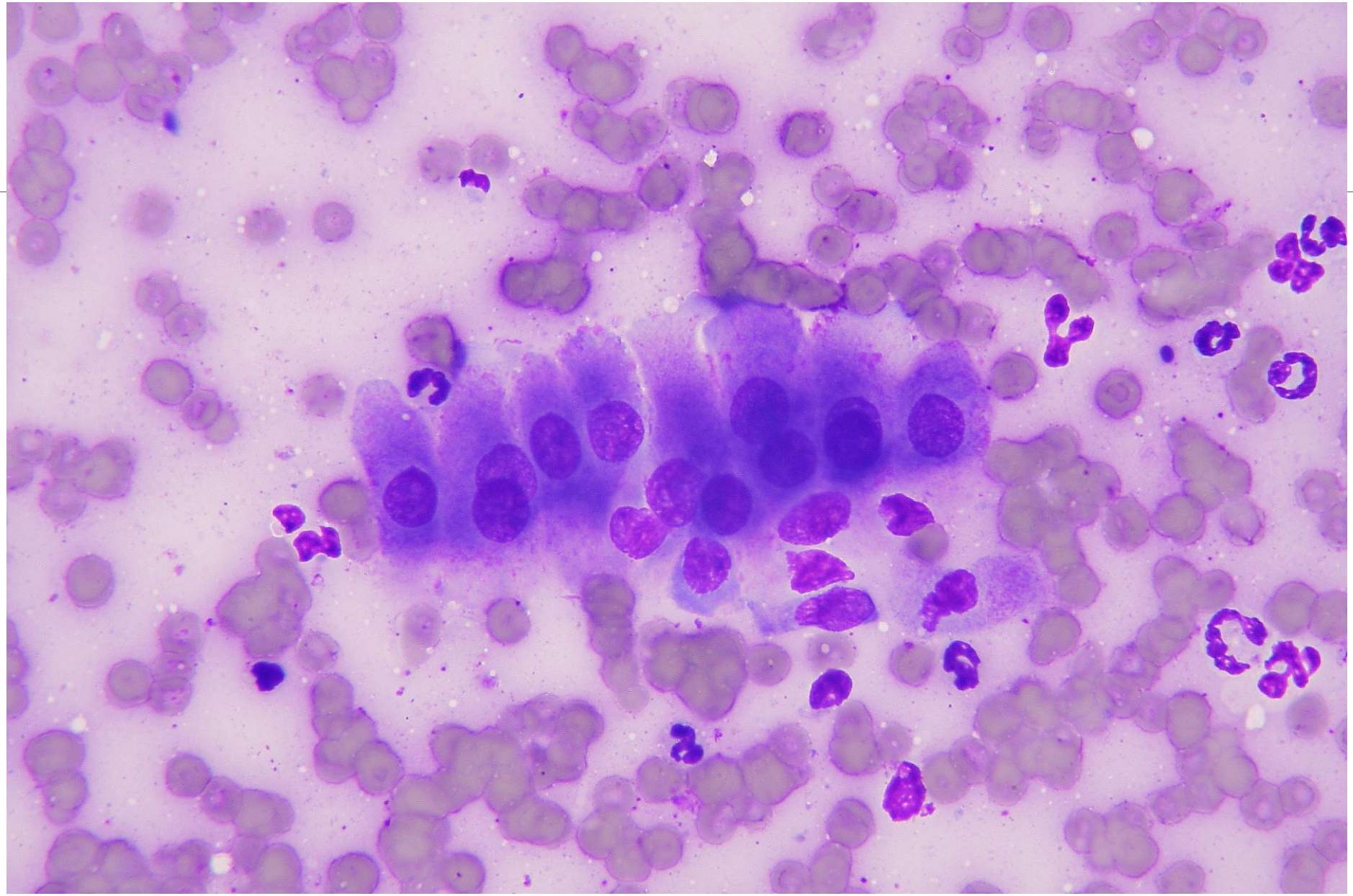

Zoom 40x
0.129 mm²
50 µm

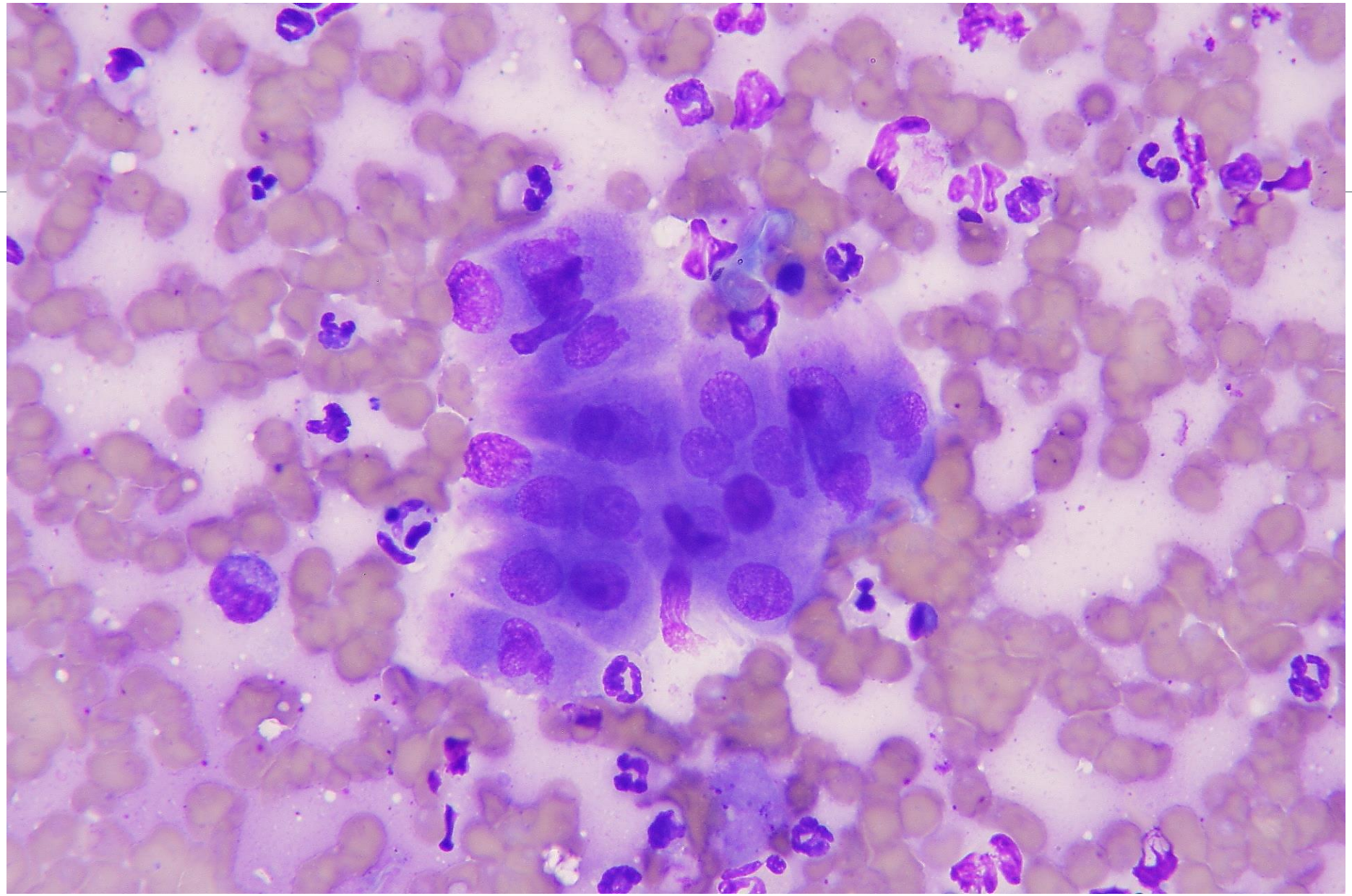

Slide Iba-1, Region 0
1x 2x 4x 10x 20x FIT
25µm - 23.7X
Slide PanCK, Region 2
1x 2x 4x 10x 20x FIT
25µm - 28X
Slide VIM, Region 4
1x 2x 4x 10x 20x FIT
25µm - 28X

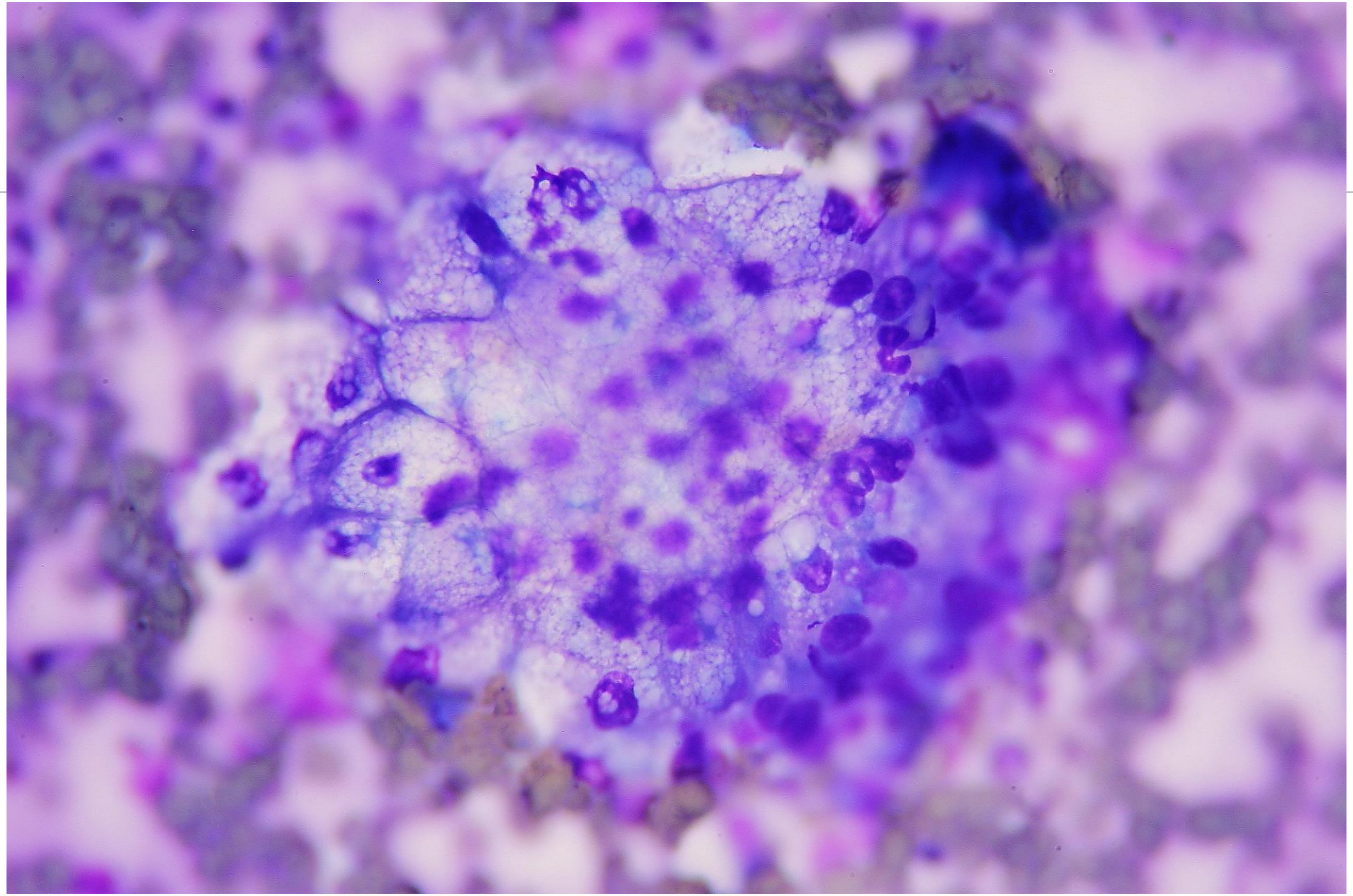
Case #6

- Dog, Dalmatian, 7-years-old
- Nodule on the carpus
- FNCS of the mass
- MGG stain









Cytologic findings

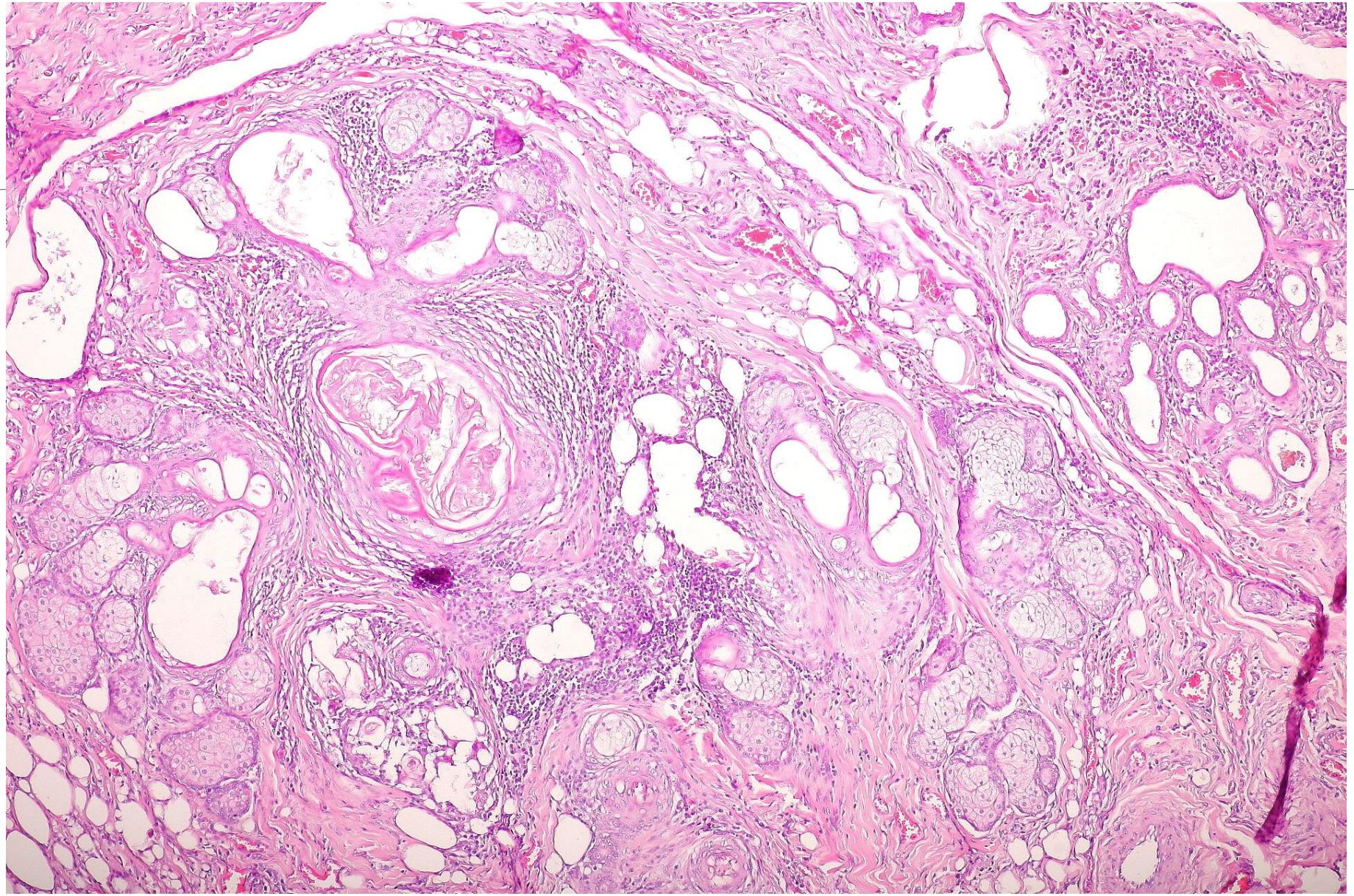
- Epithelial cells of many origin:
  - Squamous anucleated cells (keratin)
  - Apocrine cells
    - Cuboid to columnar cell
    - Palisade arrangements
  - Sebaceous cells
    - Cytoplasm filled with microglobules of lipidic (sebaceous) origin
    - Tridimensional clusters
- Inflammatory cells on the background

Cytologic diagnosis

- Benign epithelial proliferation with secundary inflammation, probably adnexial hamartoma

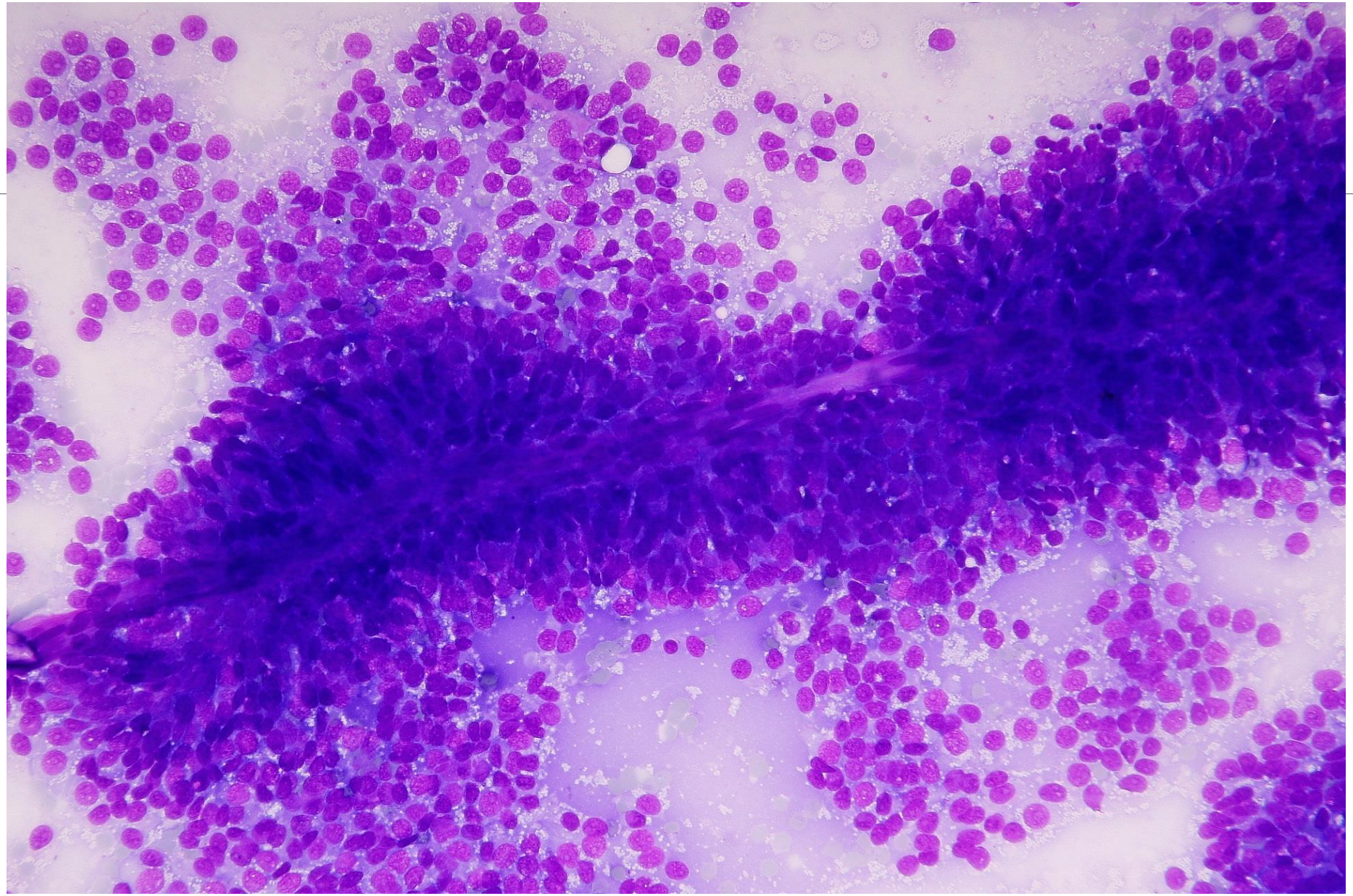
- DD:
- Benign apocrine tumor

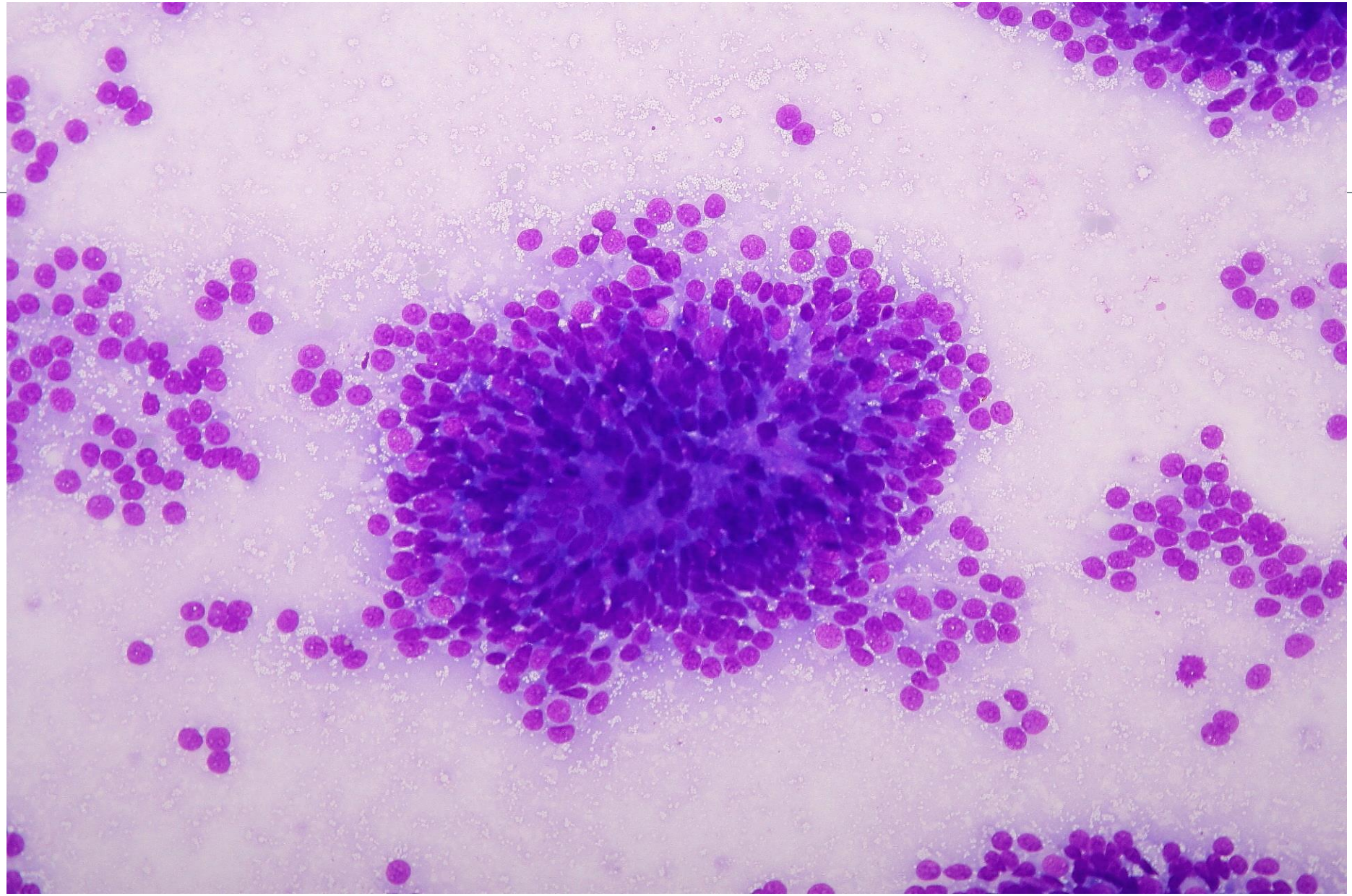
- Histologic diagnosis
- Adnexial hamartoma

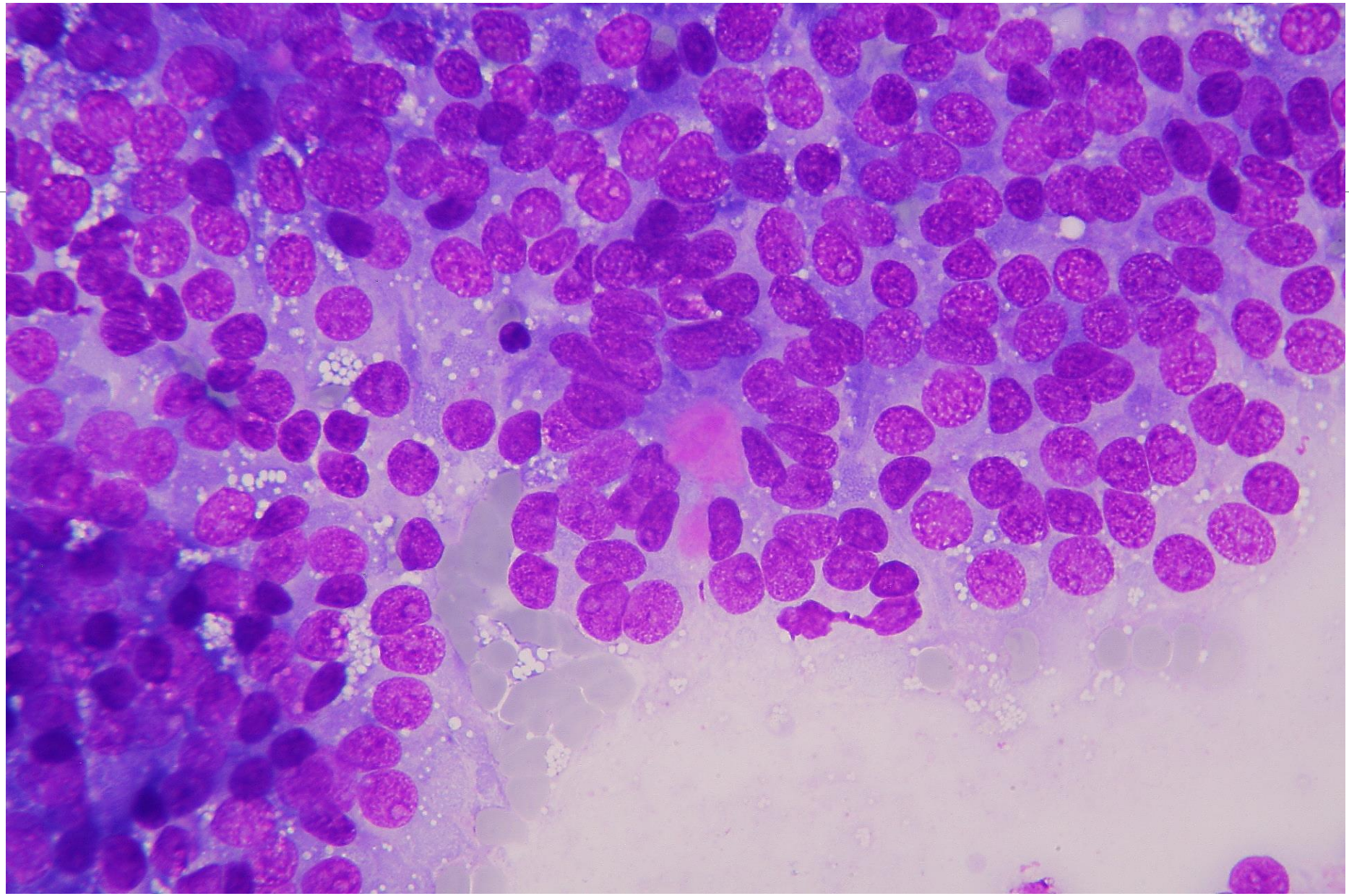


Case #7

- Dog, Chow-Chow, 12 years-old, female
- Mass in abdomen
  - Ultrasound-guided FNCS of the mass
  - MGG stain







Cytologic findings

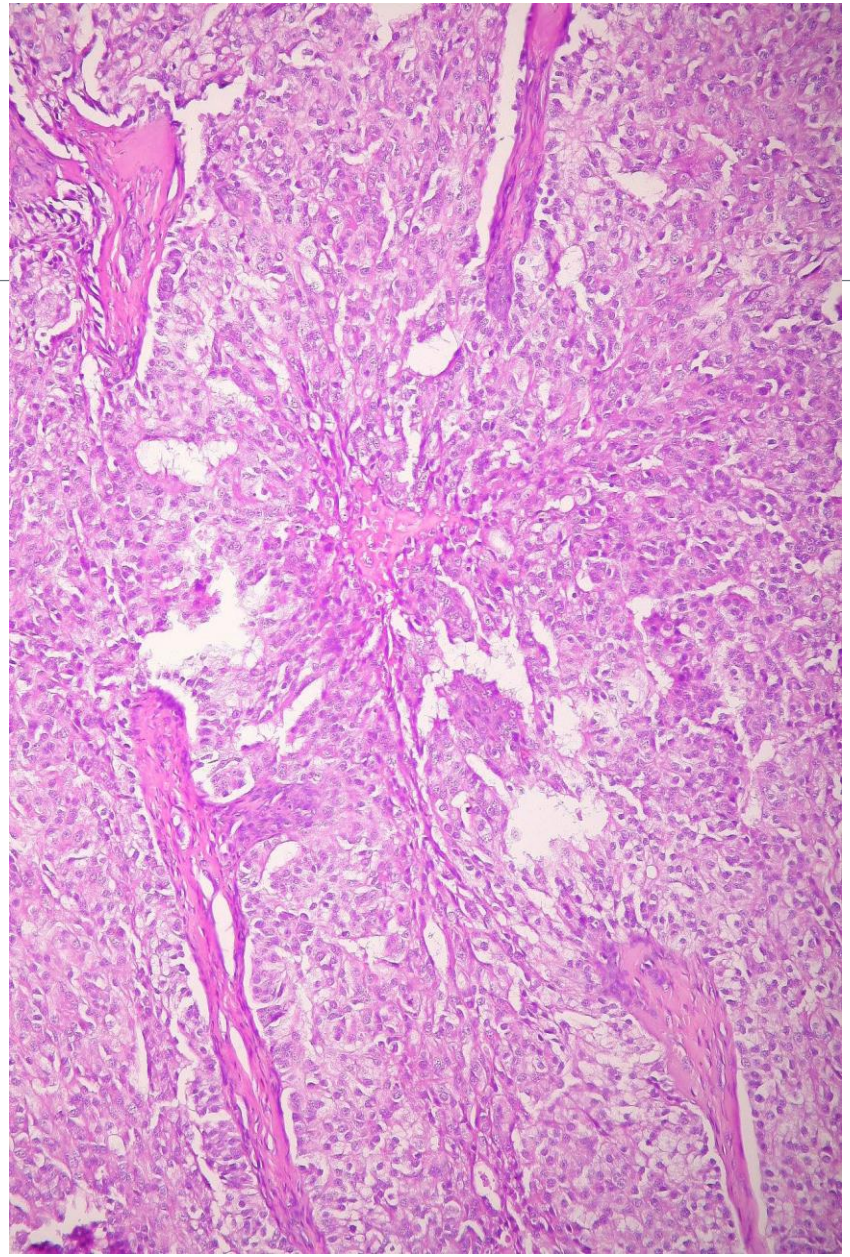
- Many «epithelial» cells
  - Indistinct cytoplasm
    - Microvacuoles
  - Round to ovoid nucleus
    - Granular chromatin
- Large sheets of cells
  - Perivascular arrangement
  - «Microacinar» arrangement suggestive of the so called «Call-Exner bodies»

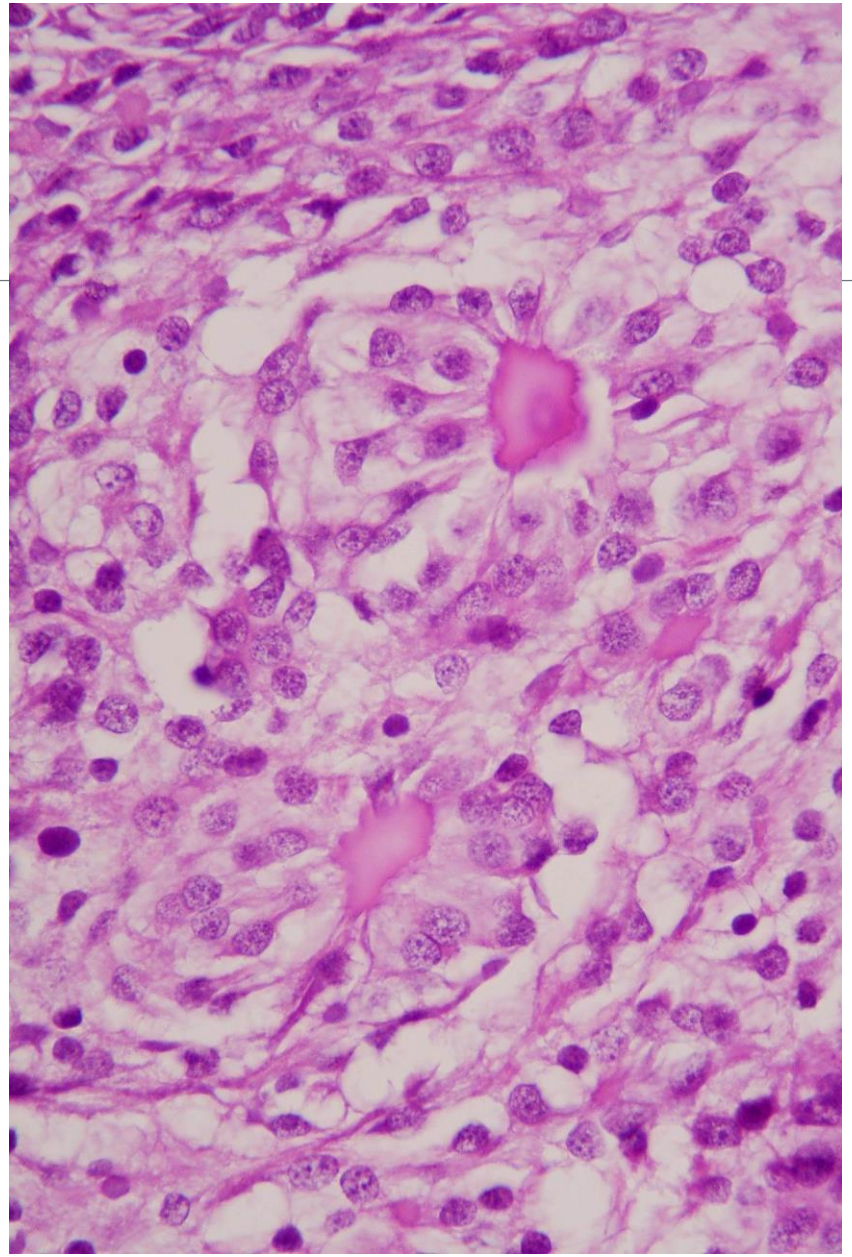
Cytologic diagnosis

- Neoplasm of gonadostromal origin, suggestive of granulosa cell tumor of ovary

Histologic diagnosis:

Granulosa cell tumor





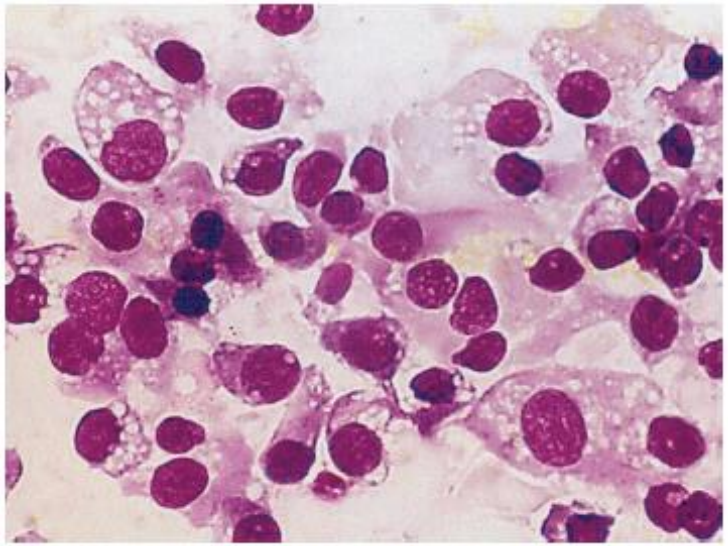


FIG 3. Granulosa cell tumour (case 9). A monolayer of moderately atypical and loosely cohesive granulosa cells, with a variable amount of eosinophilic and vacuolated cytoplasm, is present. Hemacolor. ×1000

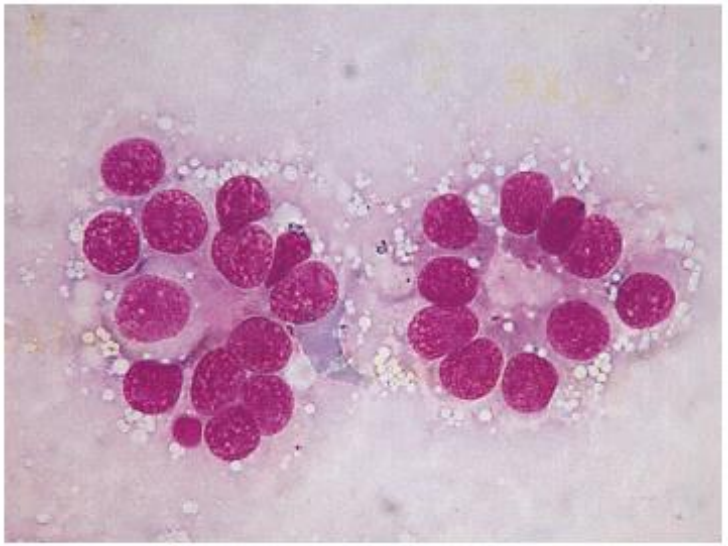


FIG 4. Granulosa cell tumour (case 9). Granulosa cells are arranged in an acinar pattern surrounding an amorphous eosinophilic extracellular material (Call-Exner-like bodies). Hemacolor. ×1000

Cytological features of canine ovarian tumours: a retrospective study of 19 cases

W. Bertazzolo, M. Dell'Orco, U. Bonfanti*, D. DeLorenzi†, C. Masserdotti‡, B. De Marco§, M. Caniatti¶ and P. Roccabianca¶

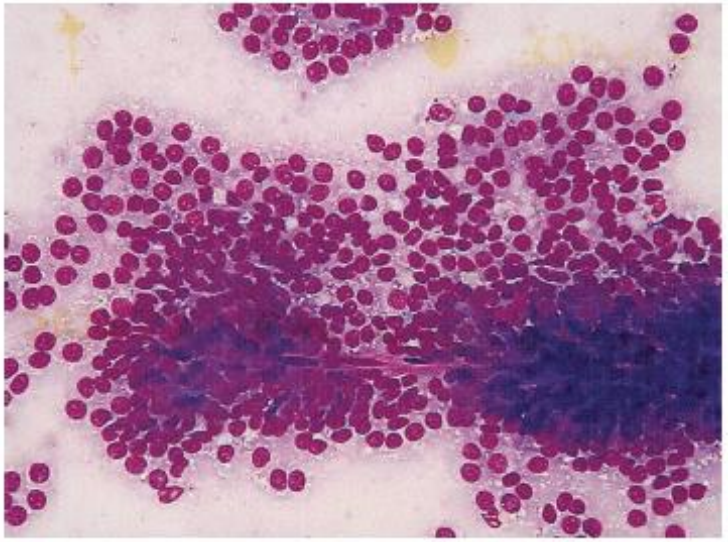


FIG 5. Granulosa cell tumour (case 15). In large clusters, granulosa cells appear occasionally superimposed and capillaries are present among them. May-Grünwald-Giemsa. ×400

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Cytologic detection of Call-Exner bodies in Sertoli cell tumors from 2 dogs

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Laboratorio D'Analisi S. Marco, Padova, Italy

Vet Clin Pathol 37/1 (2008) 112–114

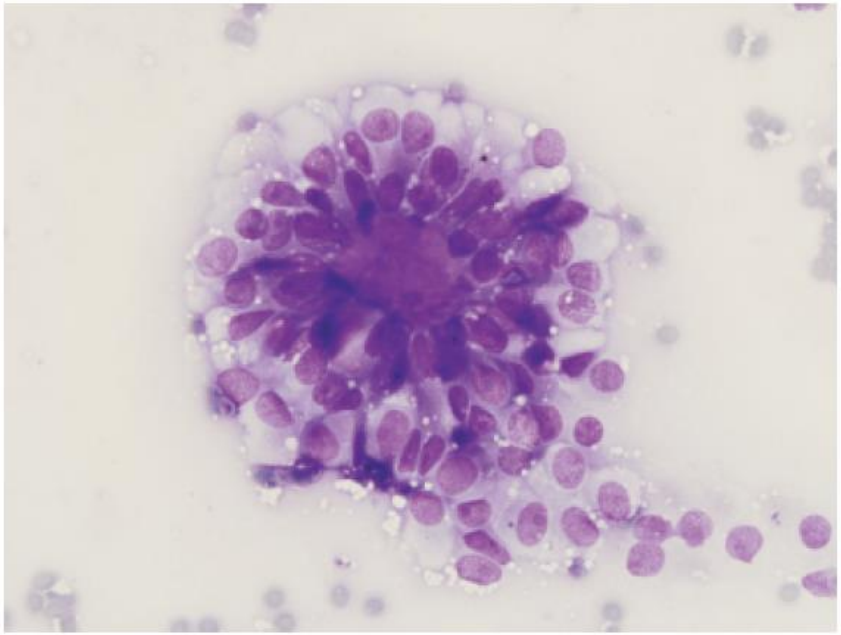


Figure 1. Fine-needle aspirate of a testicular mass from a dog. A large cluster of round to elongated cells is arranged in a rosette around deeply eosinophilic, hyaline material, consistent with a Call-Exner body. May-Grunwald-Giemsa, ×40 objective.

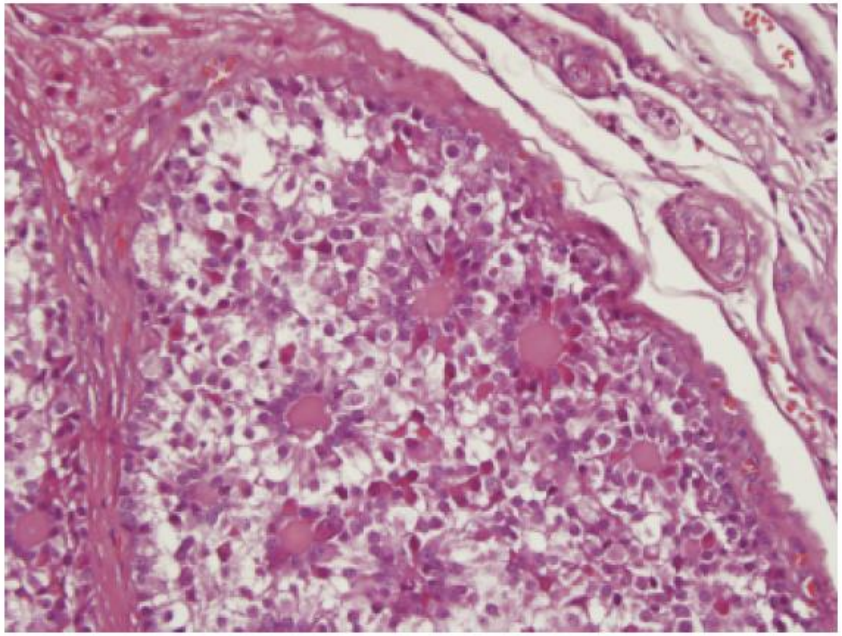
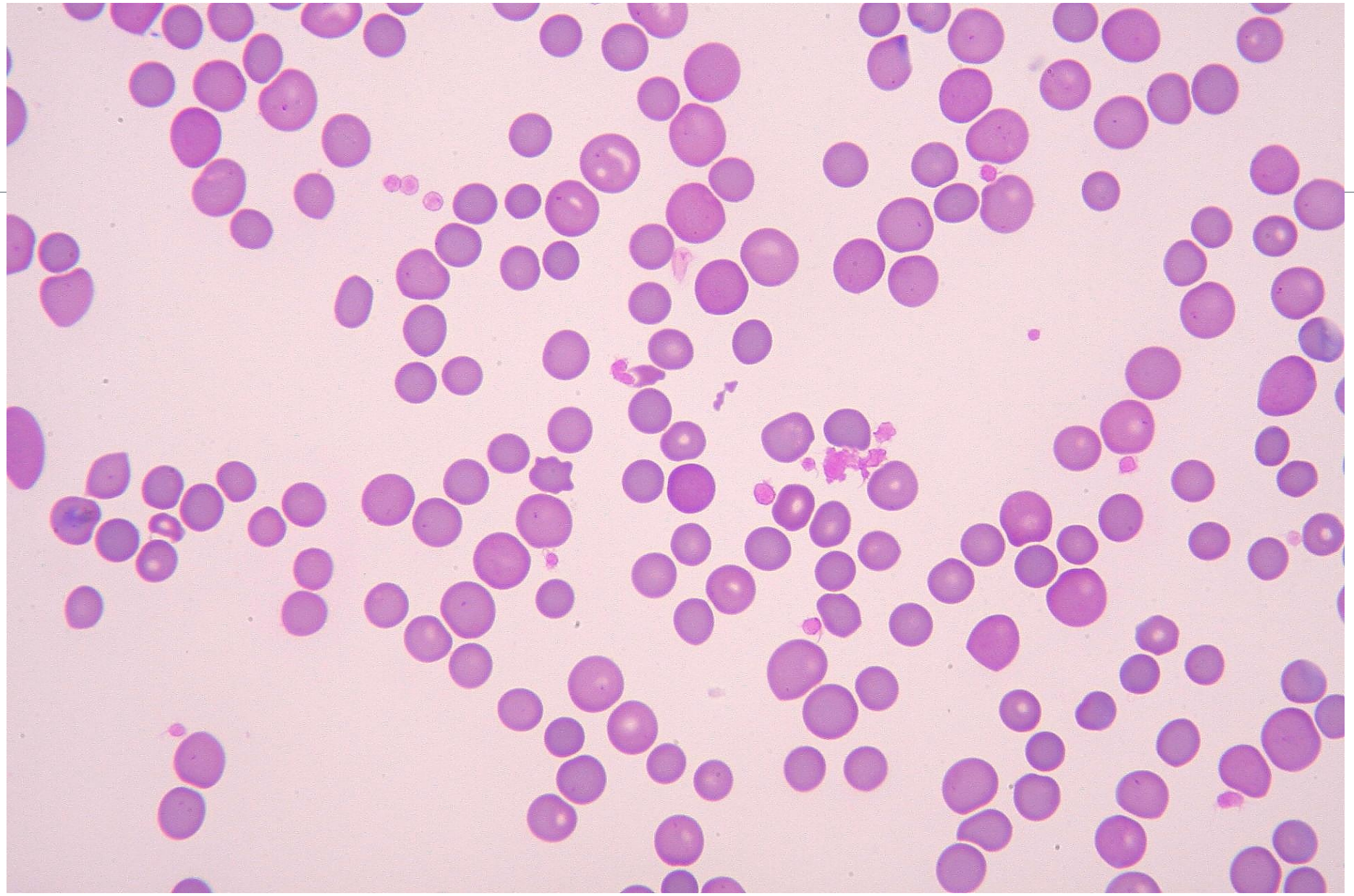
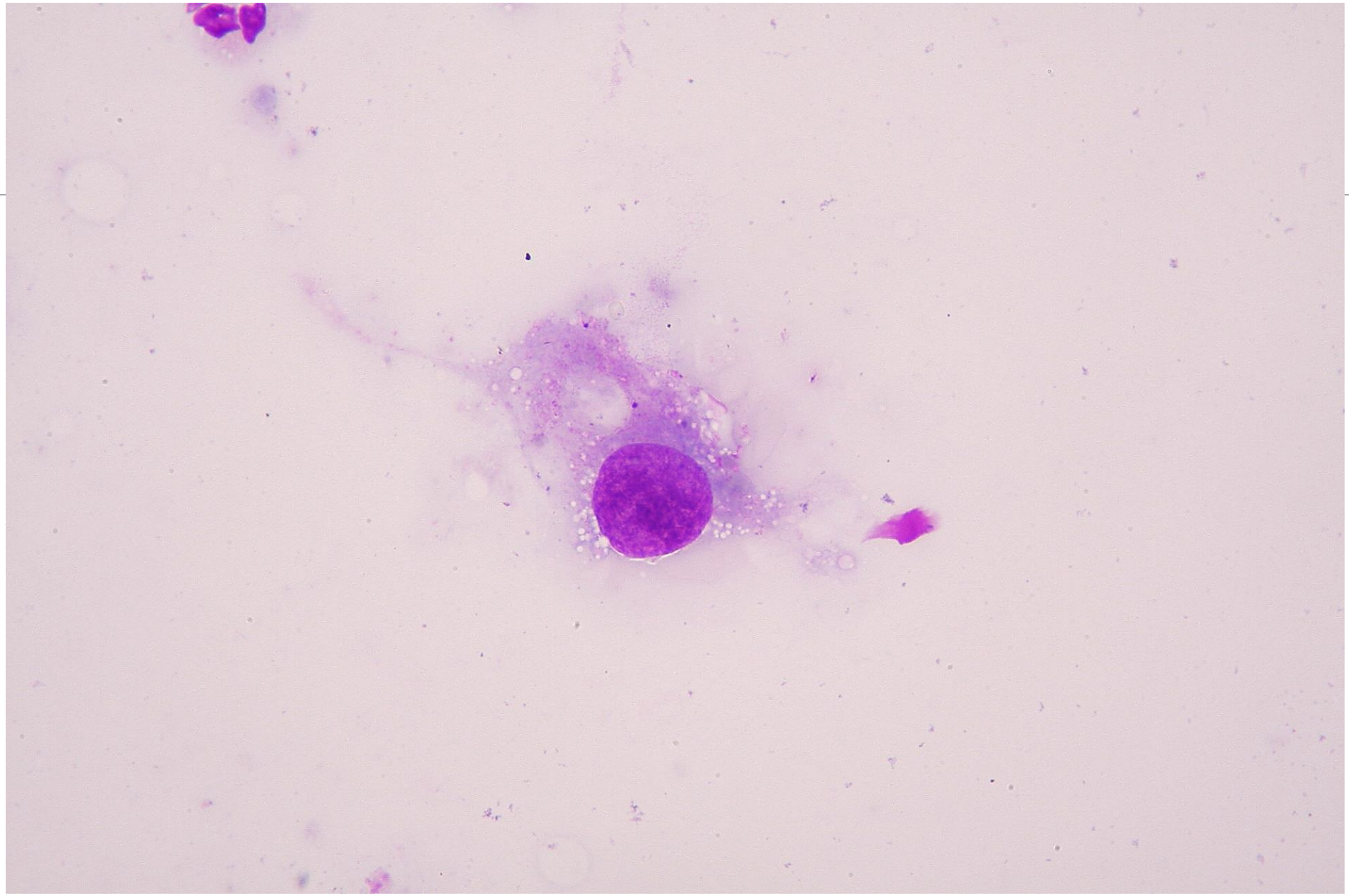


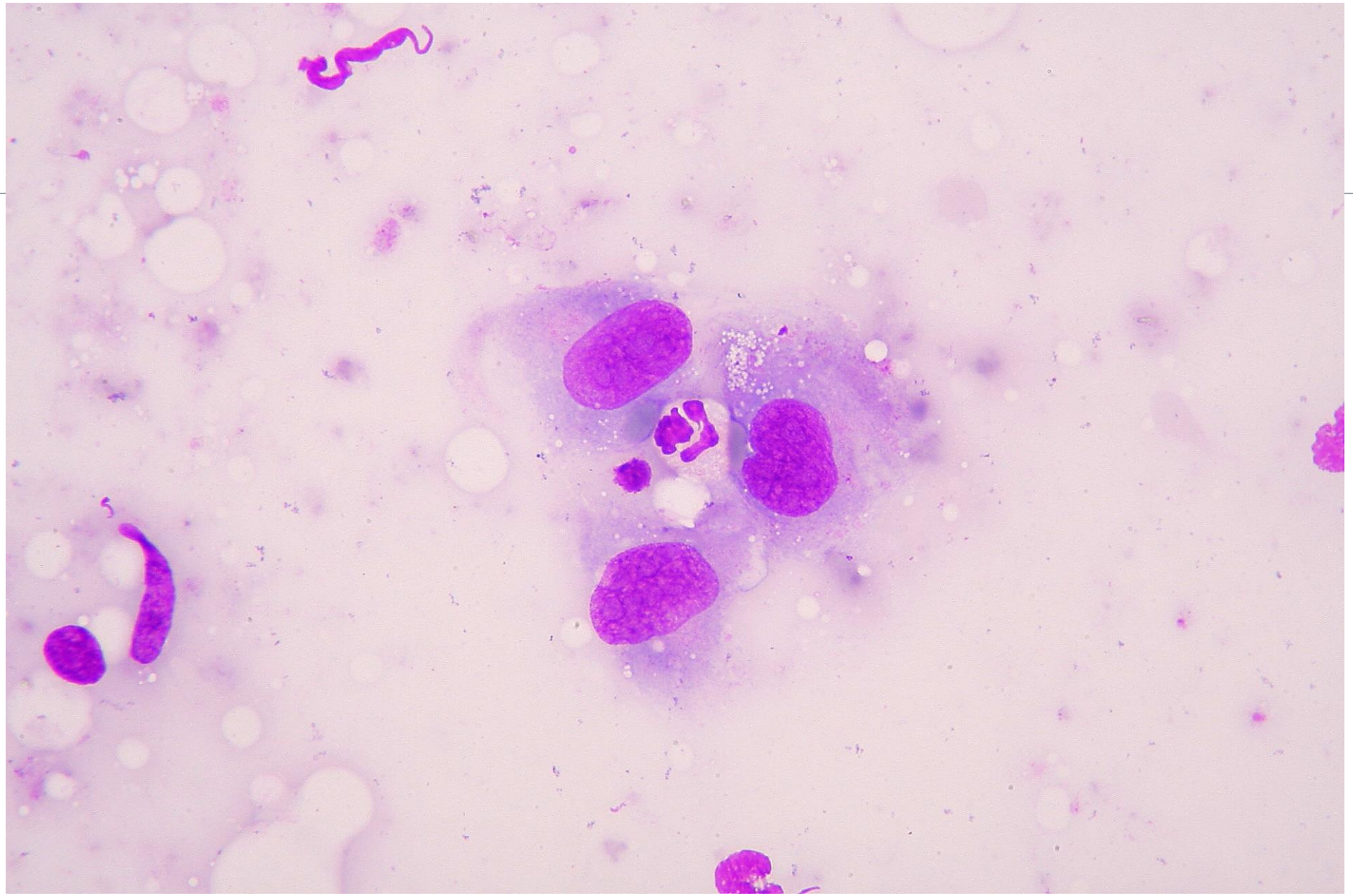
Figure 2. Histologic section of the Sertoli cell tumor, in which neoplastic cells are arranged around many round eosinophilic Call-Exner bodies. H&E, ×20 objective.

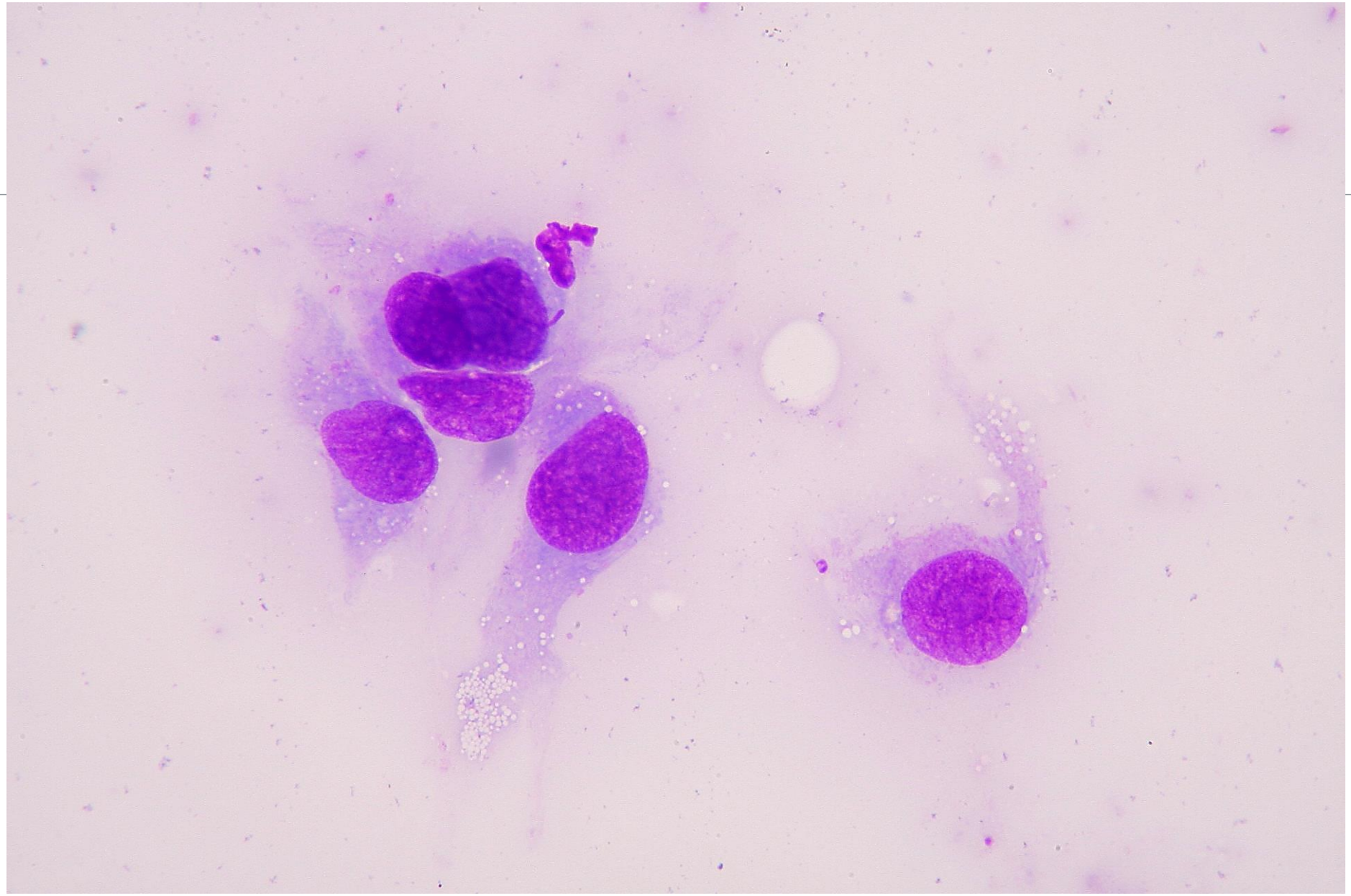
Case #8

- Dog, Boxer, 10-years-old
- Mass on the spleen and peripheral blood smear
- Ultrasound-guided FNCS of the mass
- Diff-Quick stain of the blood smear
- MGG stain of the mass



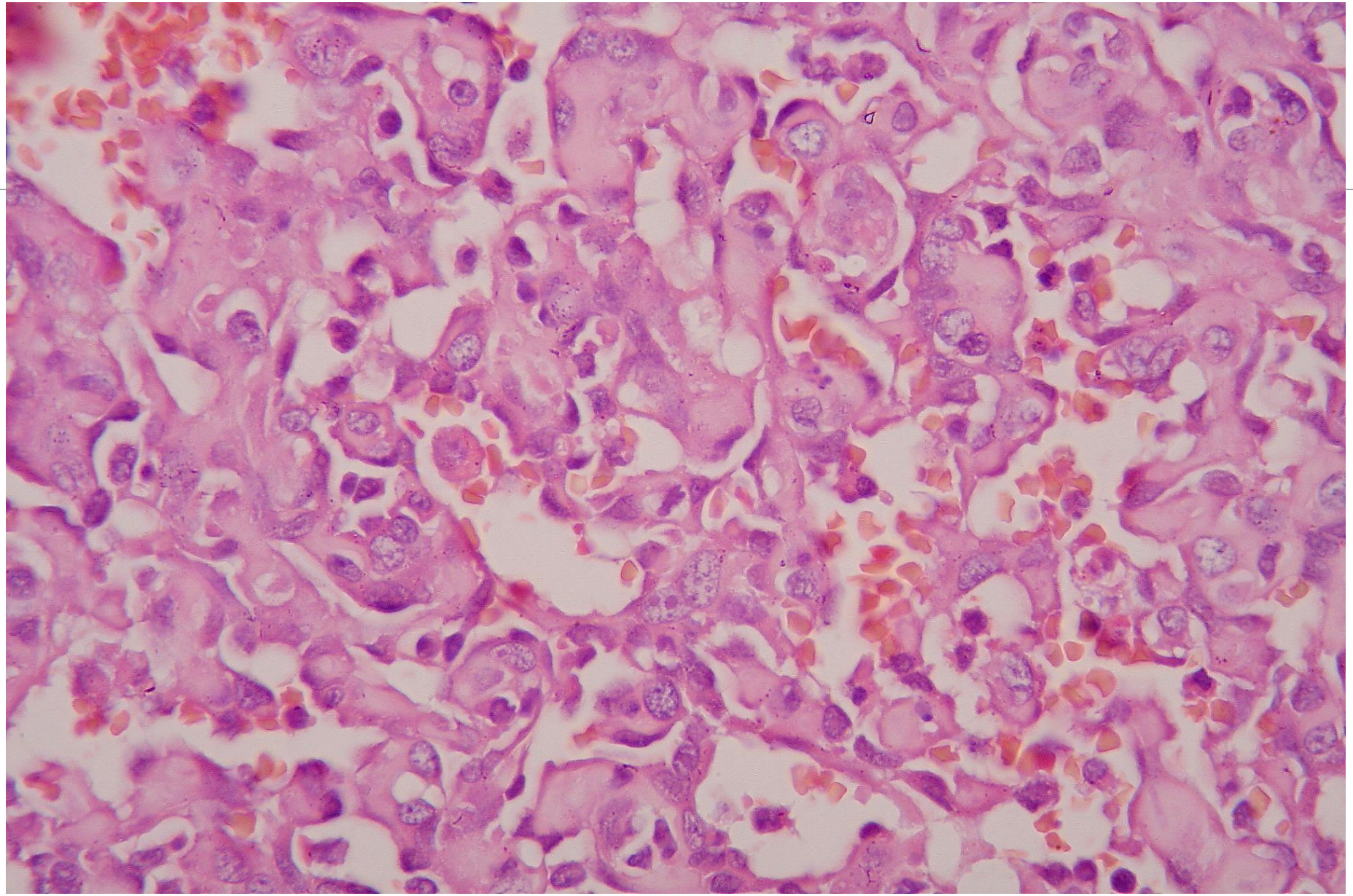






Cytologic findings

- Blood:
  - Some schistocytes
  - Rare acantocytes
- Spleen:
  - Bloody background
  - Rare atypical spindle cells
  - Some «vascular space»



Canine angiosarcoma: cytologic, histologic, and immunohistochemical correlations

Walter Bertazzolo, Marta Dell'Orco, Ugo Bonfanti, Gabriele Ghisleni, Mario Caniatti, Carlo Masserdotti, Elisa Antoniazzi, Luca Crippa, Paola Roccabianca

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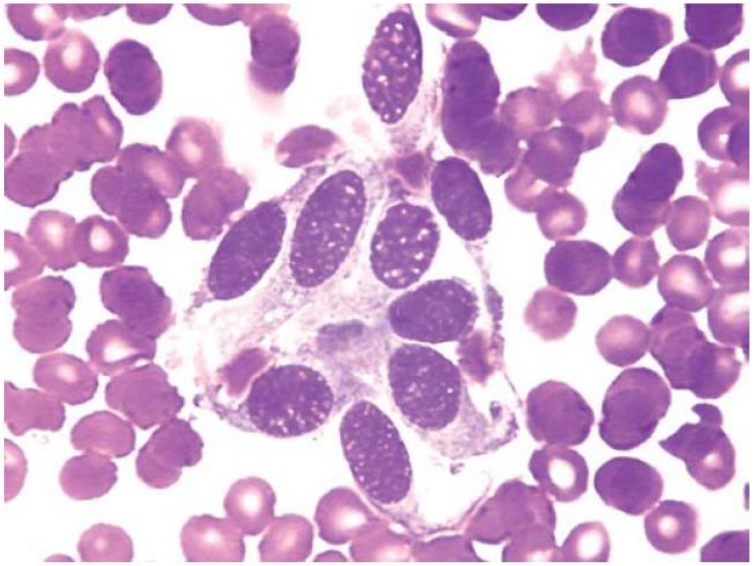
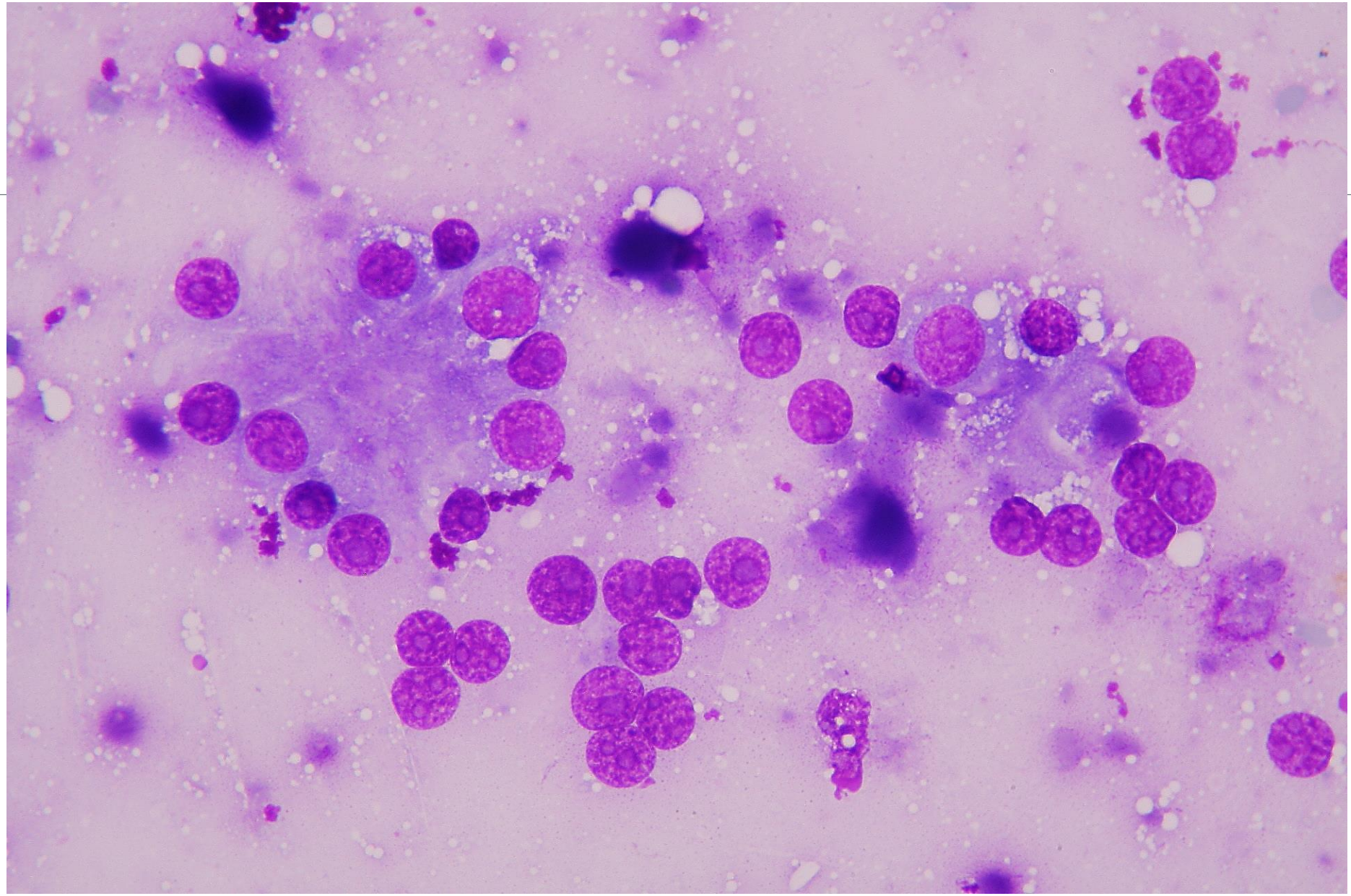


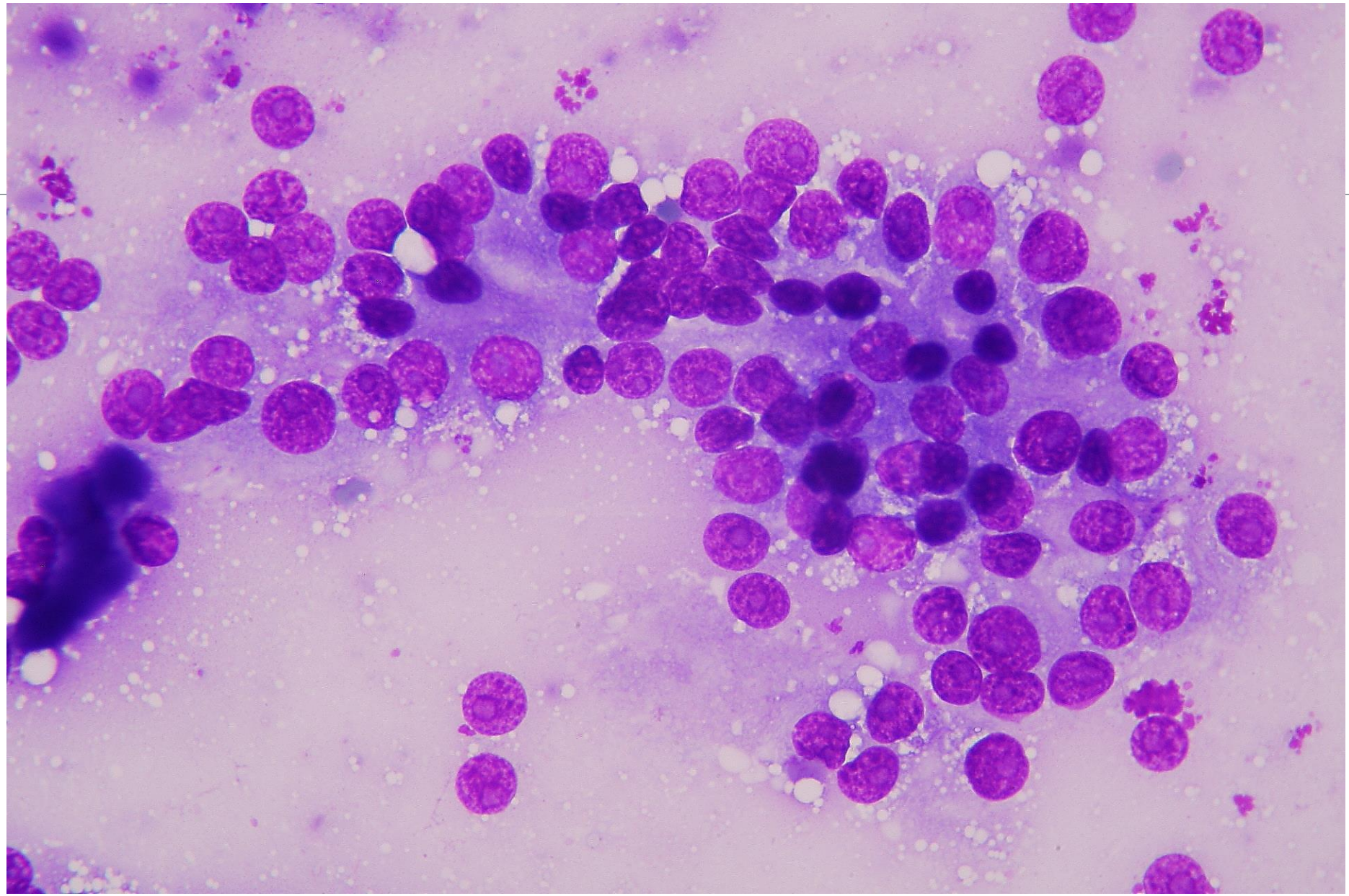
Figure 5. Pseudoacinar arrangement of neoplastic cells from a poorly differentiated sarcomatous angiosarcoma (case 8). Hemacolor, ×100 objective.

Pseudoacinar structures were observed in cytologic specimens from 7 cases (4 from the sarcomatous subgroups and 3 from the epithelioid subgroup) (Figure 5). On the basis of the pseudoacinar arrangements, these 7 cases were considered to have vasoformative features.[12] In 1 specimen (case 8) these structures were numerous, whereas in the other 6 specimens (cases 1, 2, 9, 11, 12, and 19) they were sparse.

Case #9

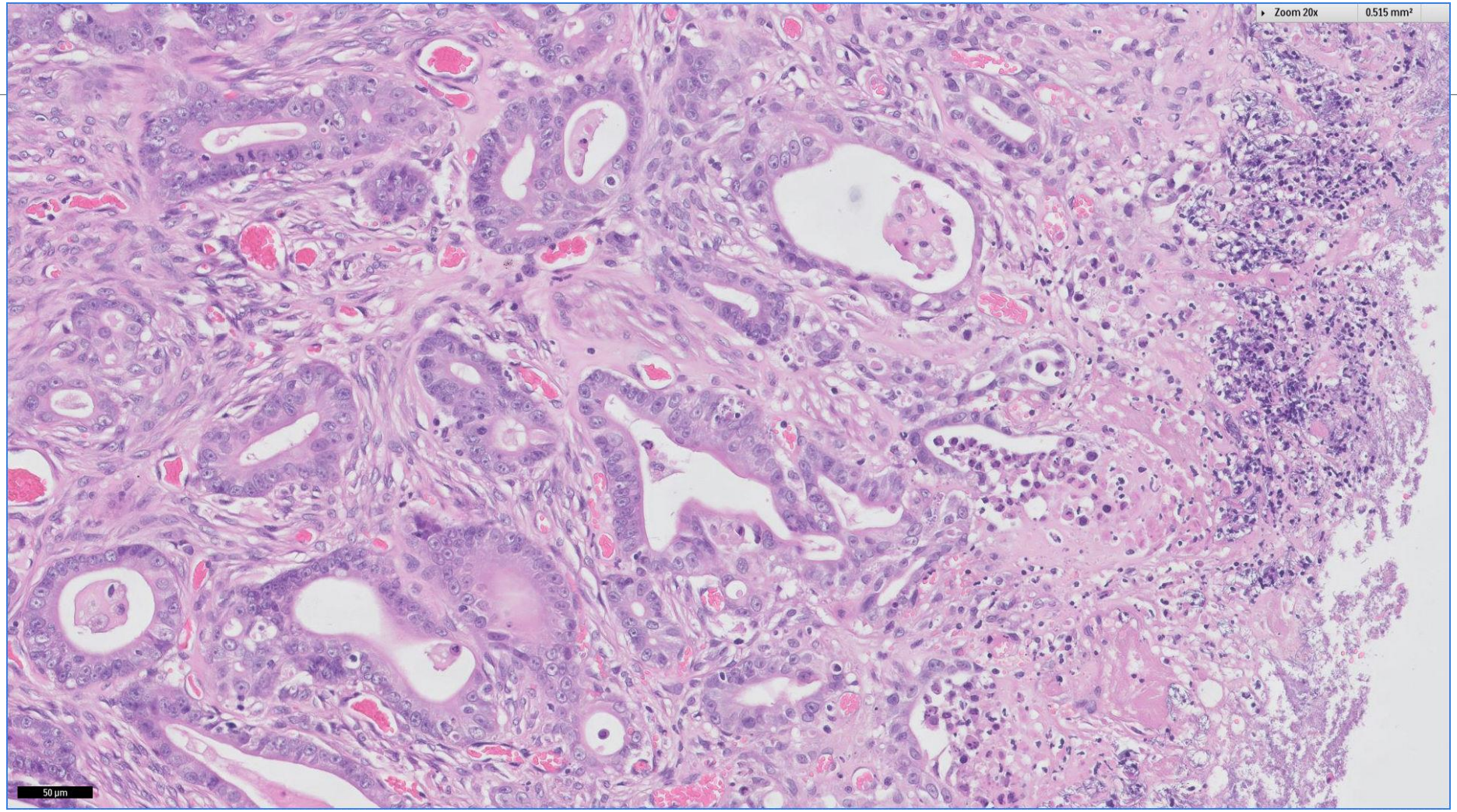
- Cat, DSH, 11 years-old, male
- Mass in abdomen, localized in intestinal wall
  - Ultrasound-guided FNCS of the mass
  - MGG stain





Cytologic findings

- Epithelial cells
  - Round to columnar shape
    - Microvacuoles
  - Round to ovoid nuclei
- Palisade arrangement
- Tubular arrangement


Zoom 20x
0.515 mm²
50 µm

Cytologic diagnosis

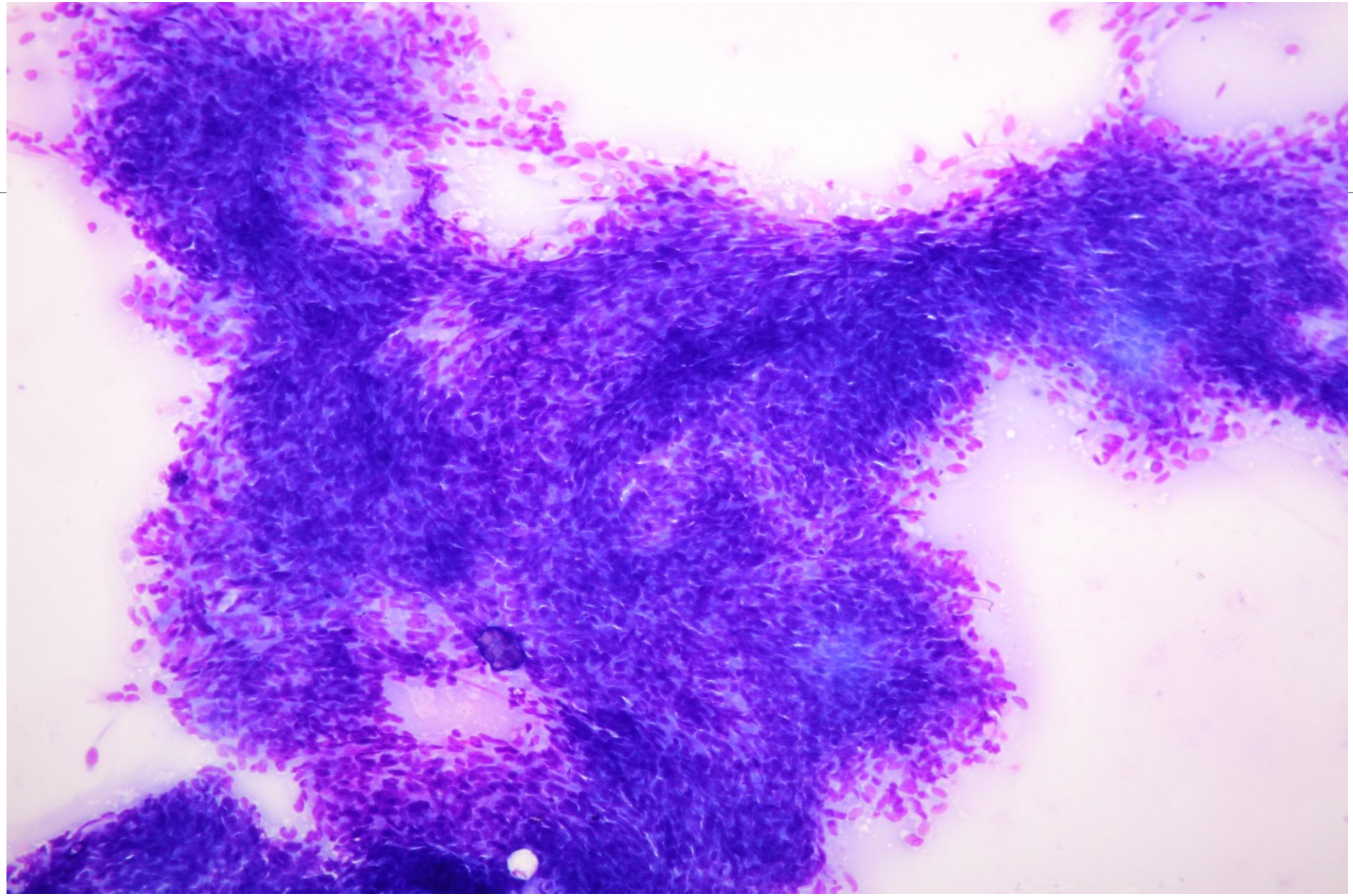
- Intestinal adenocarcinoma

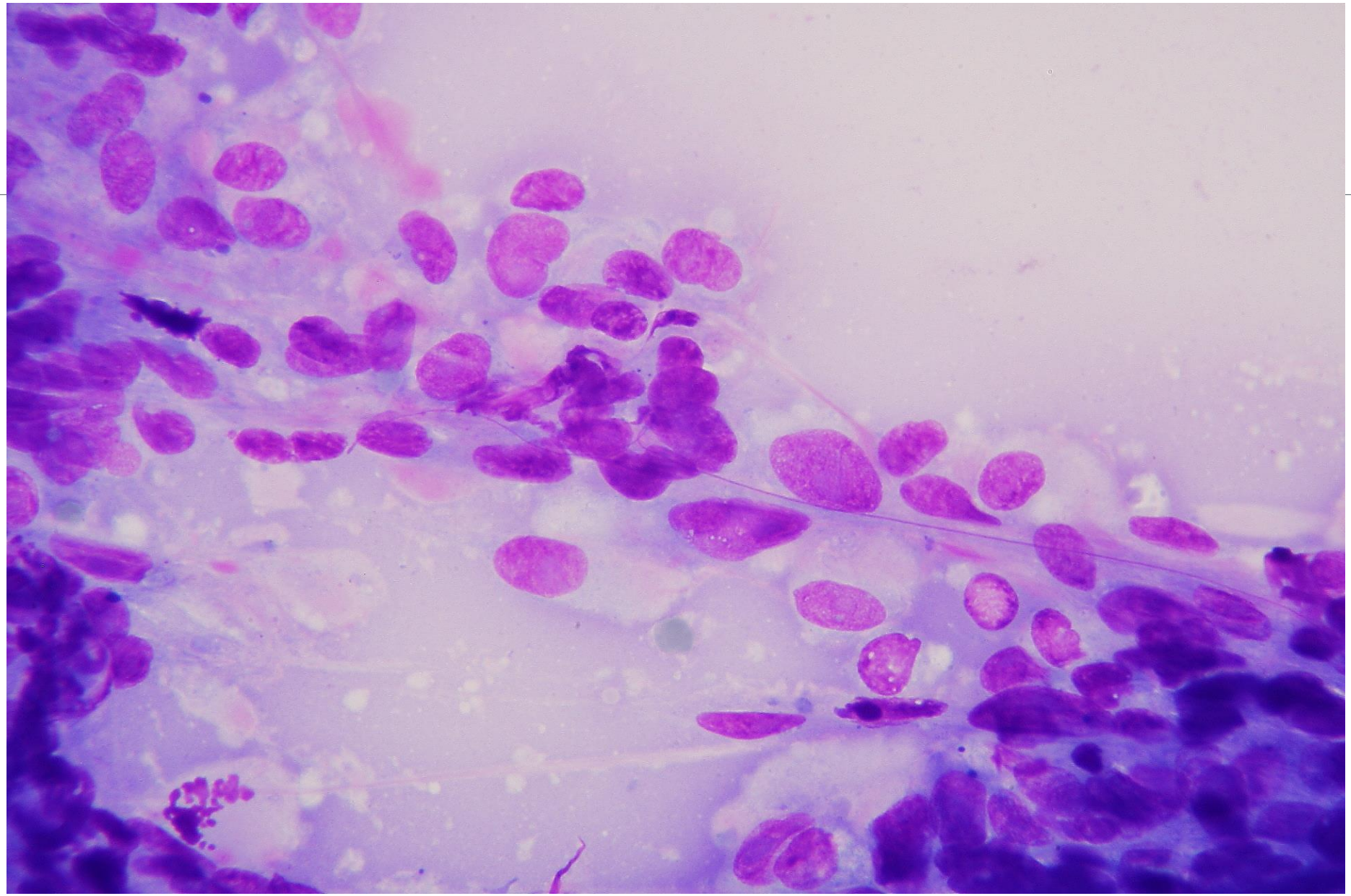
- DD:
- Others «glandular» carcinoma

- Histologic diagnosis:
- Intestinal adenocarcinoma, tubular type

Case #10

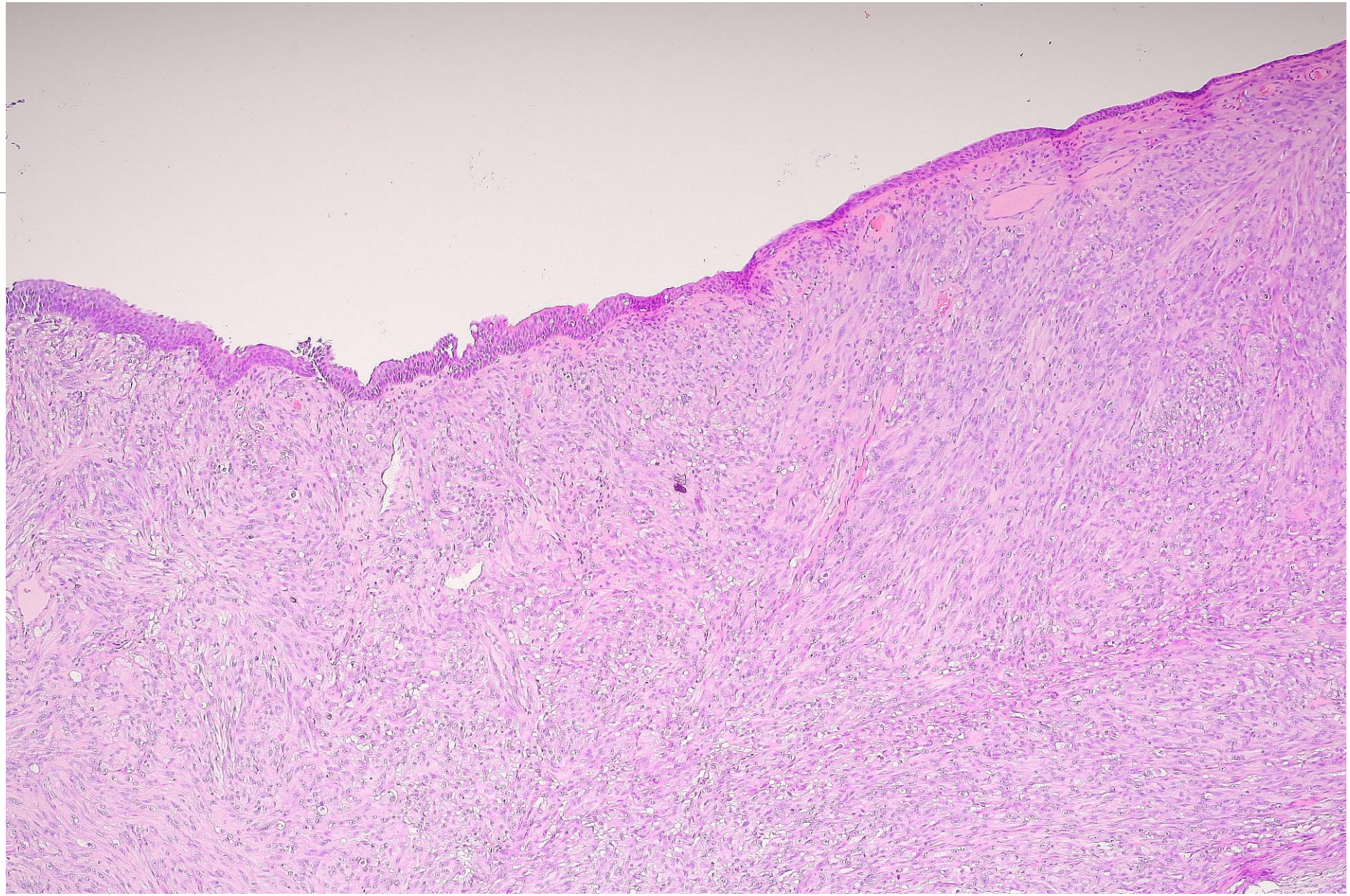
- Cat, DSH, 10-years-old, female
- Enlargement of urinary bladder wall
  - Ultrasound-guide FNCS of the mass
  - MGG stain

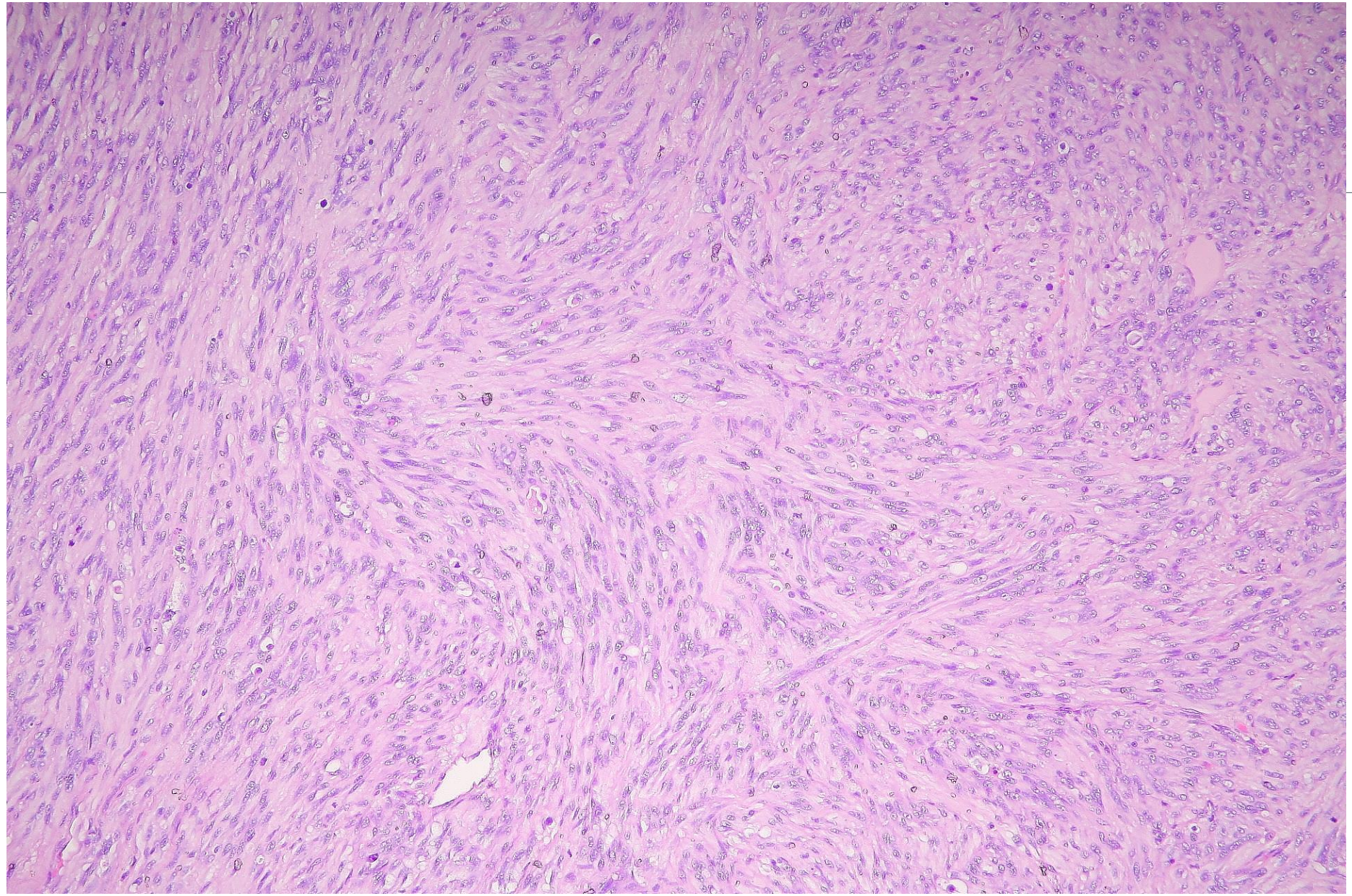




Cytologic findings

- Many spindle cells
  - Elongated, slight basophilic cytoplasm
  - Ovoid nuclei
- Storiform arrangement





Cytologic diagnosis

- Urinary wall sarcoma

- DD:
- Rabdhomyosarcoma
- Leiomyosarcoma

- Histologic diagnosis:
- Urinary bladder sarcoma