

Radiology / Pathology Conference

September 2009

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Radiology

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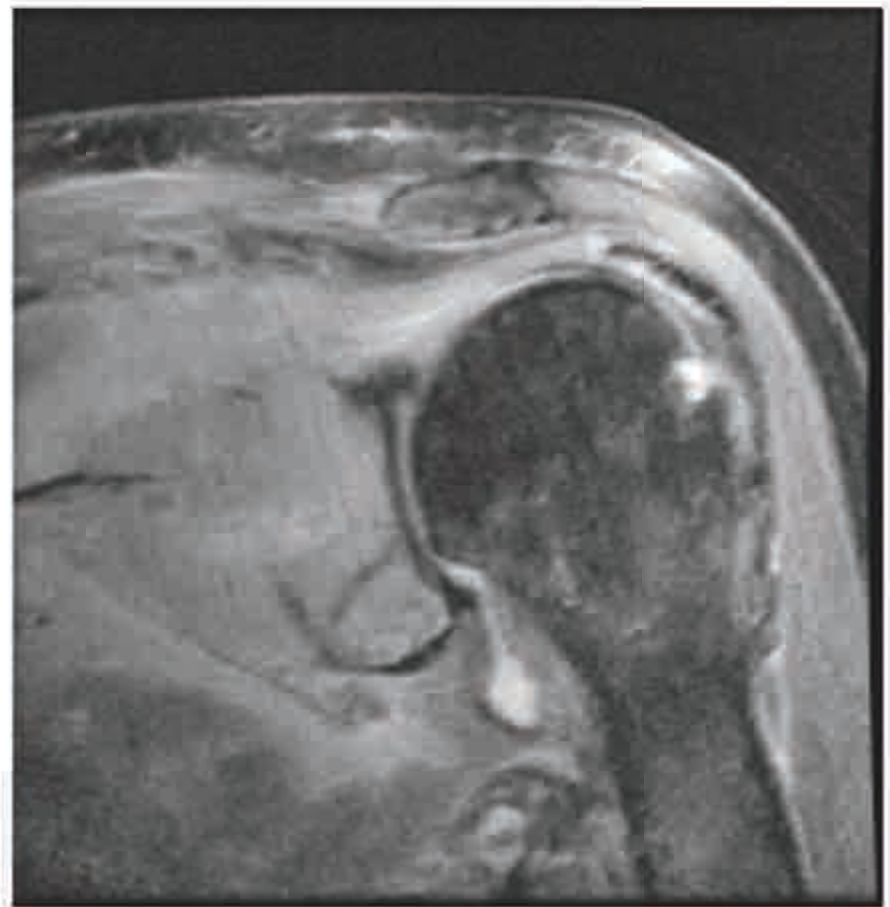
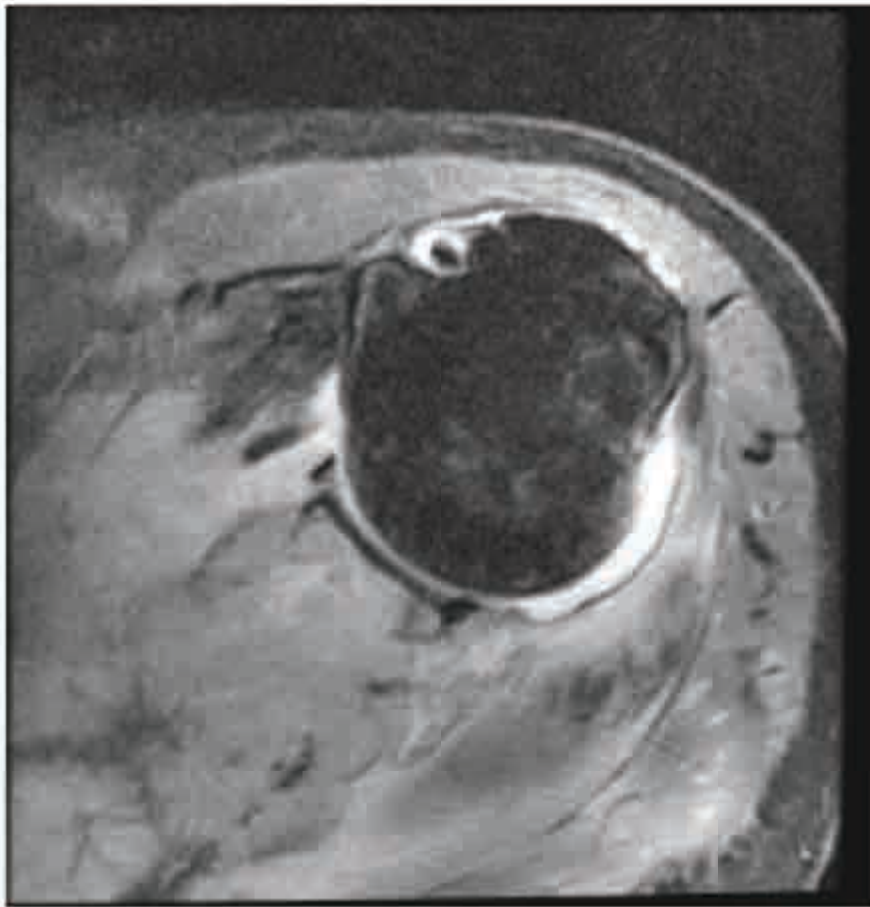
Cytopathology Fellow

Case 1

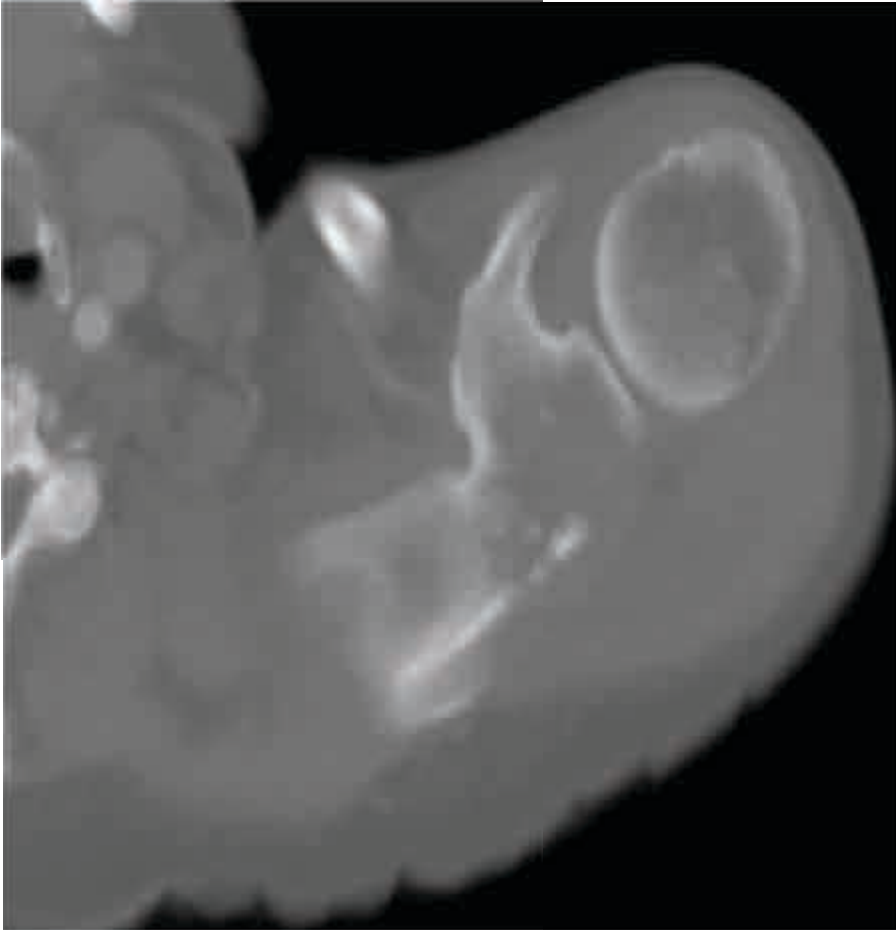
Case 1

- 60 year old female with neck and increasing left shoulder pain which she attributes to a work related injury.

Case 1

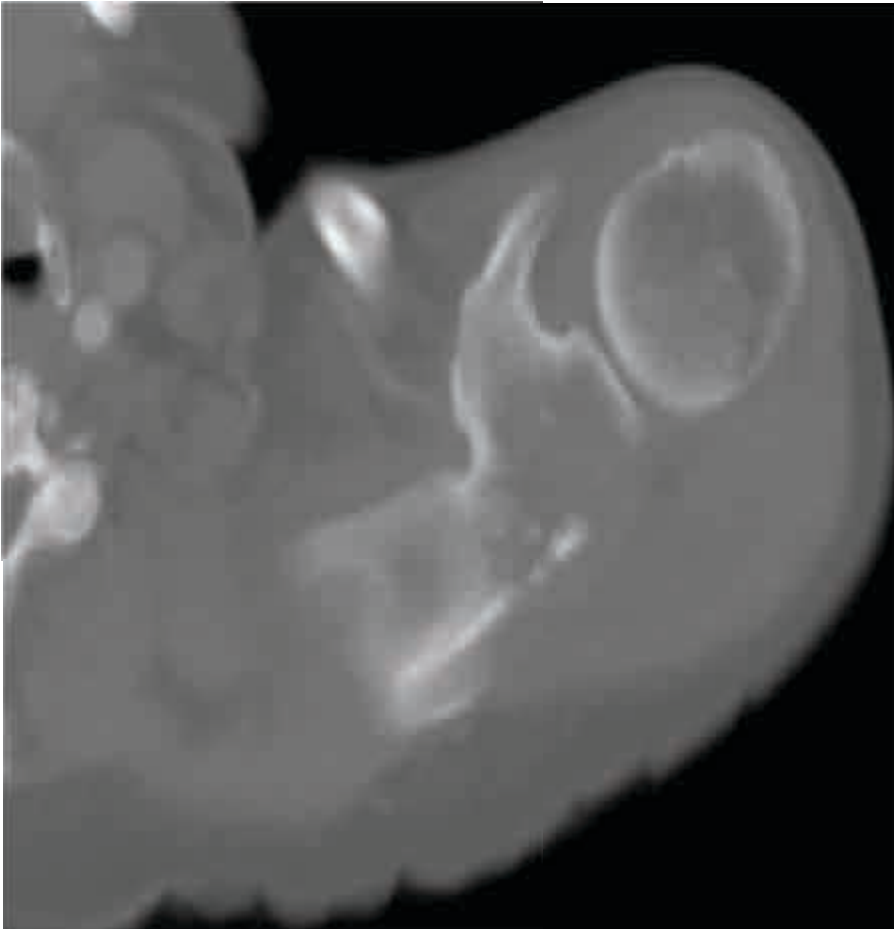


Case 1



Case 1

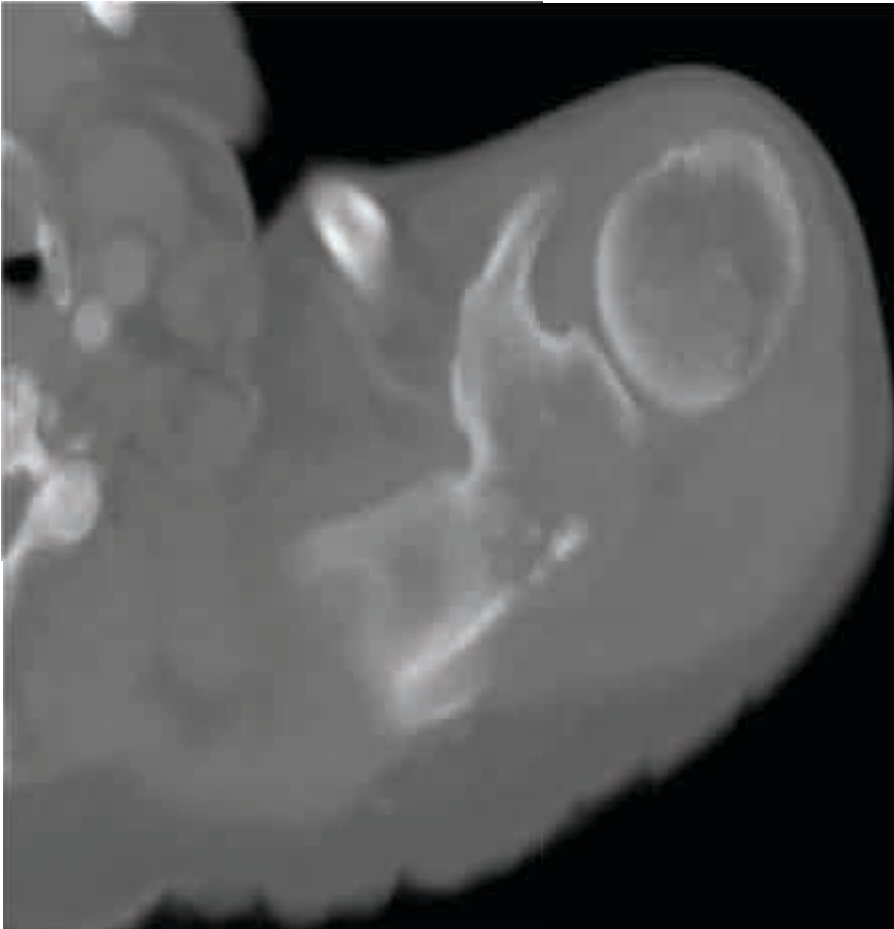
DDx



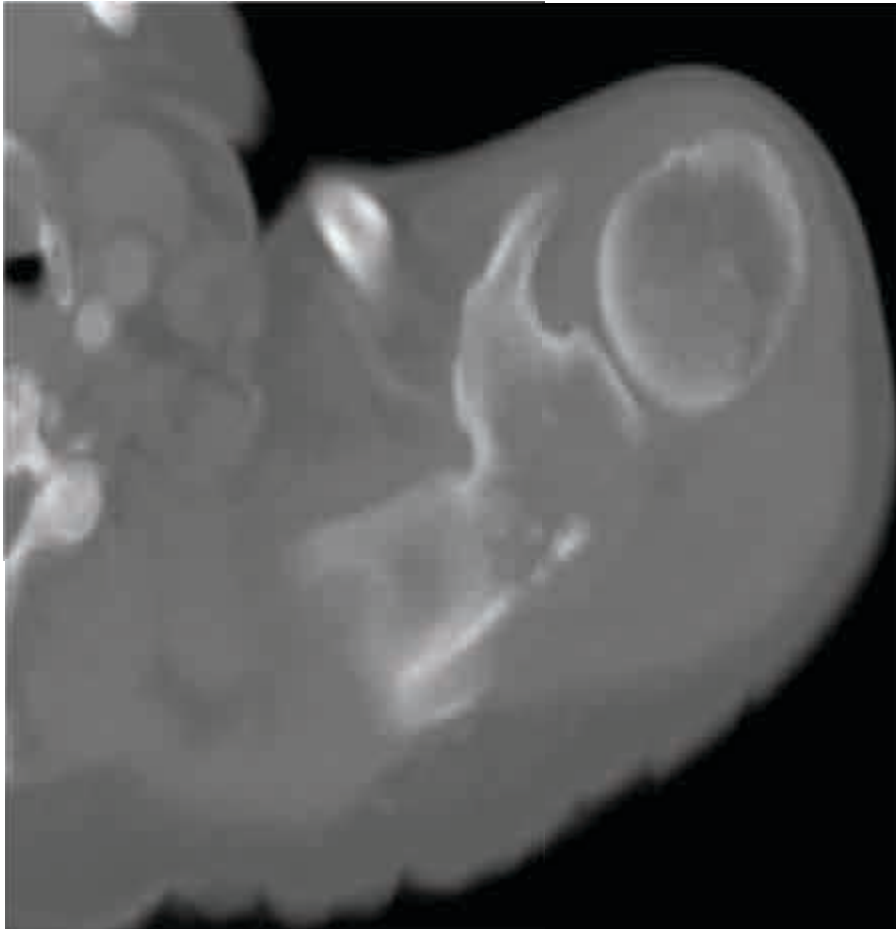
Case 1

DDx

- Metastasis



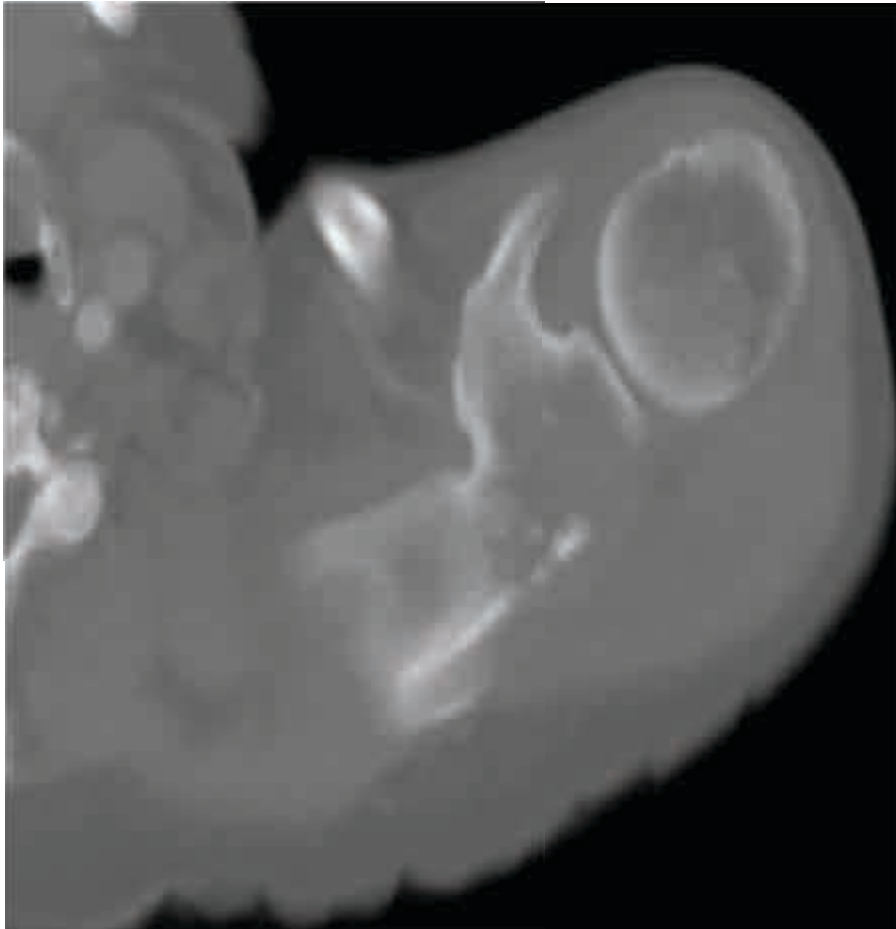
Case 1



DDx

- Metastasis
- Myeloma

Case 1

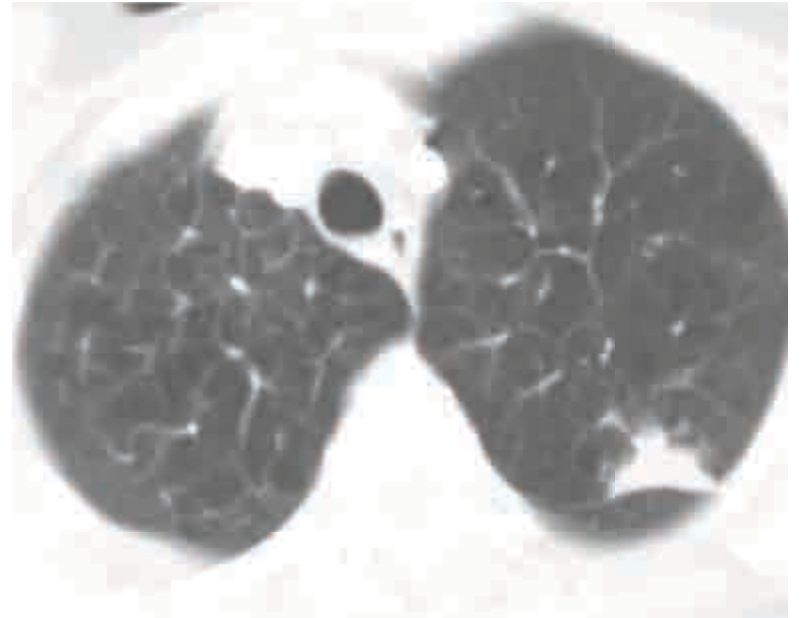


DDx

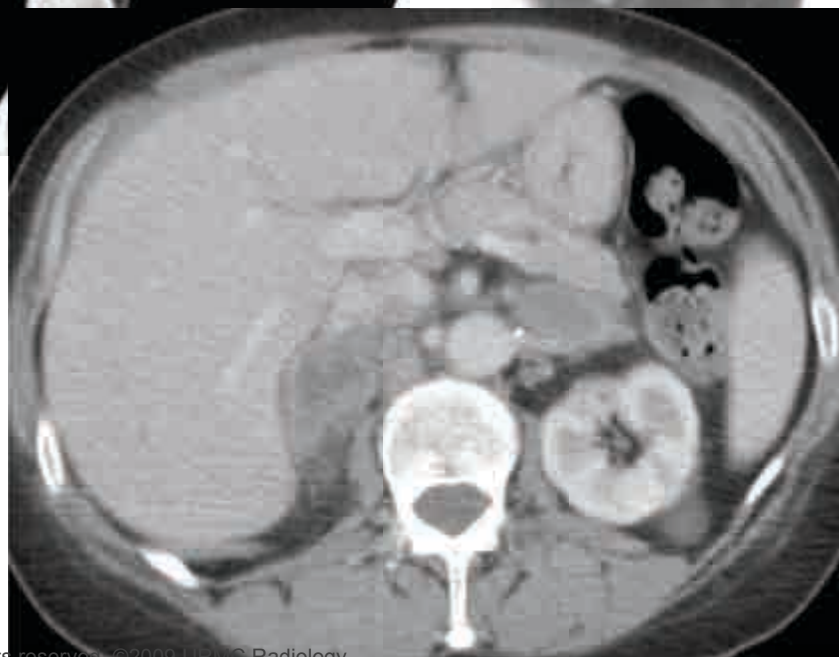
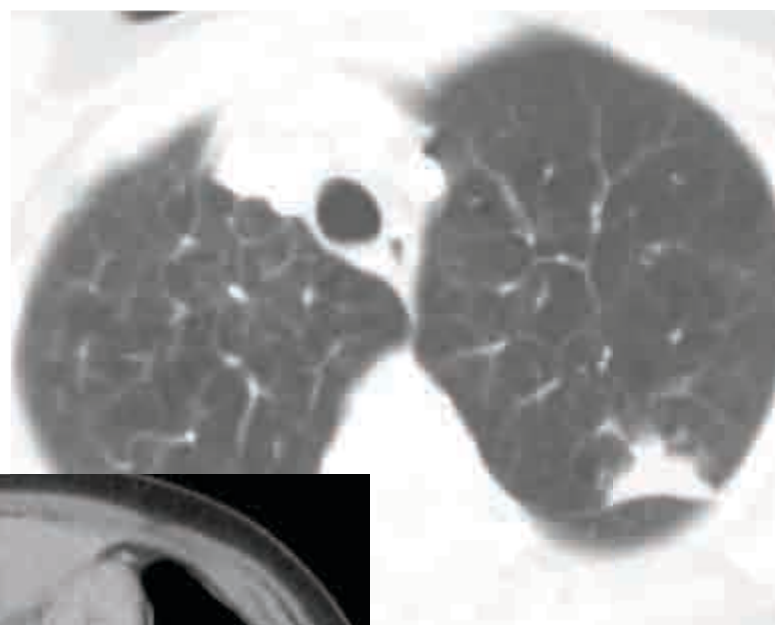
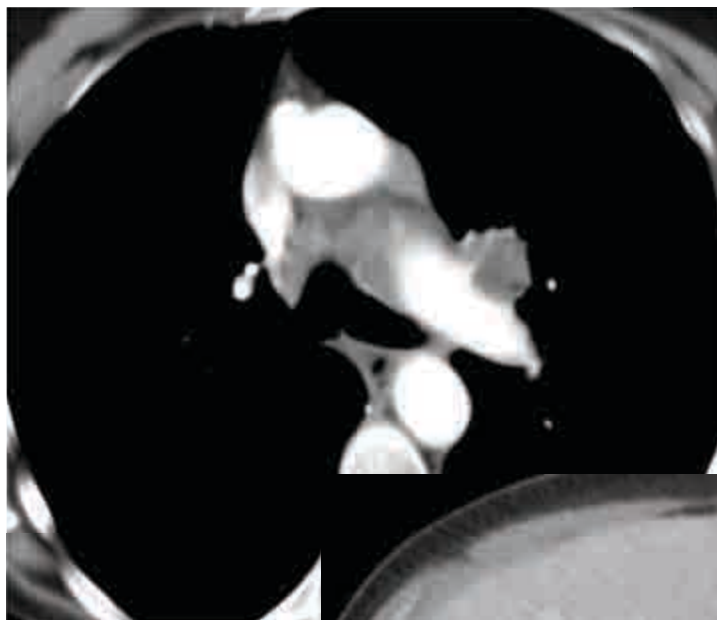
- Metastasis
- Myeloma
- Lymphoma

Case 1

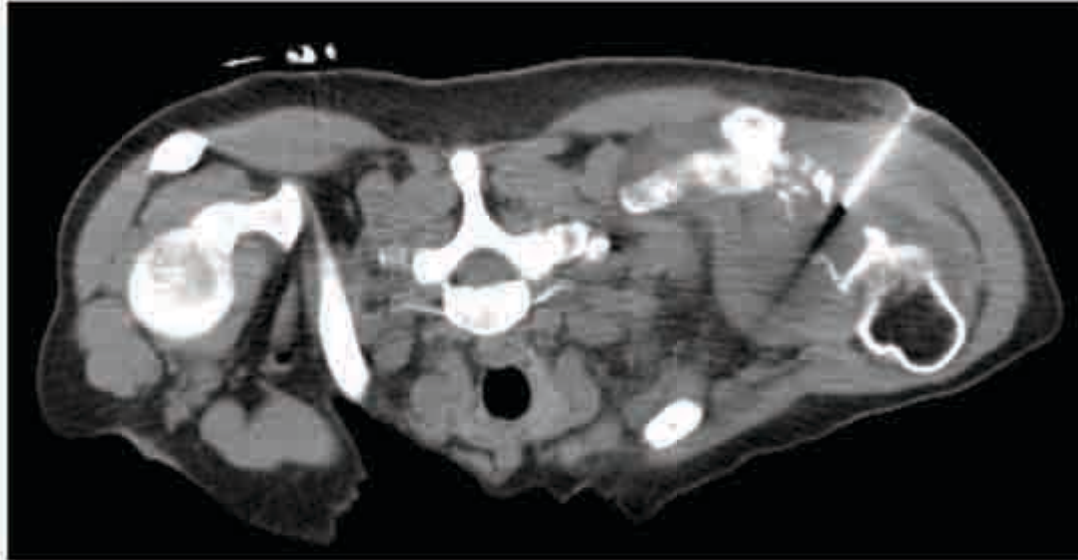
Case 1



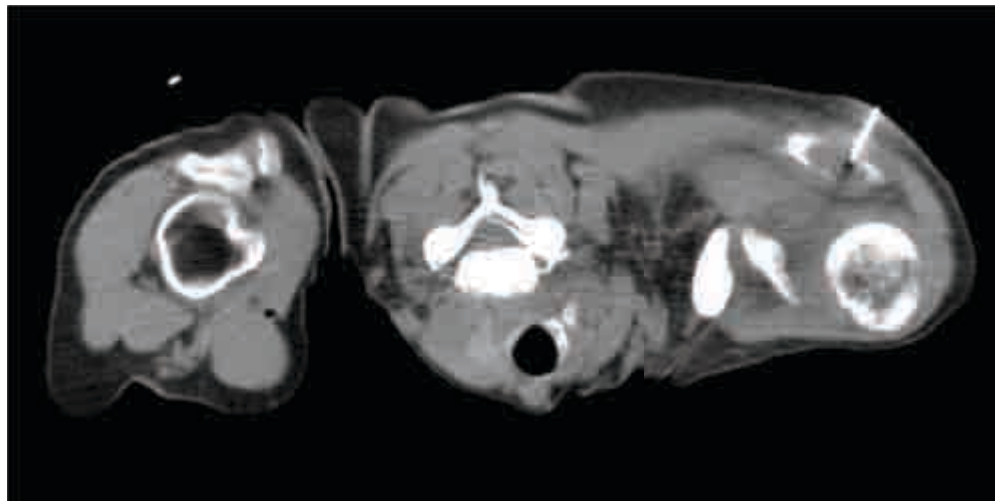
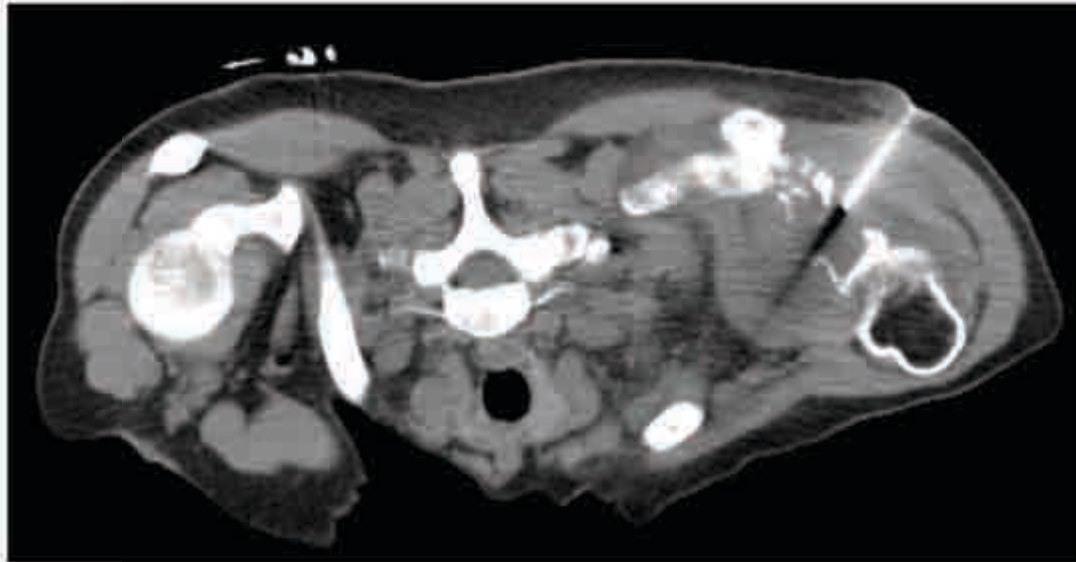
Case 1



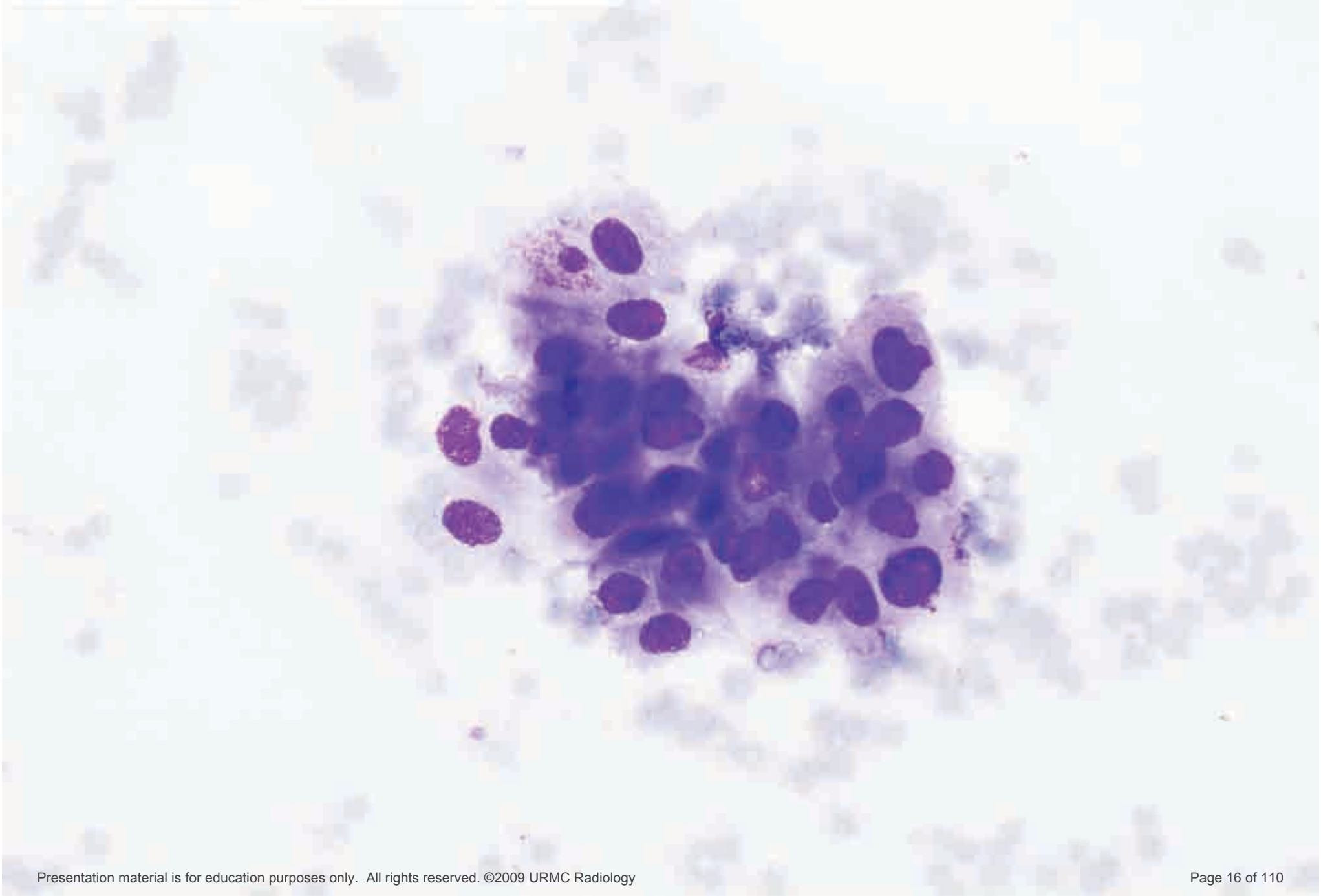
Case 1



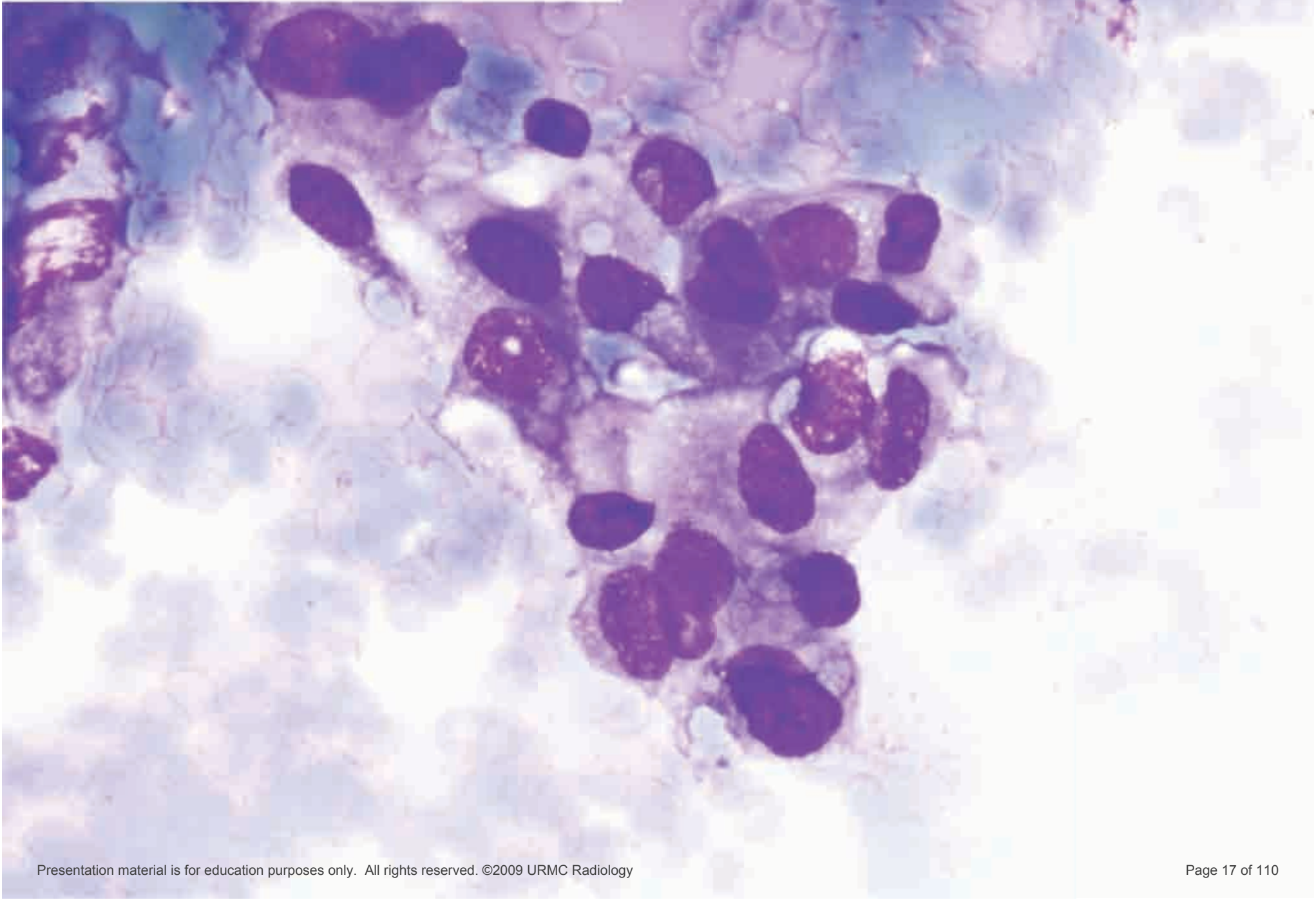
Case 1



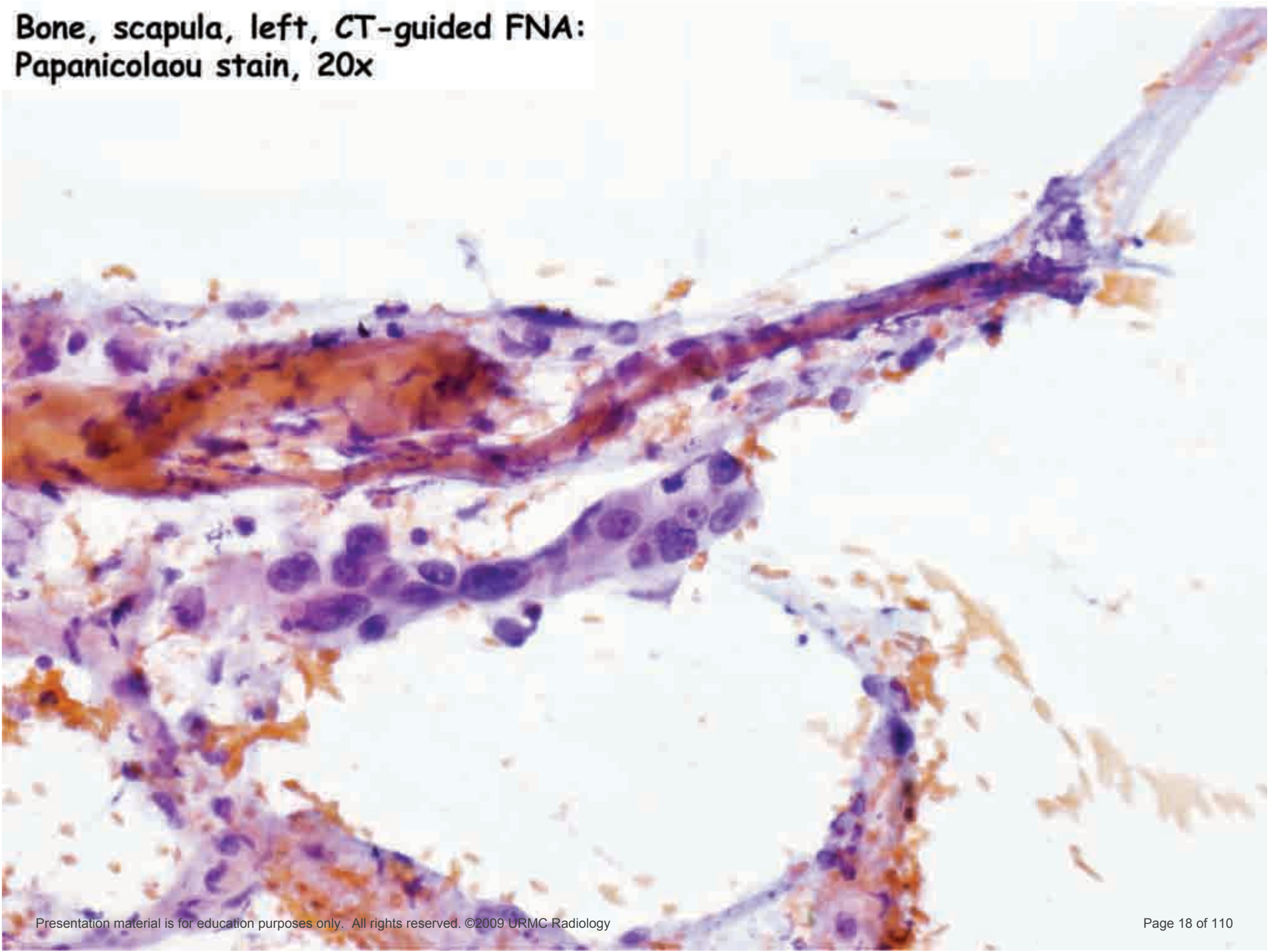
**Bone, scapula, left, CT-guided FNA:
Diff-Quik stain, 20x**



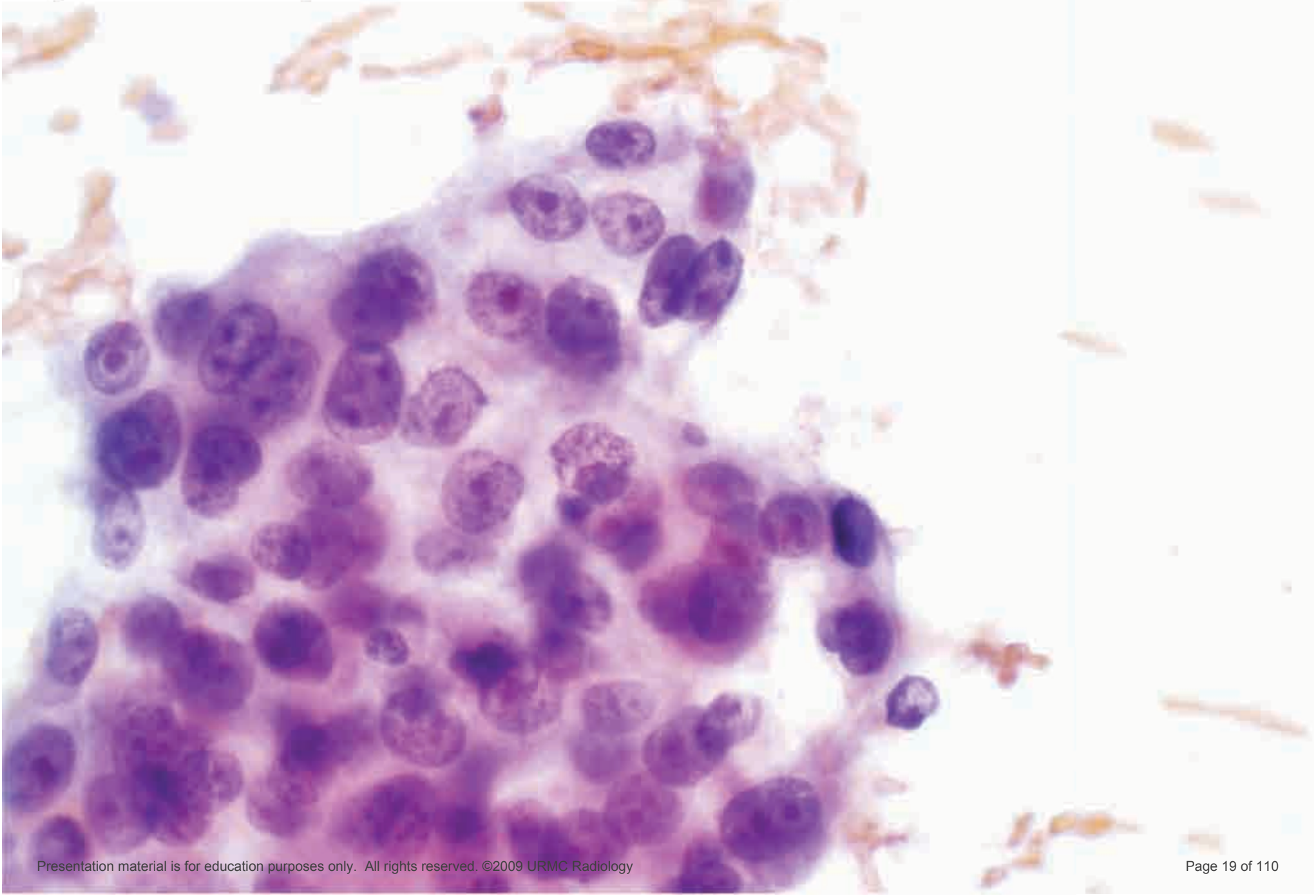
**Bone, scapula, left, CT-guided FNA:
Diff-Quik stain, 40x**



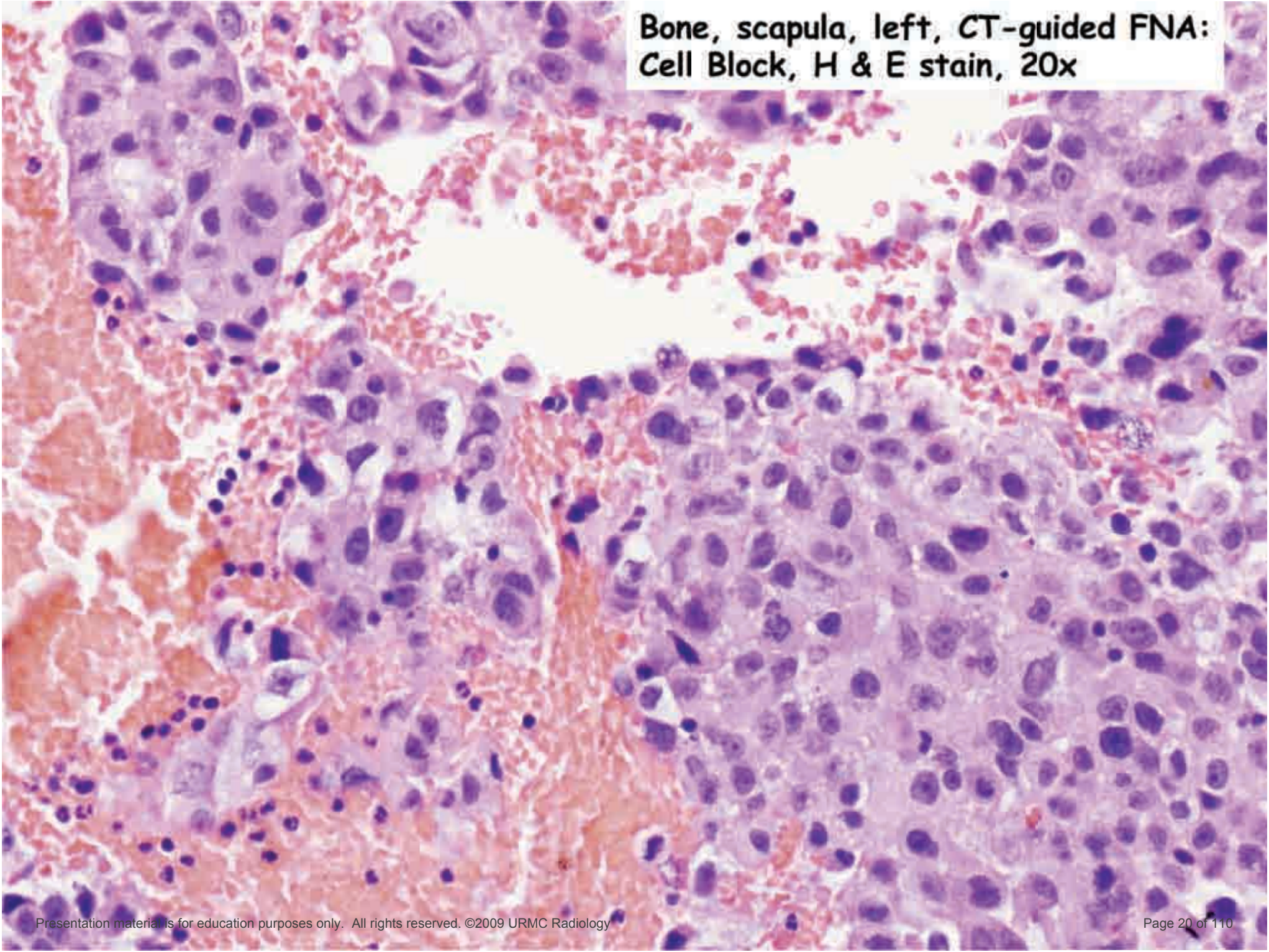
**Bone, scapula, left, CT-guided FNA:
Papanicolaou stain, 20x**

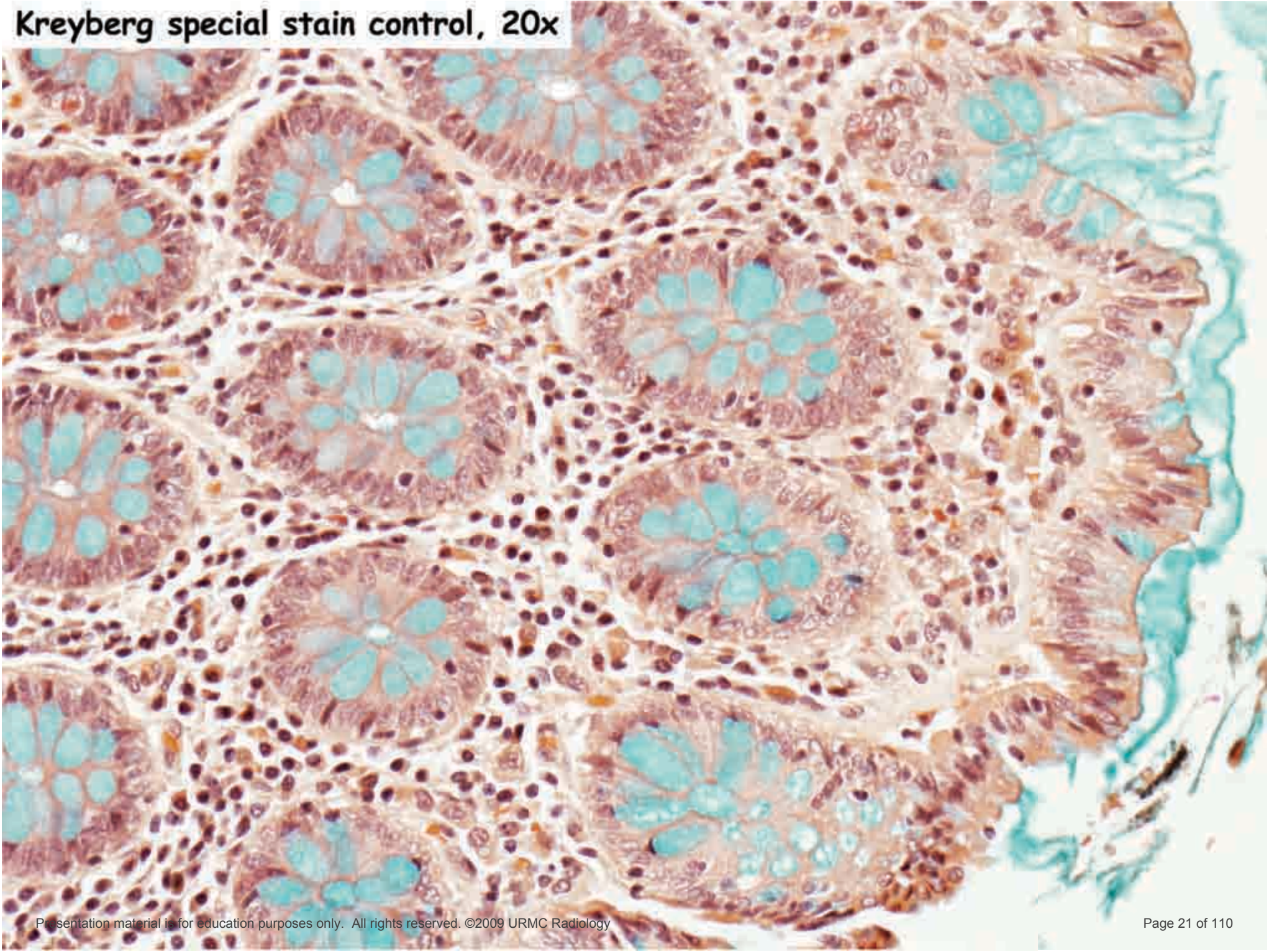


**Bone, scapula, left, CT-guided FNA:
Papanicolaou stain, 40x**

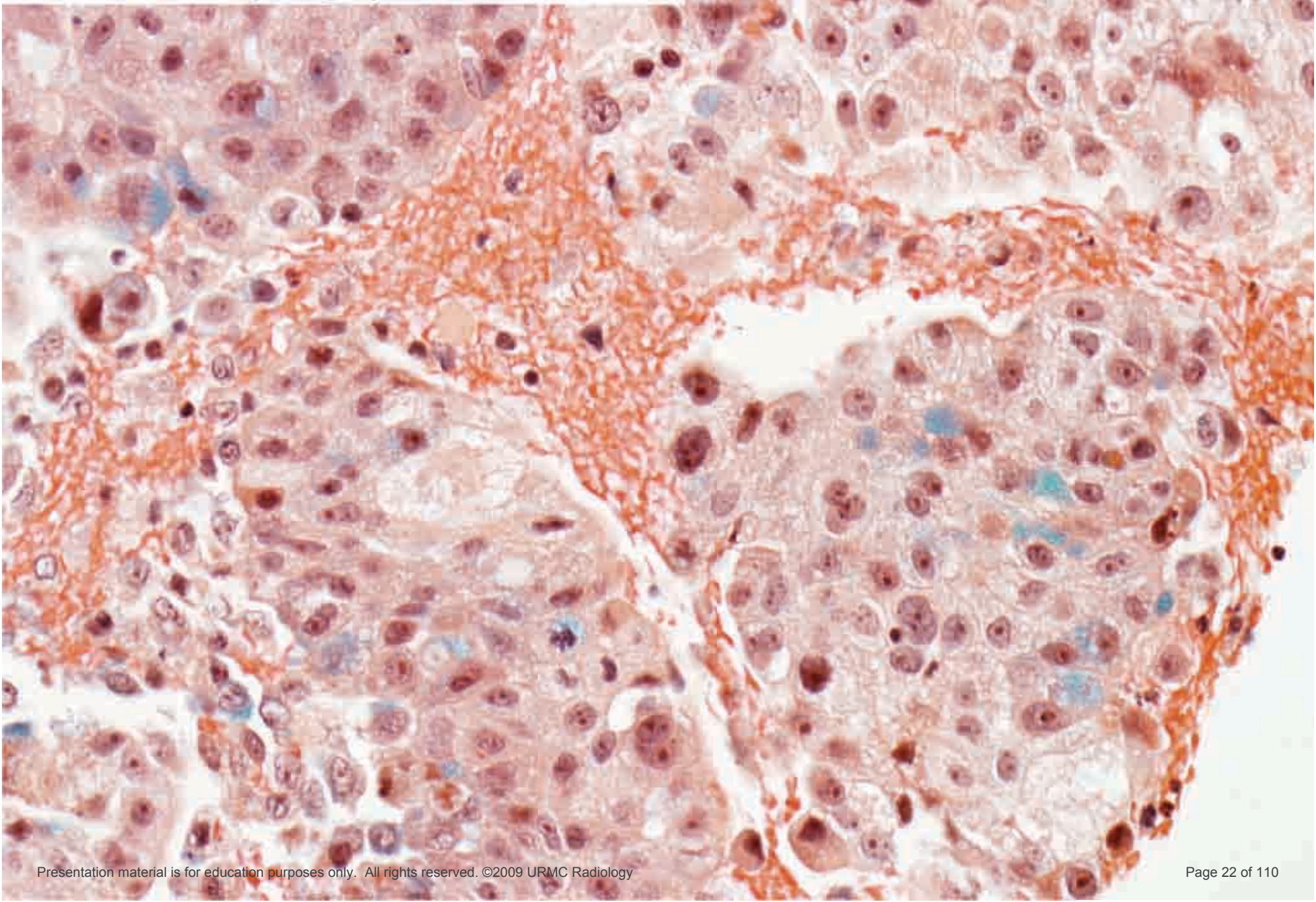


**Bone, scapula, left, CT-guided FNA:
Cell Block, H & E stain, 20x**





**Lung, left middle lobe , CT-guided FNA:
Cell Block, Kreyberg special stain, 20x**



Bone, scapula, left, CT-guided fine needle aspiration:

Malignant tumor cells present derived from poorly differentiated non-small cell carcinoma, favor adenocarcinoma.

Comment: Immunohistochemical for TTF-1 and p63 are both negative. A Kreyberg stain is strongly positive for intracellular mucin supporting the diagnosis of poorly differentiated adenocarcinoma.

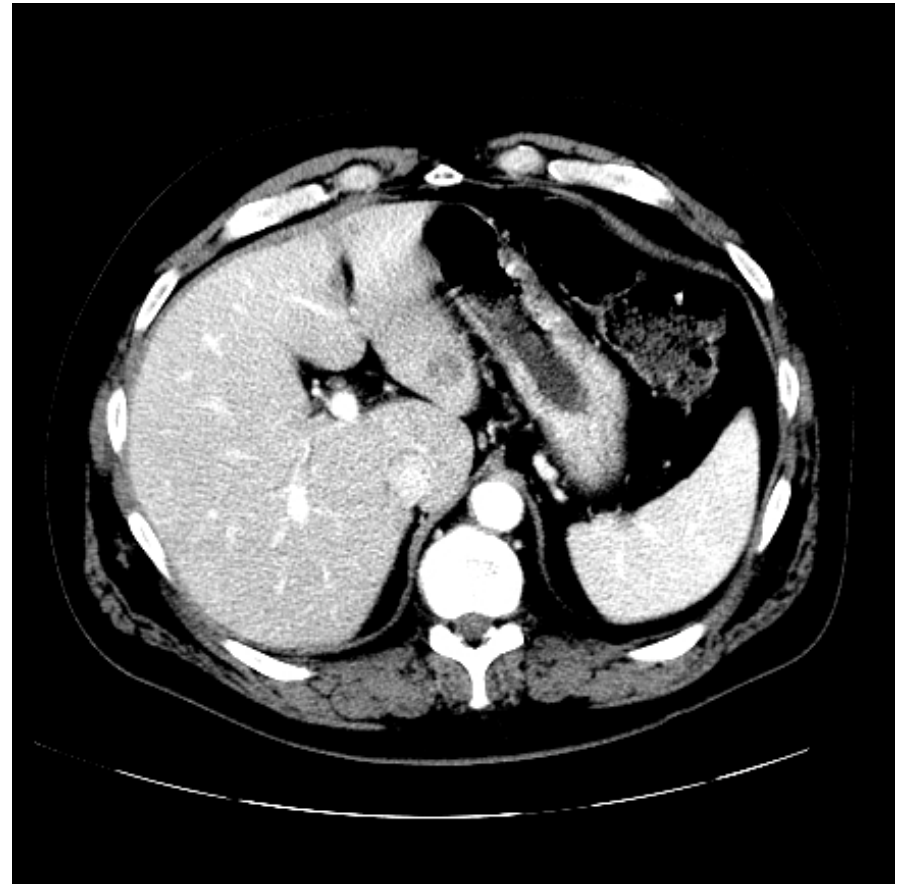
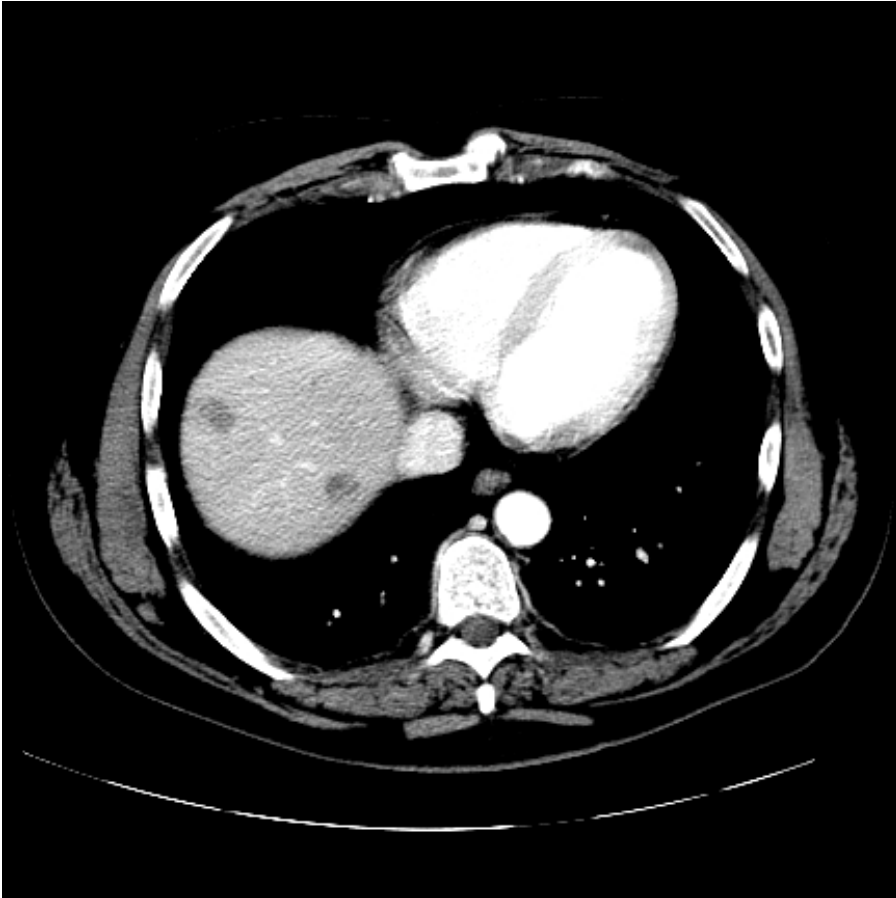
Cell block and cytologic preparations examined.

Case 2

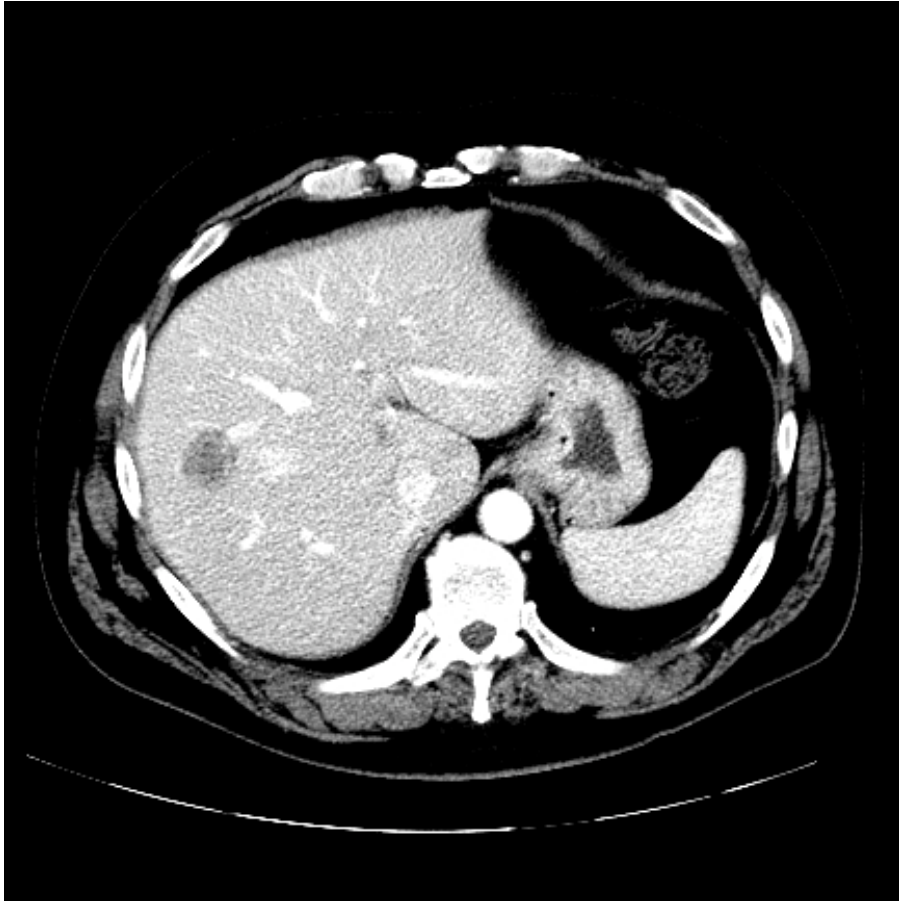
Case 2

- 44 y/o male presents for CT of the abdomen and pelvis. History of ½ pack/day tobacco use (current) for a total of at least 15 pack years. Anxiety disorder. History is otherwise withheld.

Case 2



Case 2



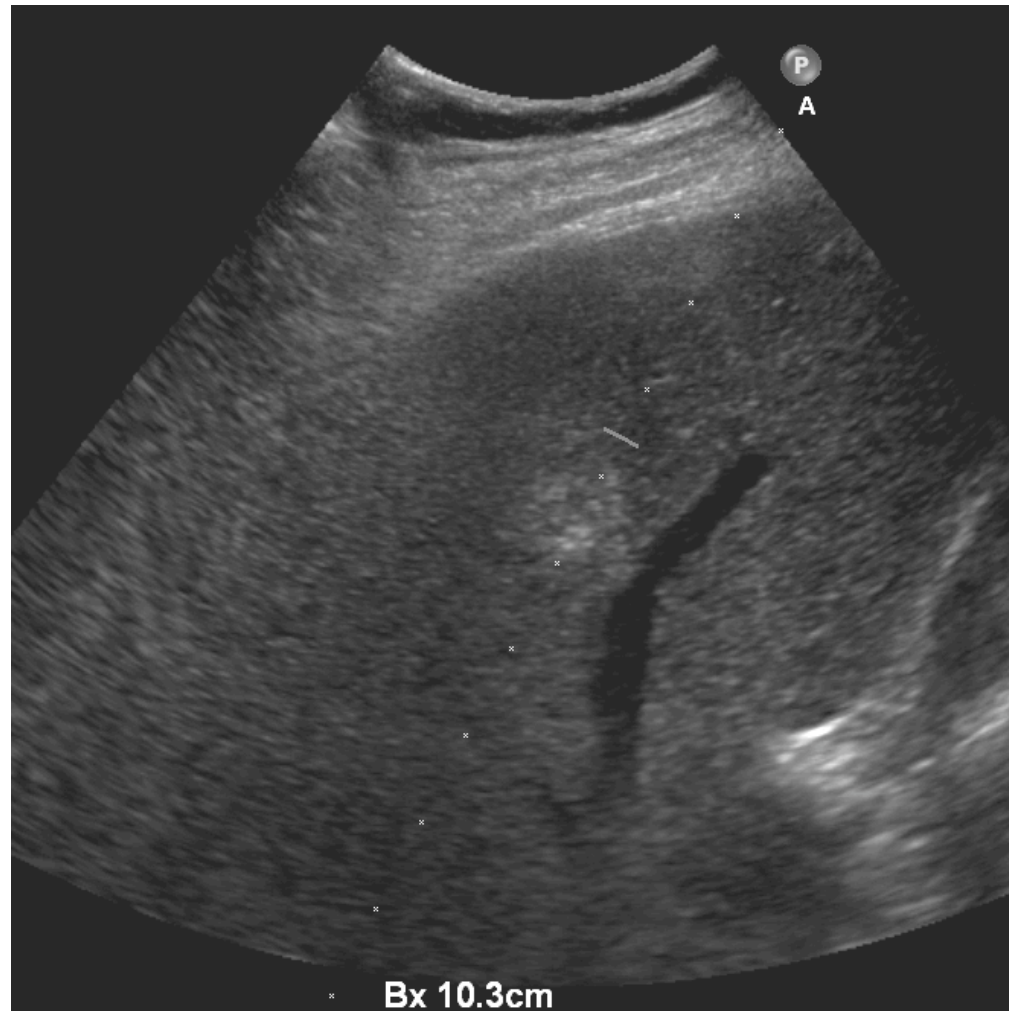
Case 2

- Ddx: Multiple hypoattenuating liver lesions:
 - Congenital / vascular
 - Simple hepatic cysts
 - Hepatic cavernous hemangiomata
 - Autoimmune / collagen-vascular disease
 - Sarcoidosis
 - Neoplasia
 - Hepatic adenomata
 - Lymphoma
 - Metastatic disease to the liver
 - Hepatocellular carcinoma
 - Infection
 - Hyatid cysts (characteristic with internal sepatations / “daughter cysts”)
 - ascending cholangitis
 - pyogenic abcesses
 - amebic abcesses
 - Fibropolycytic disease
 - Caroli disease
 - autosomal dominant polycystic liver disease
 - Multiple biliary hamaratomata

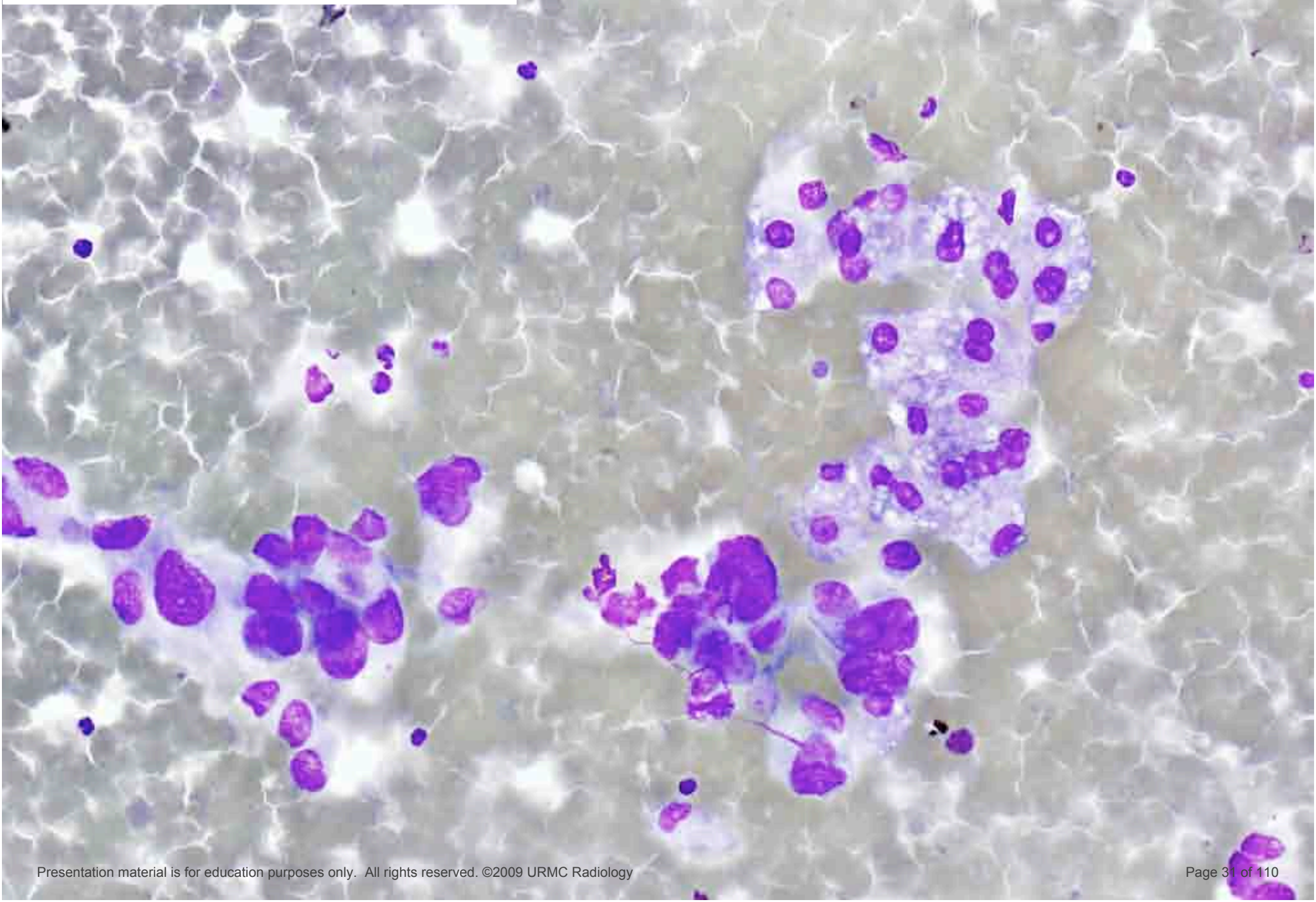
Case 2



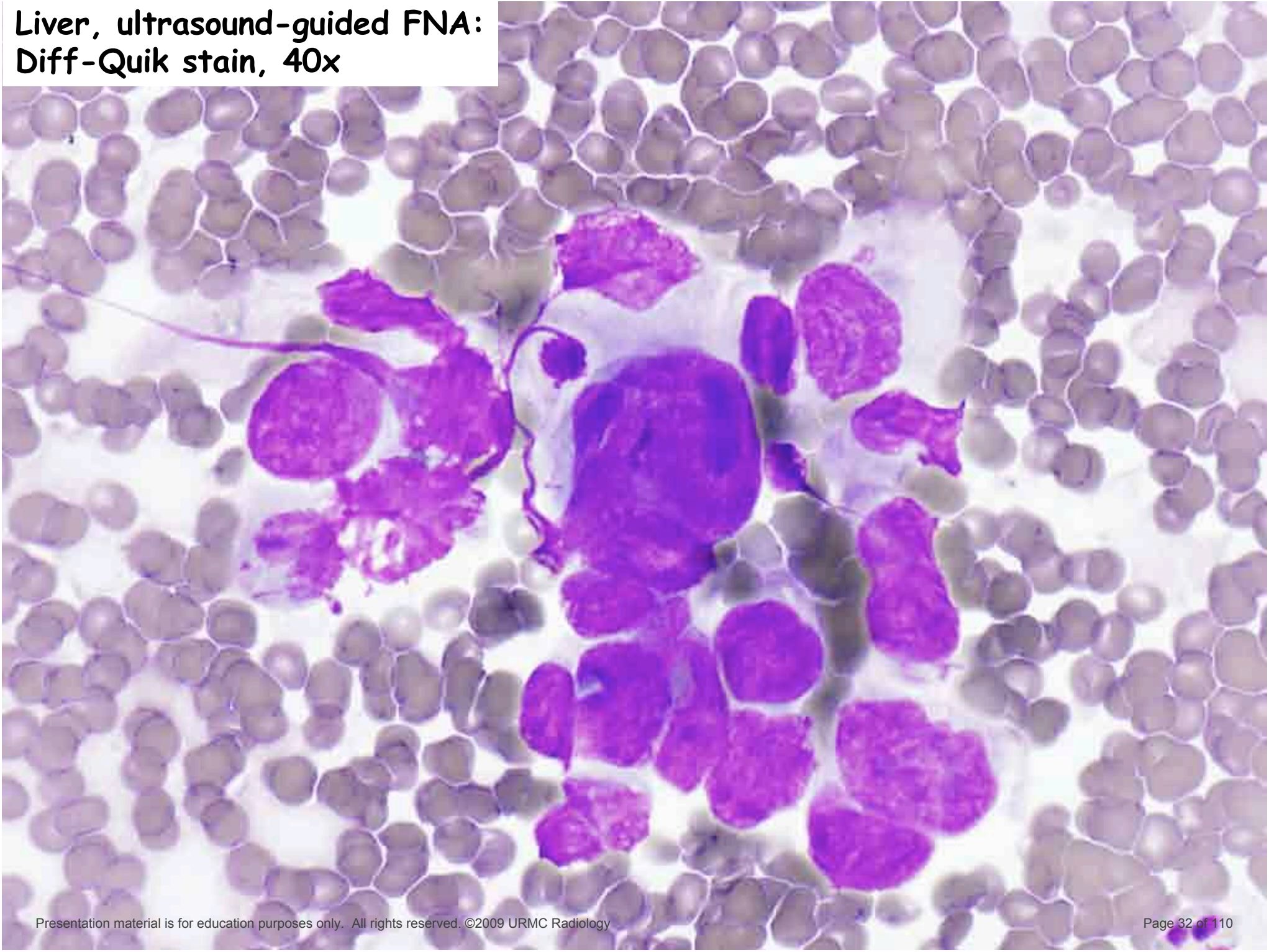
Case 2



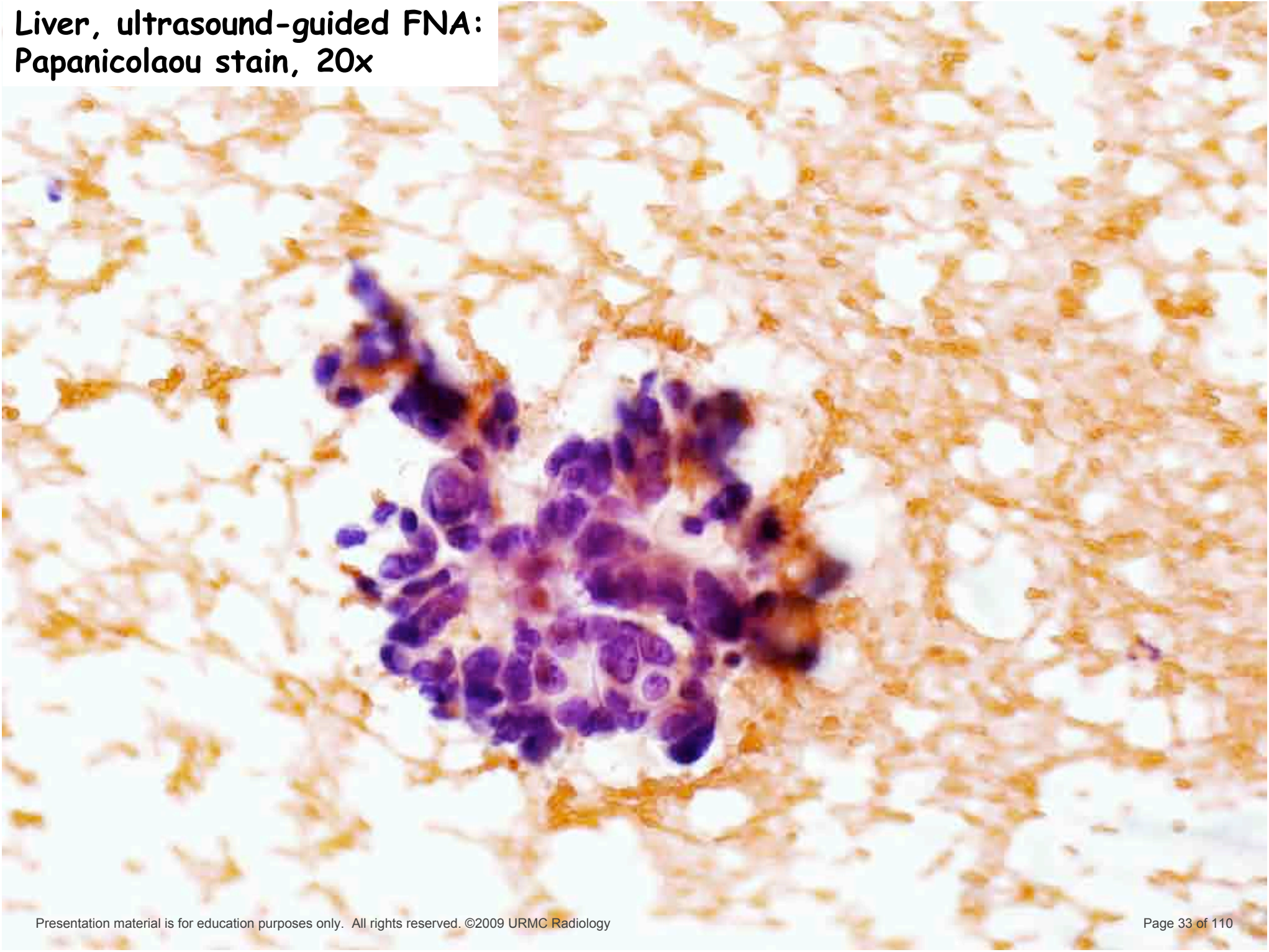
**Liver, ultrasound-guided FNA:
Diff-Quik stain, 20x**



**Liver, ultrasound-guided FNA:
Diff-Quik stain, 40x**



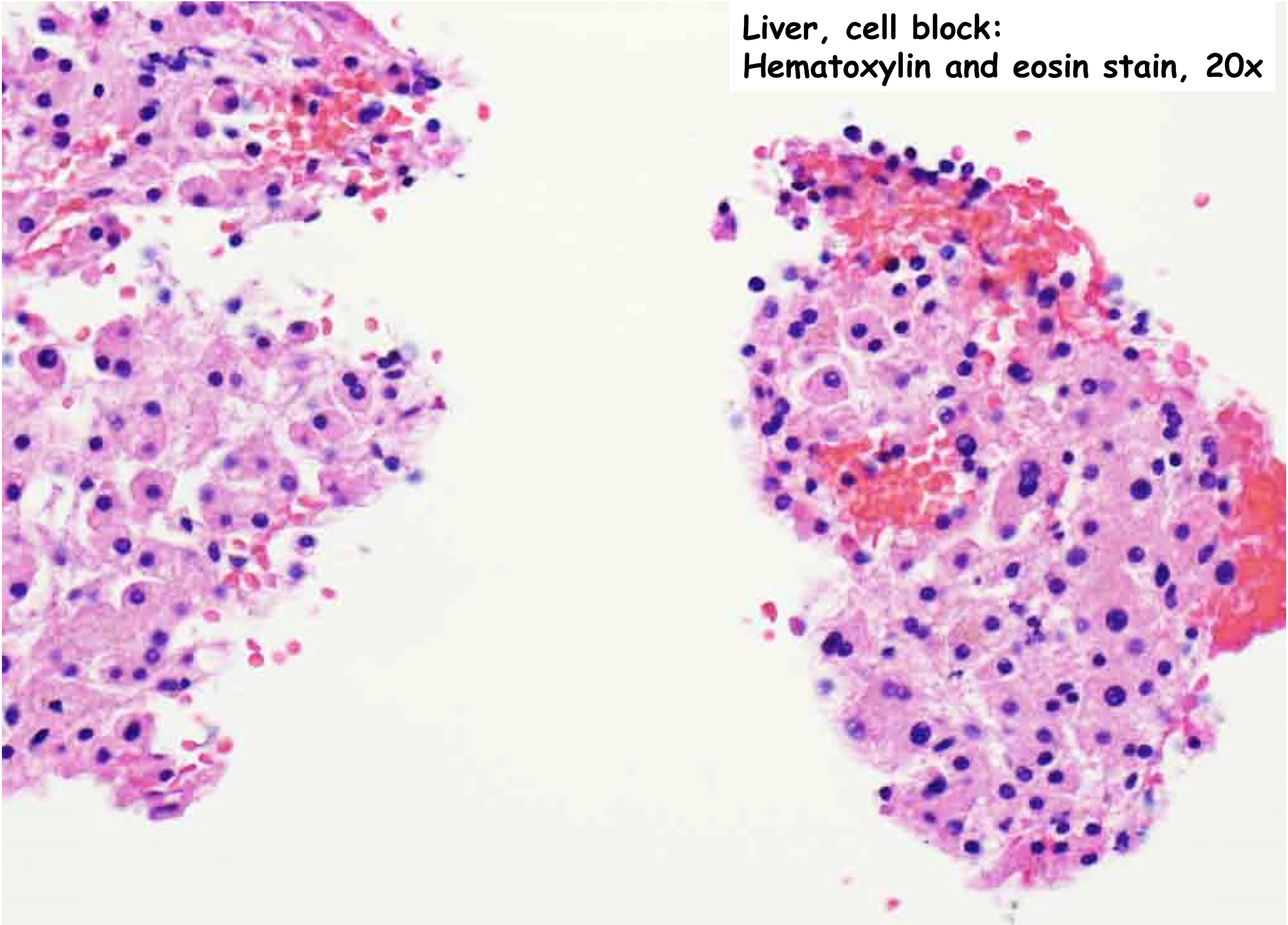
**Liver, ultrasound-guided FNA:
Papanicolaou stain, 20x**



**Liver, ultrasound-guided FNA:
Papanicolaou stain, 40x**



Liver, cell block:
Hematoxylin and eosin stain, 20x



Liver, ultrasound-guided fine needle aspiration:

Malignant tumor cells present derived from adenocarcinoma consistent with colorectal primary.

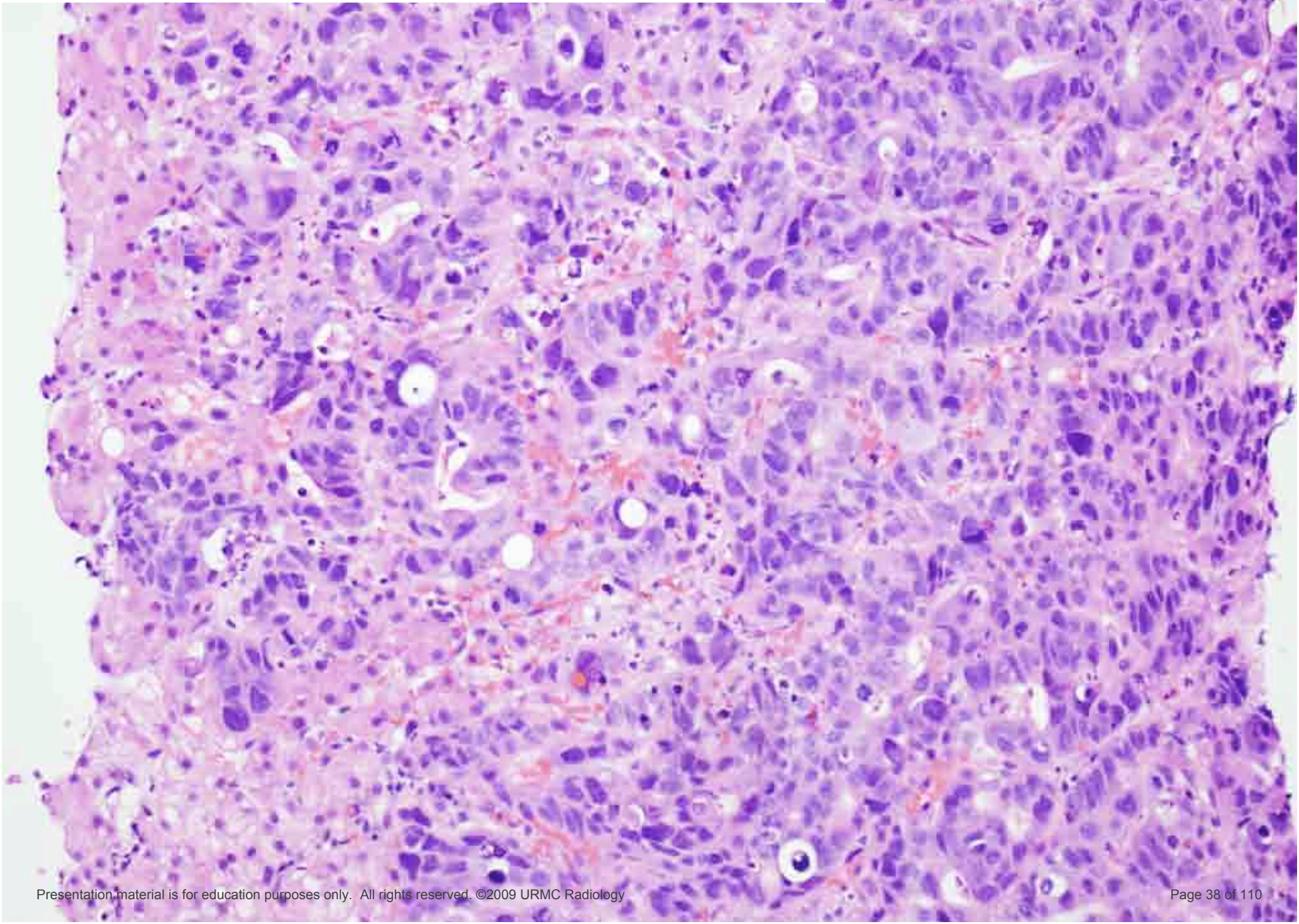
Cell block and cytologic preparations examined.

Liver, right, core needle biopsy:

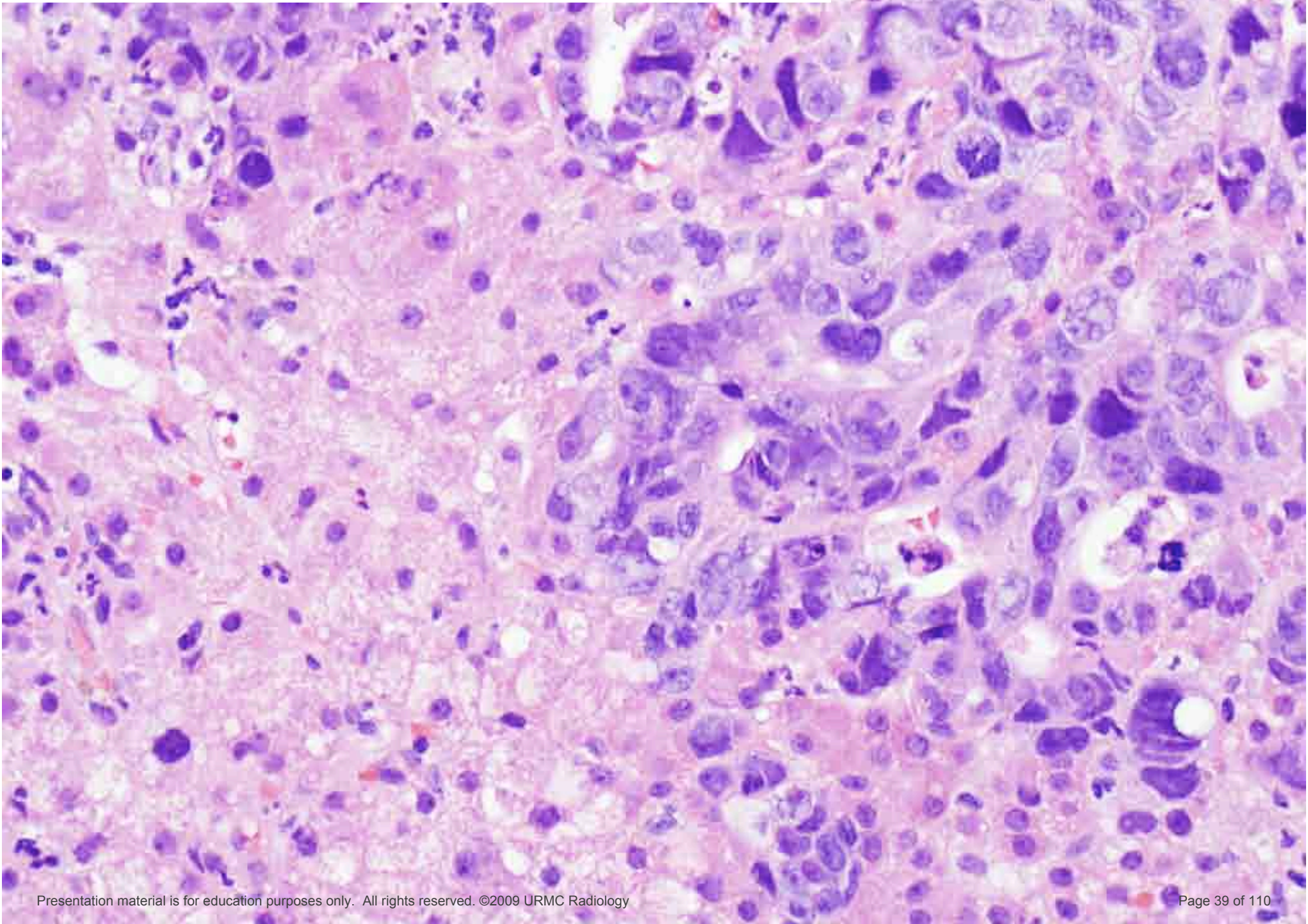
Moderately to poorly-differentiated adenocarcinoma consistent with colorectal primary.

Comment: The tissue block will be sent for Kras testing.

Liver, right, core needle biopsy: H & E stain, 10x



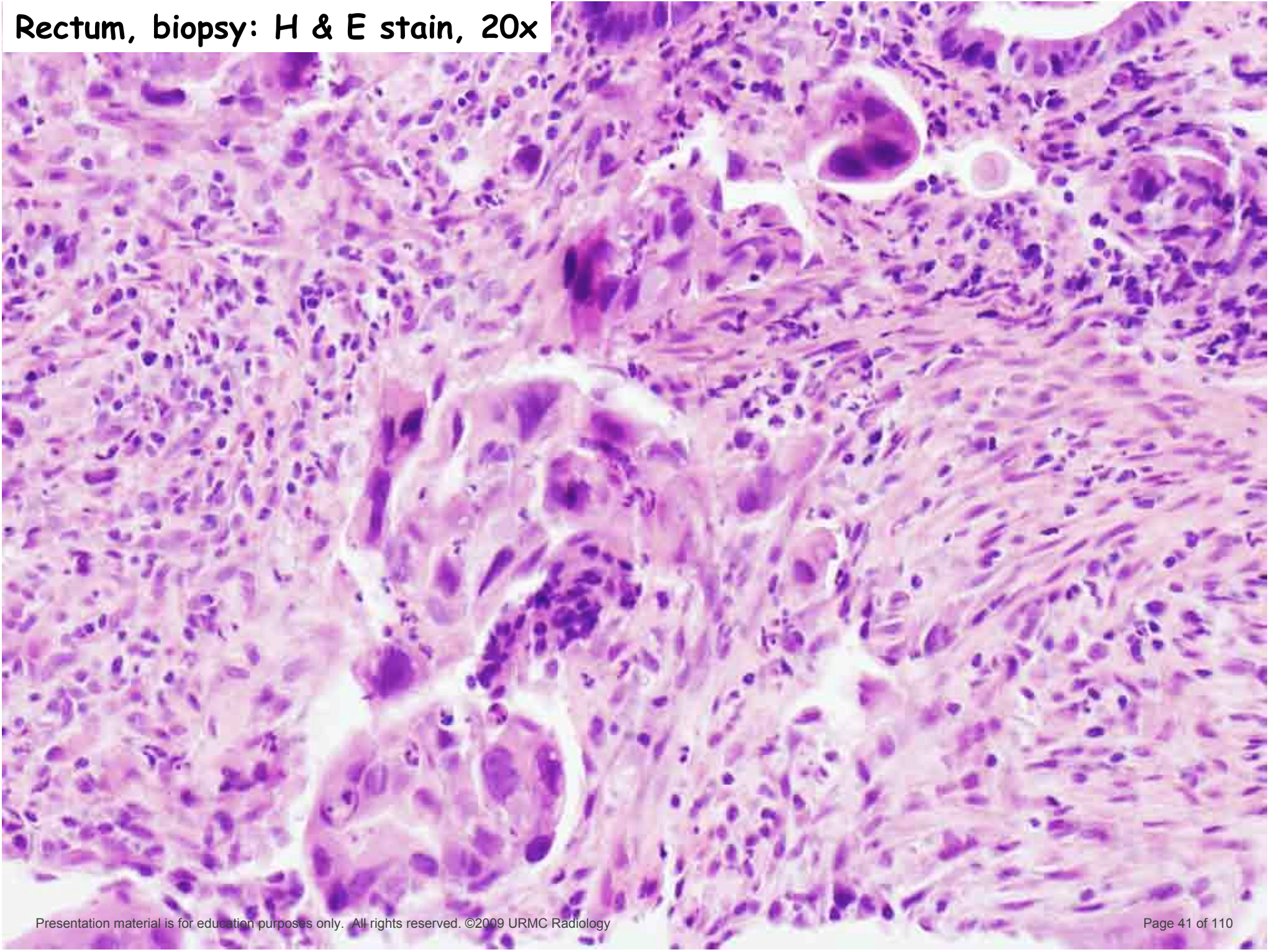
Liver, right, core needle biopsy: H & E stain, 20x



Rectum, biopsy: (outside slide consultation)

Adenocarcinoma, moderately to poorly-differentiated.

Rectum, biopsy: H & E stain, 20x

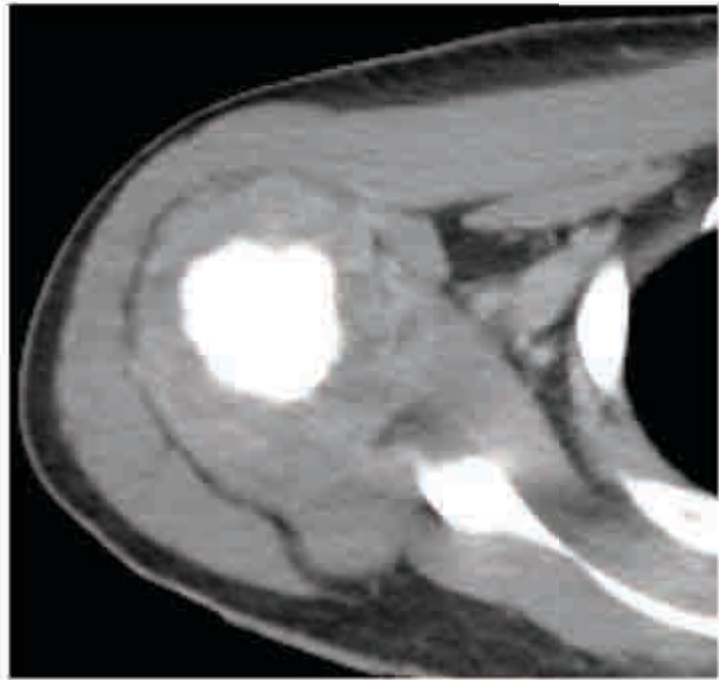
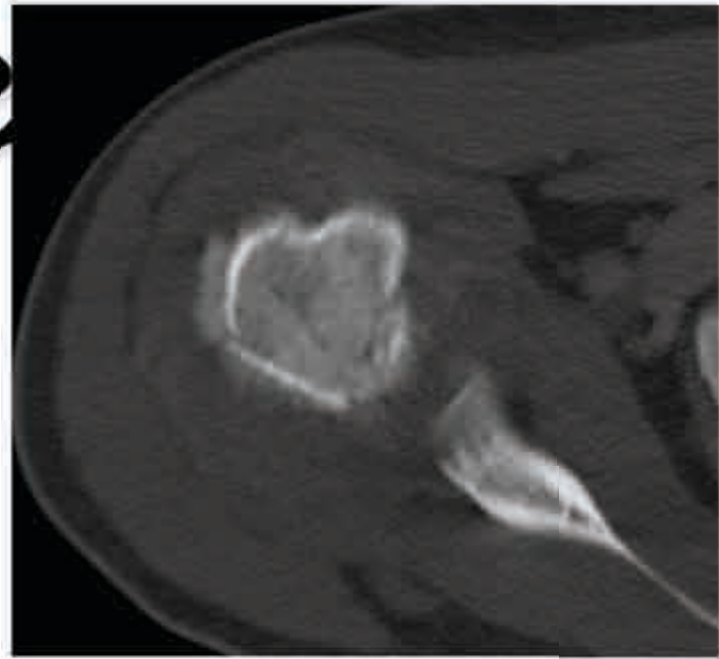


Case 3

Case 3

- 22 year old male with worsening right shoulder pain which he believes is secondary to weight-lifting.

Case



Case 3

DDx

Case 3

DDx

- Primary bone neoplasm

Case 3

DDx

- Primary bone neoplasm
 - Osteosarcoma

Case 3

DDx

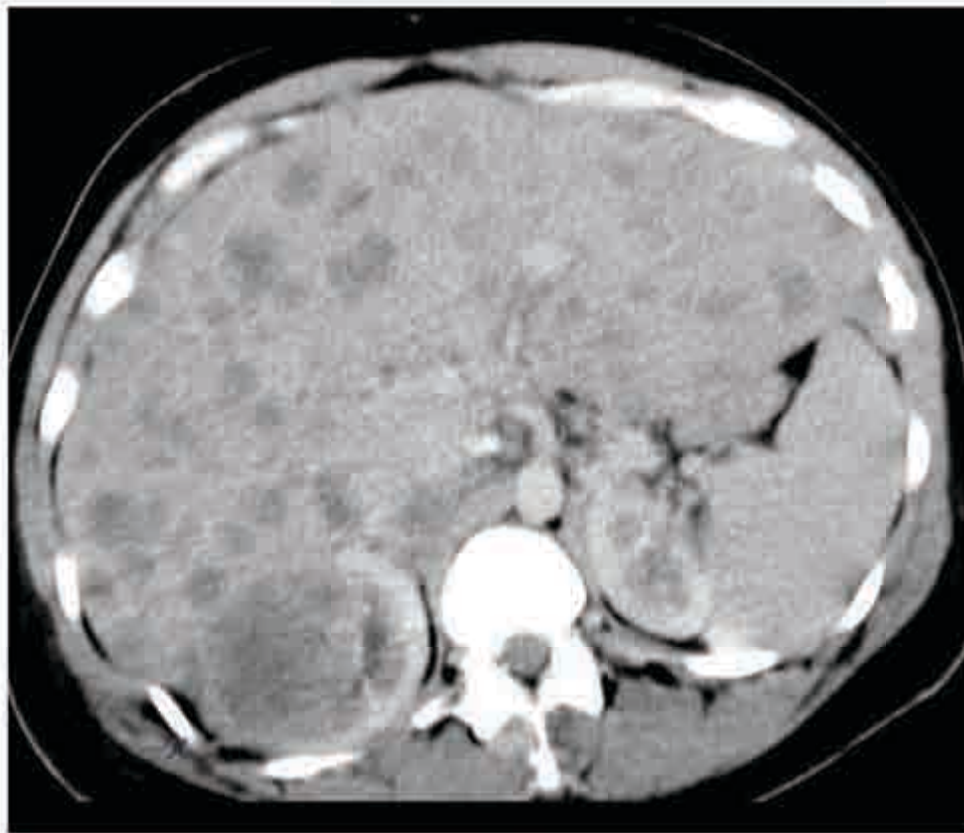
- Primary bone neoplasm
 - Osteosarcoma
 - Ewing's sarcoma

Case 3

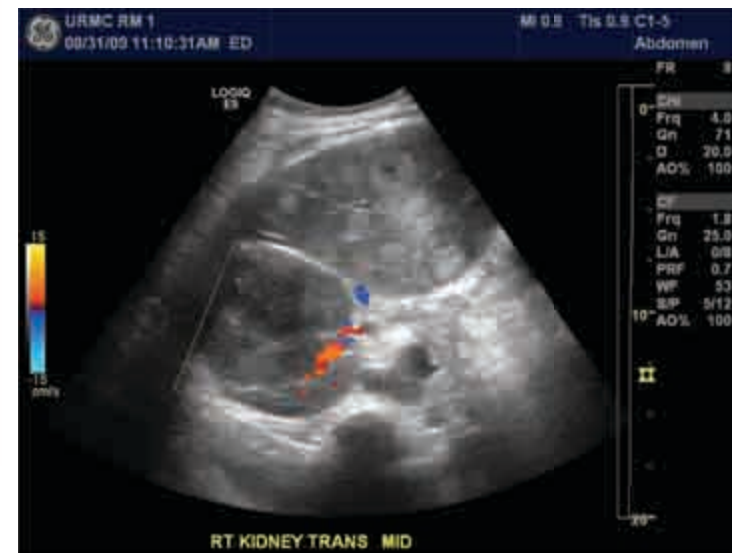
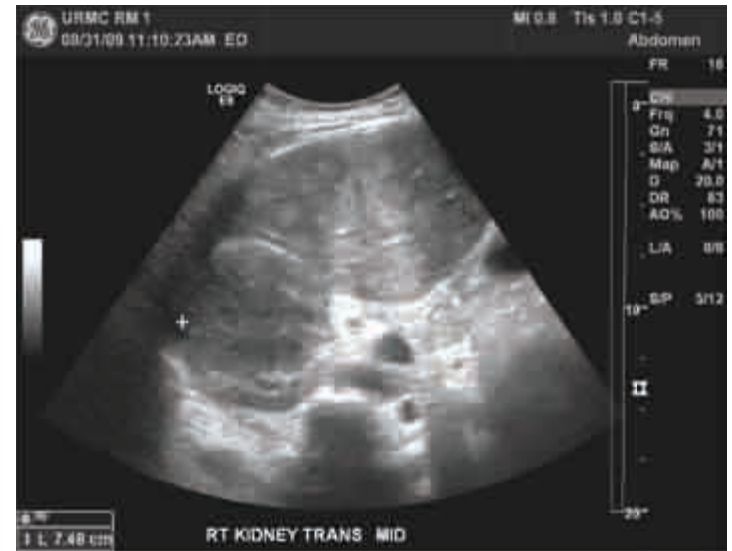
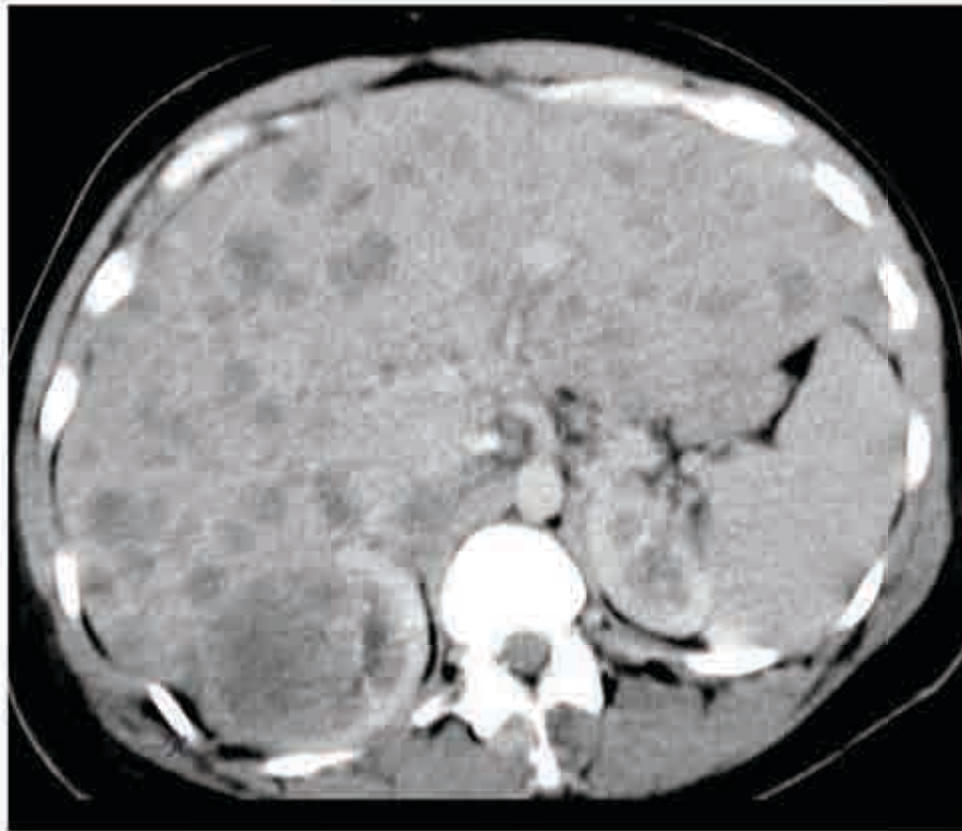
DDx

- Primary bone neoplasm
 - Osteosarcoma
 - Ewing's sarcoma
- Lymphoma

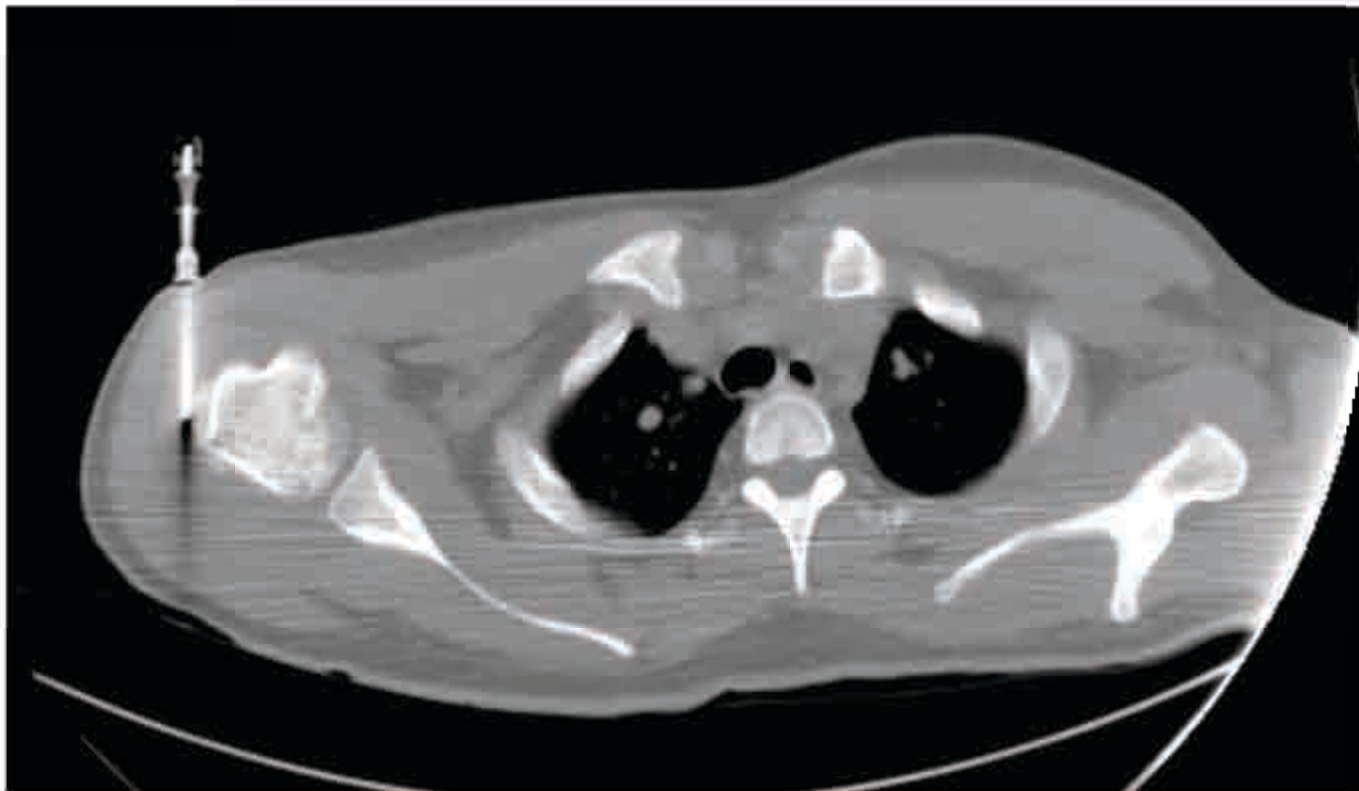
Case 3



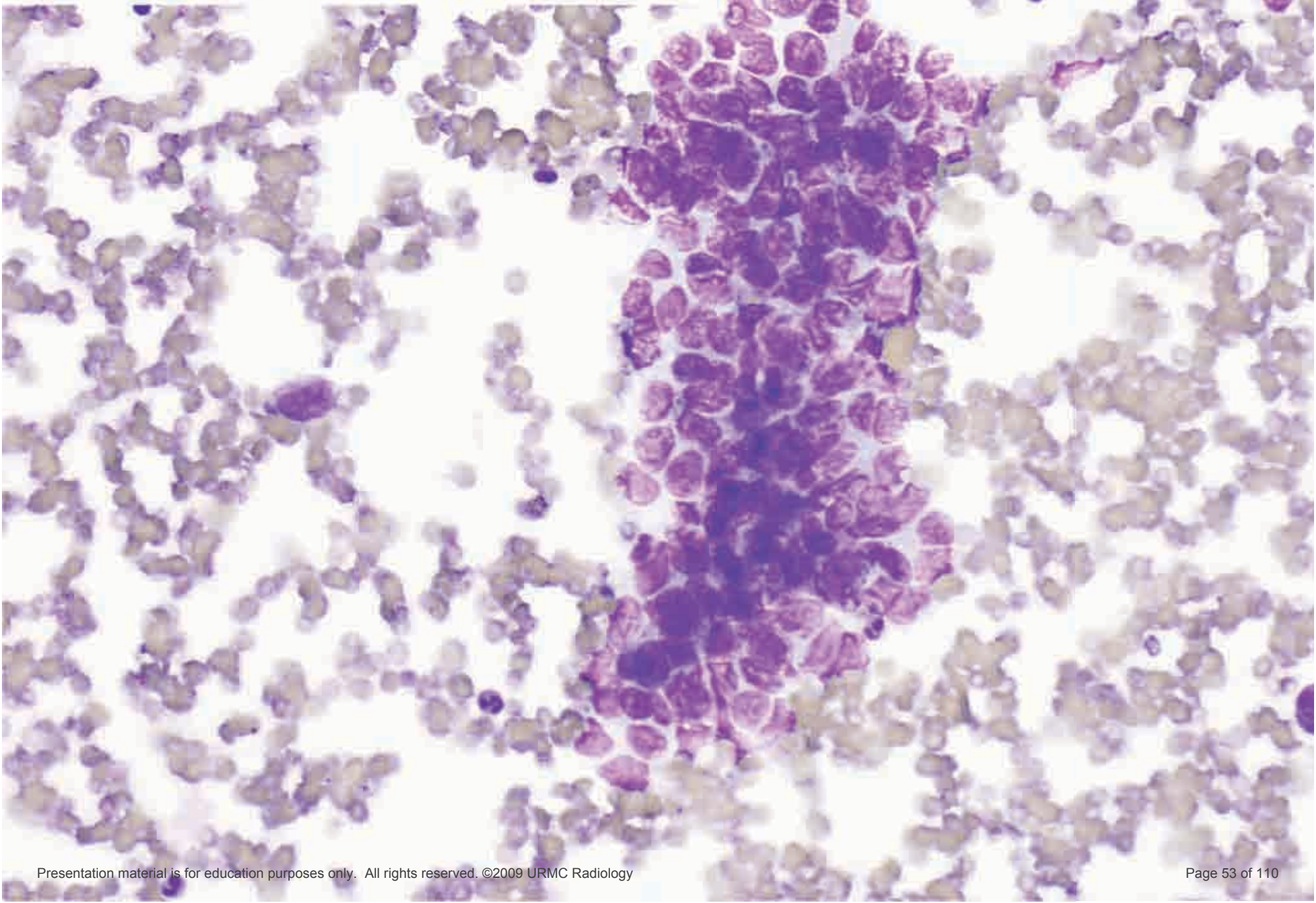
Case 3



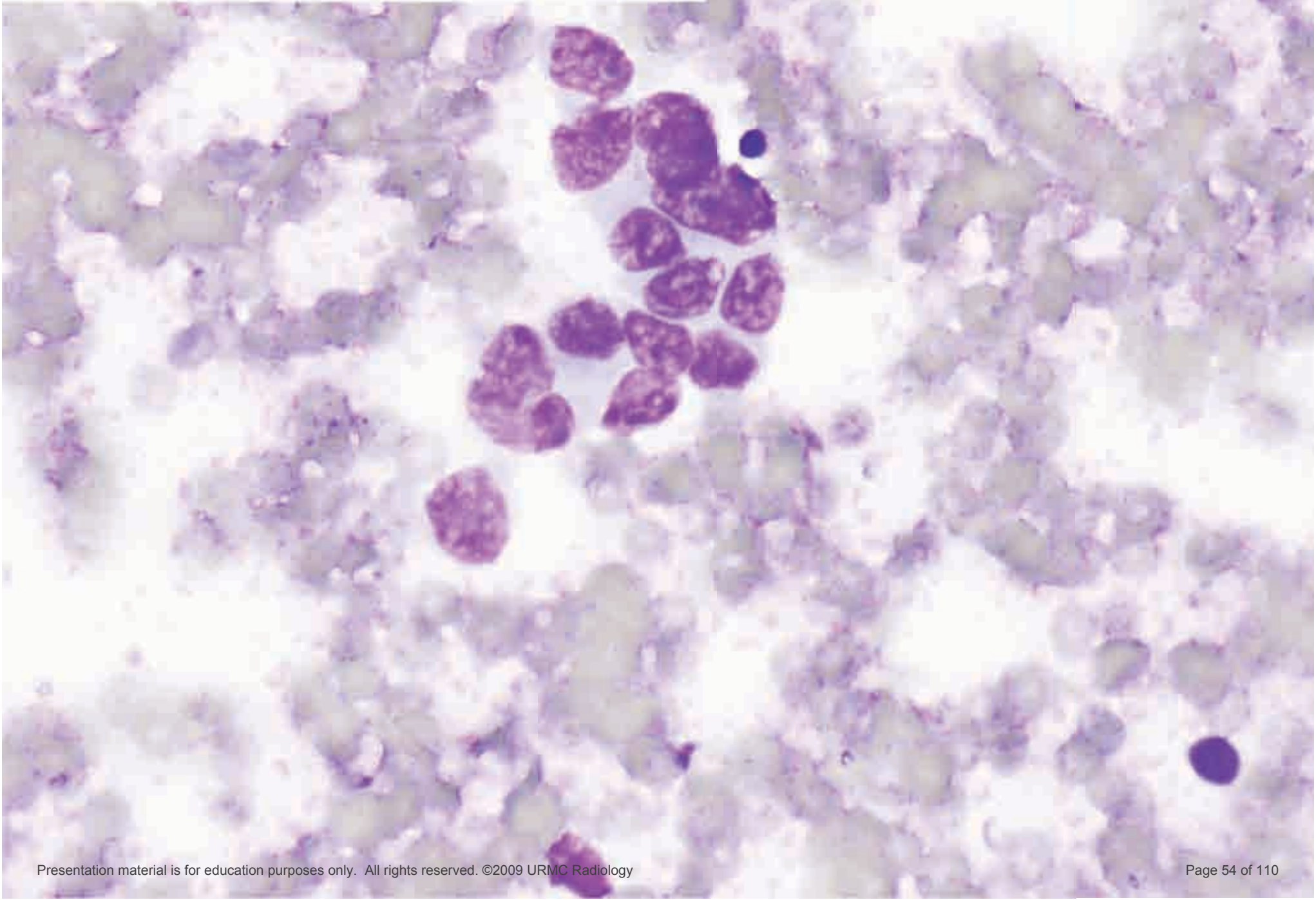
Case 3



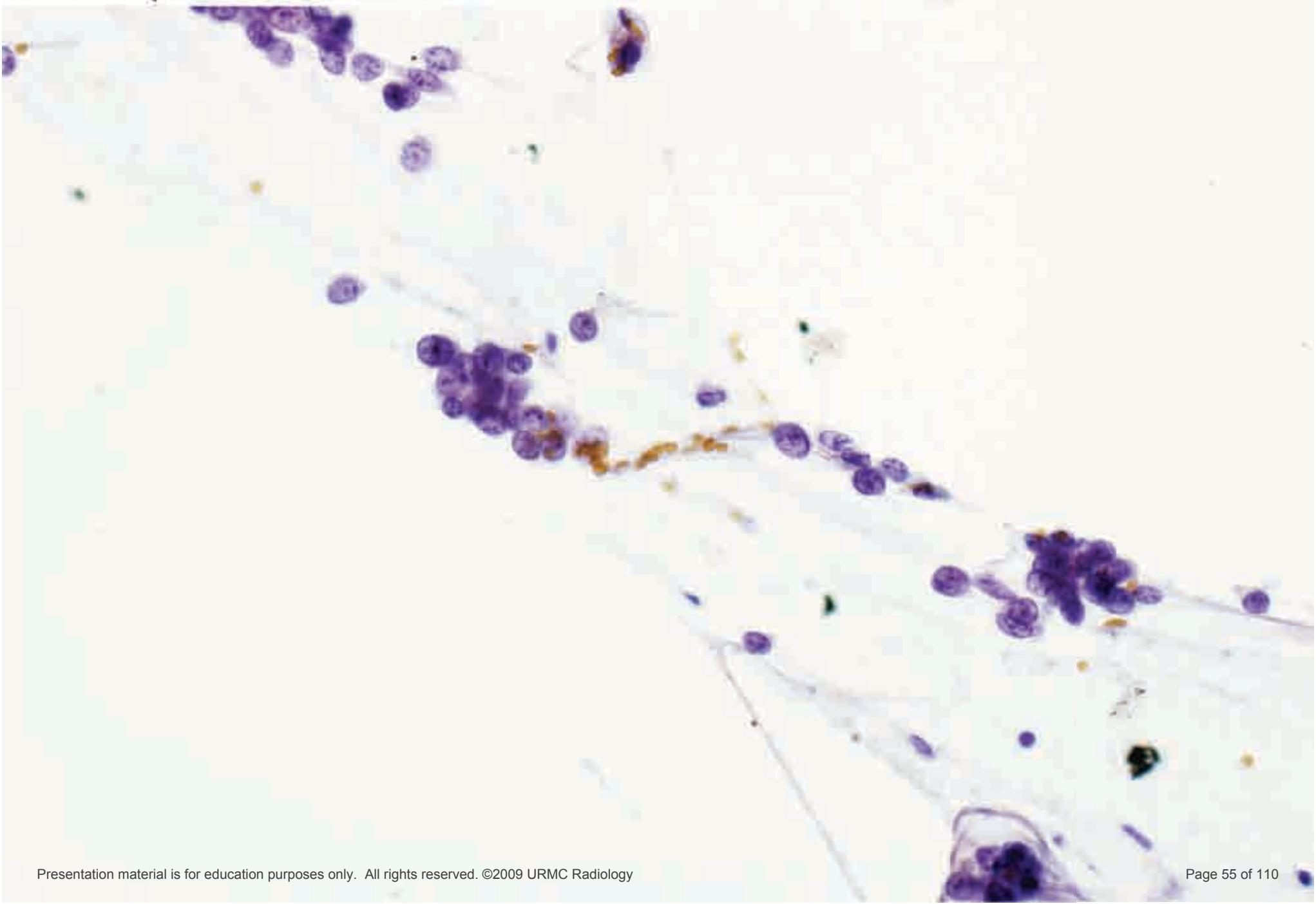
**Bone and soft tissue, humerus, CT-guided
FNA: Diff-Quik stain, 20x**



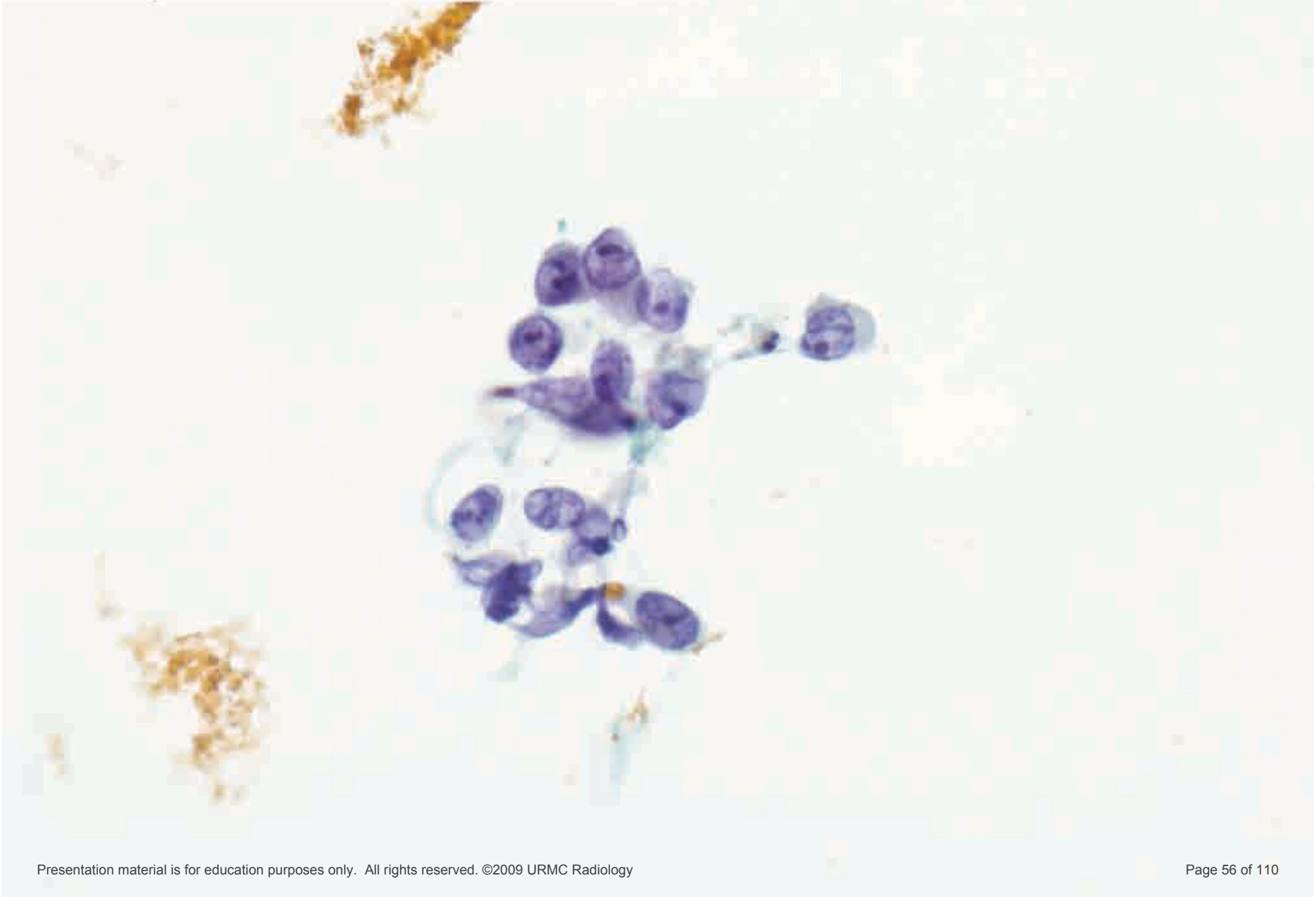
**Bone and soft tissue, humerus, CT-guided
FNA: Diff-Quik stain, 40x**

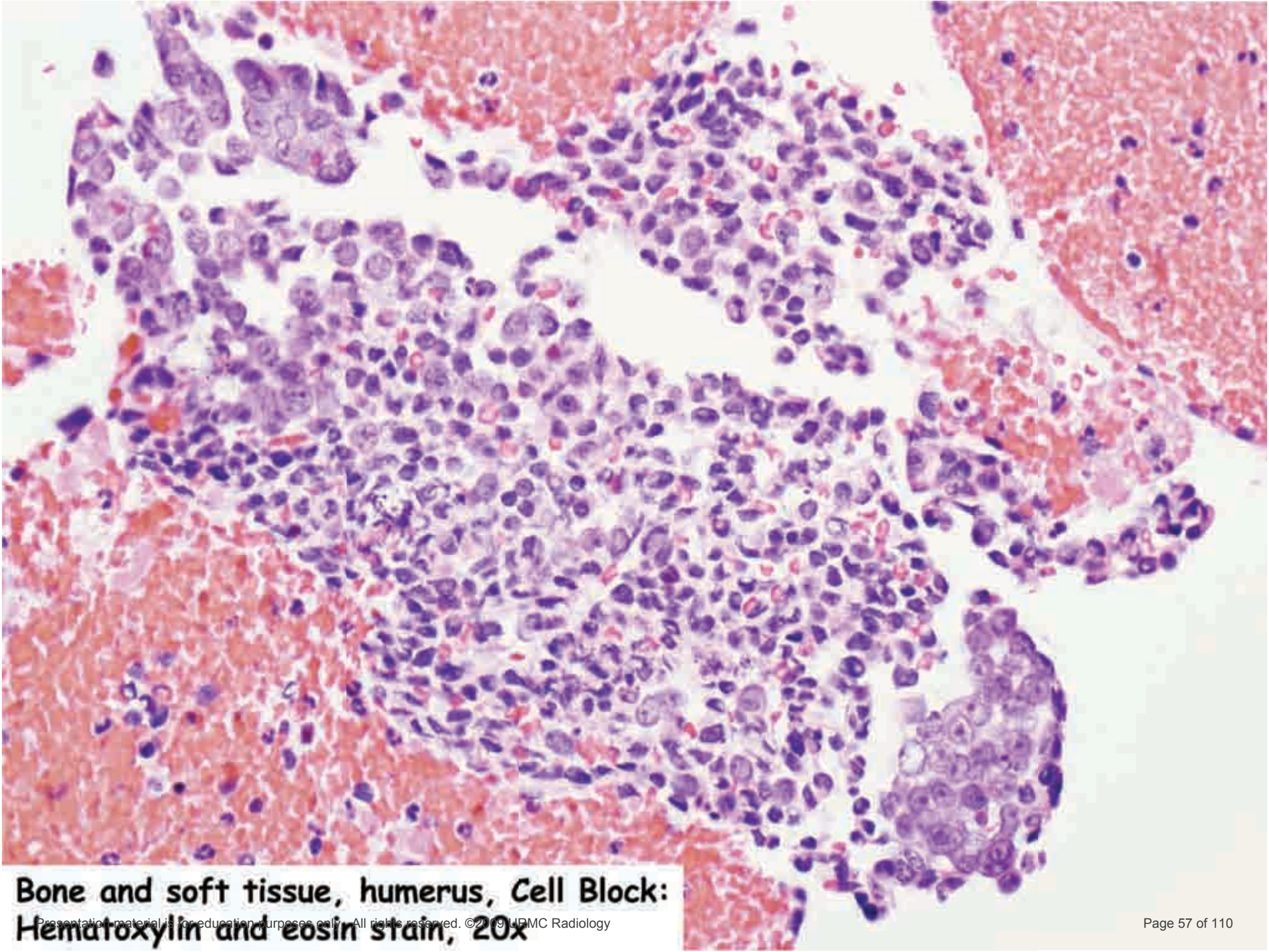


**Bone and soft tissue, humerus, CT-guided
FNA: Papanicolaou stain, 20x**



**Bone and soft tissue, humerus, CT-guided
FNA: Papanicolaou stain, 40x**

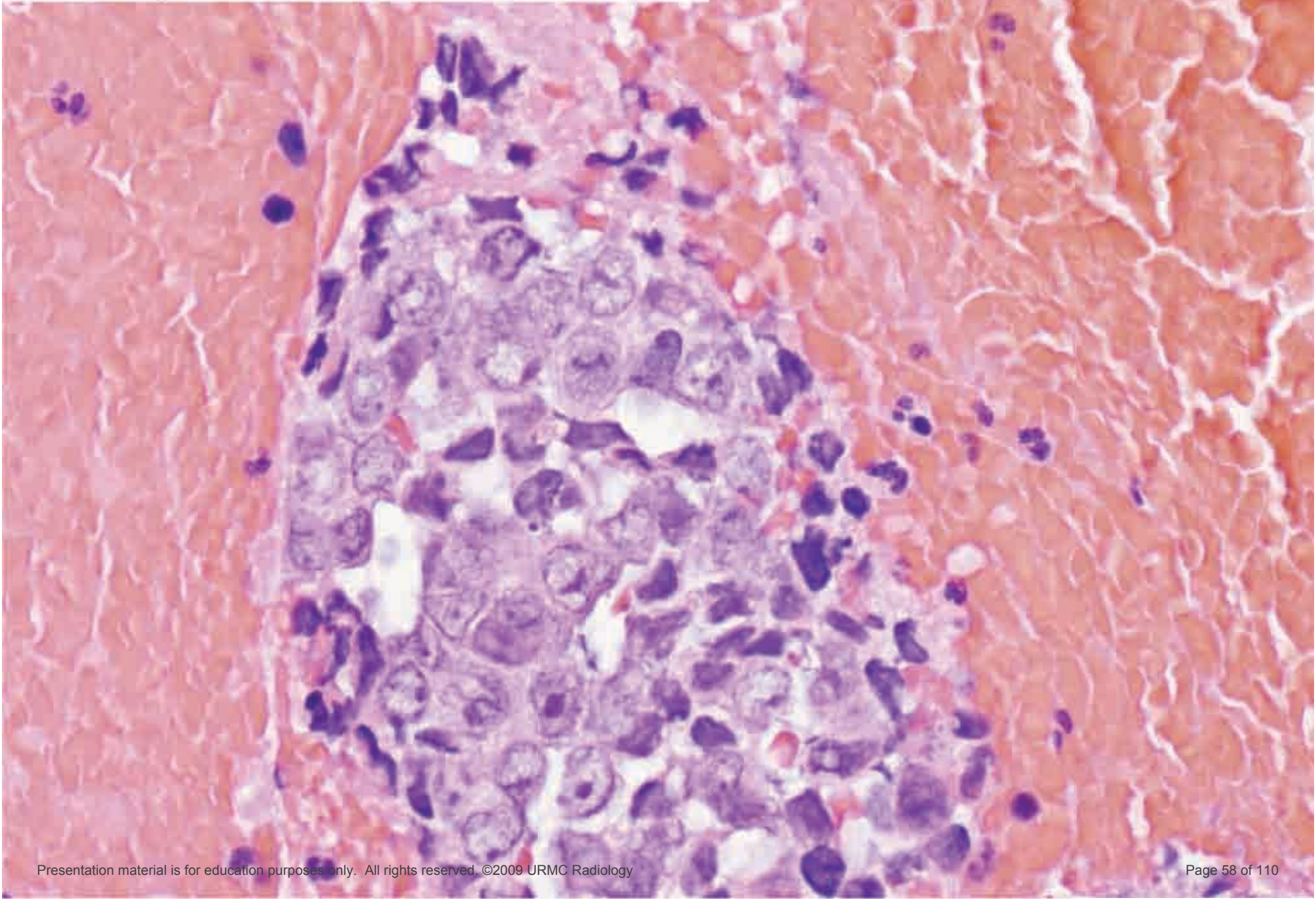




Bone and soft tissue, humerus, Cell Block:
Hematoxylin and eosin stain, 20x

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**Bone and soft tissue, humerus, Cell Block:
Hematoxylin and eosin stain, 40x**



Bone and soft tissue, humerus, CT-guided fine needle aspiration:

Poorly differentiated malignant neoplasm, favor metastatic renal medullary carcinoma.

Bone and soft tissue, right proximal humerus, biopsy:

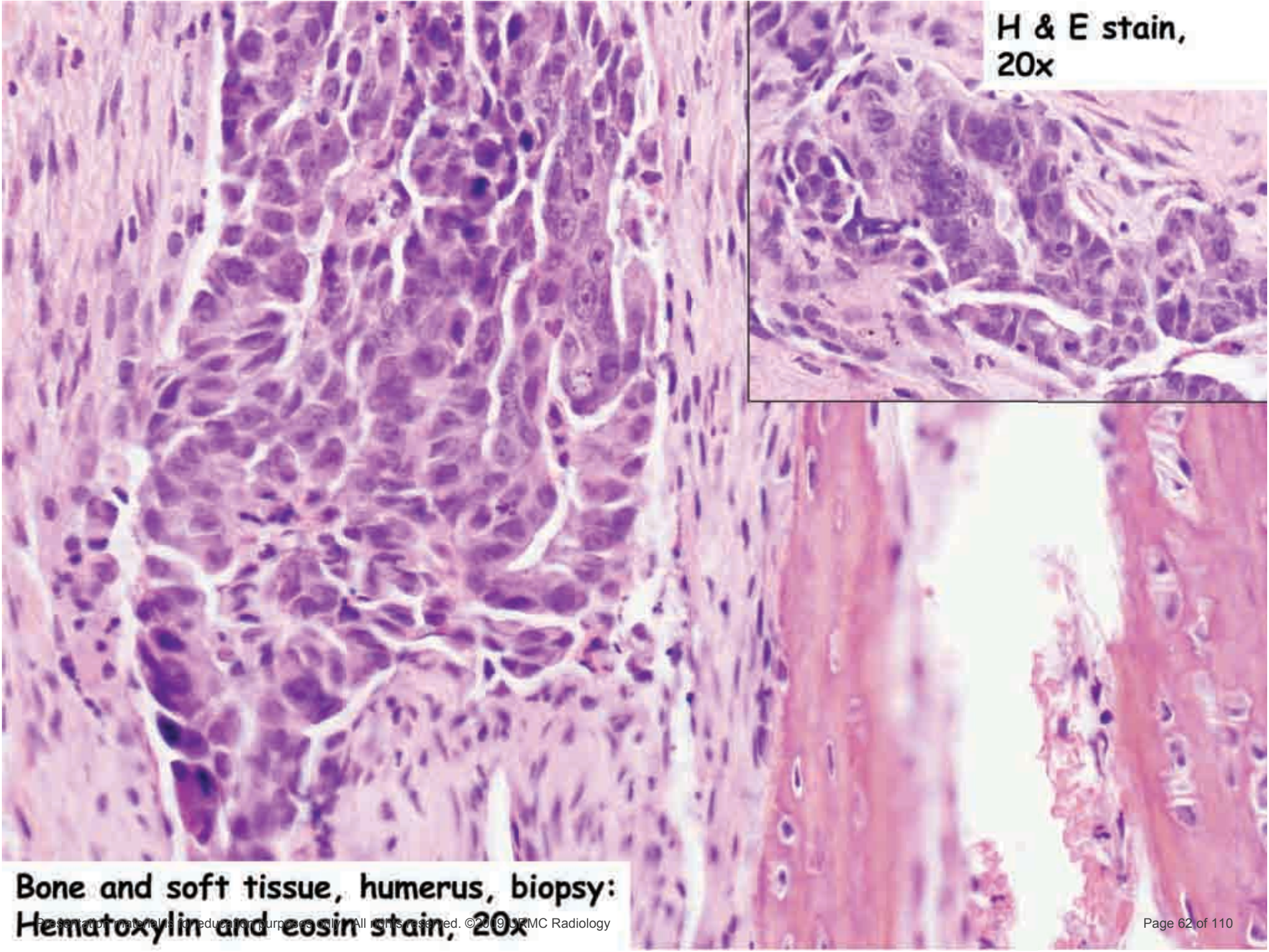
Malignant epithelial neoplasm, most consistent with metastasis from renal medullary carcinoma.

Comment: Immunohistochemical stains are positive for EMA, cytokeratin 7 and AE1/AE3 in the epithelial cells.

The differential diagnosis includes metastatic carcinoma or primary synovial sarcoma (monophasic). The clinical presentation of widespread metastasis to the vertebrae, lungs and liver with a possible 9 cm. renal mass favor metastasis from renal medullary carcinoma. Renal medullary carcinoma is a tumor of young patients that characteristically arises within the setting of sickle cell trait or disease.

Definitive distinction between renal medullary carcinoma and synovial sarcoma cannot be made on immunohistochemical studies; however, if clinically indicated FISH analysis for the typical translocation associated with synovial sarcoma could be performed.

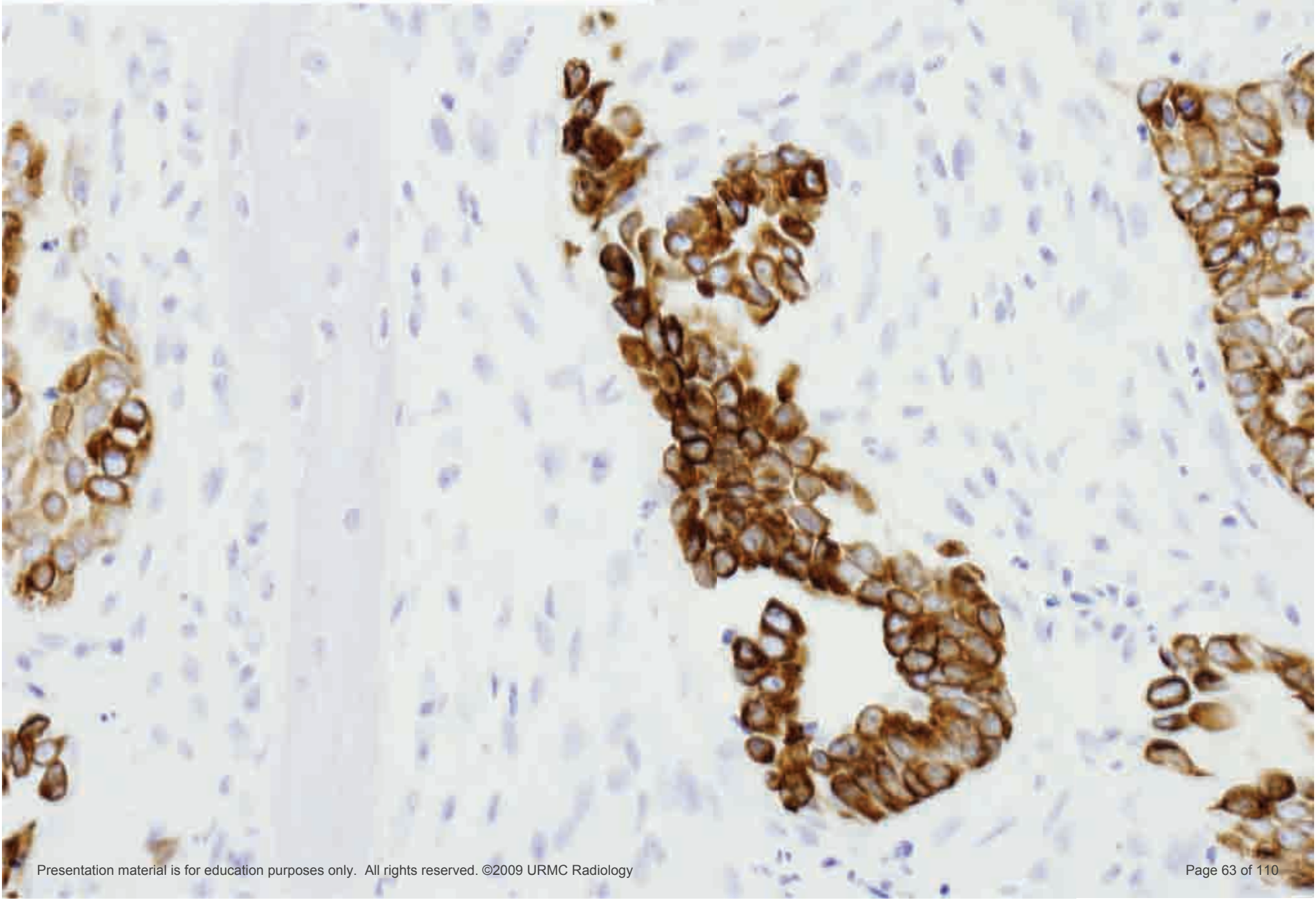
H & E stain,
20x



Bone and soft tissue, humerus, biopsy:
Hematoxylin and eosin stain, 20x

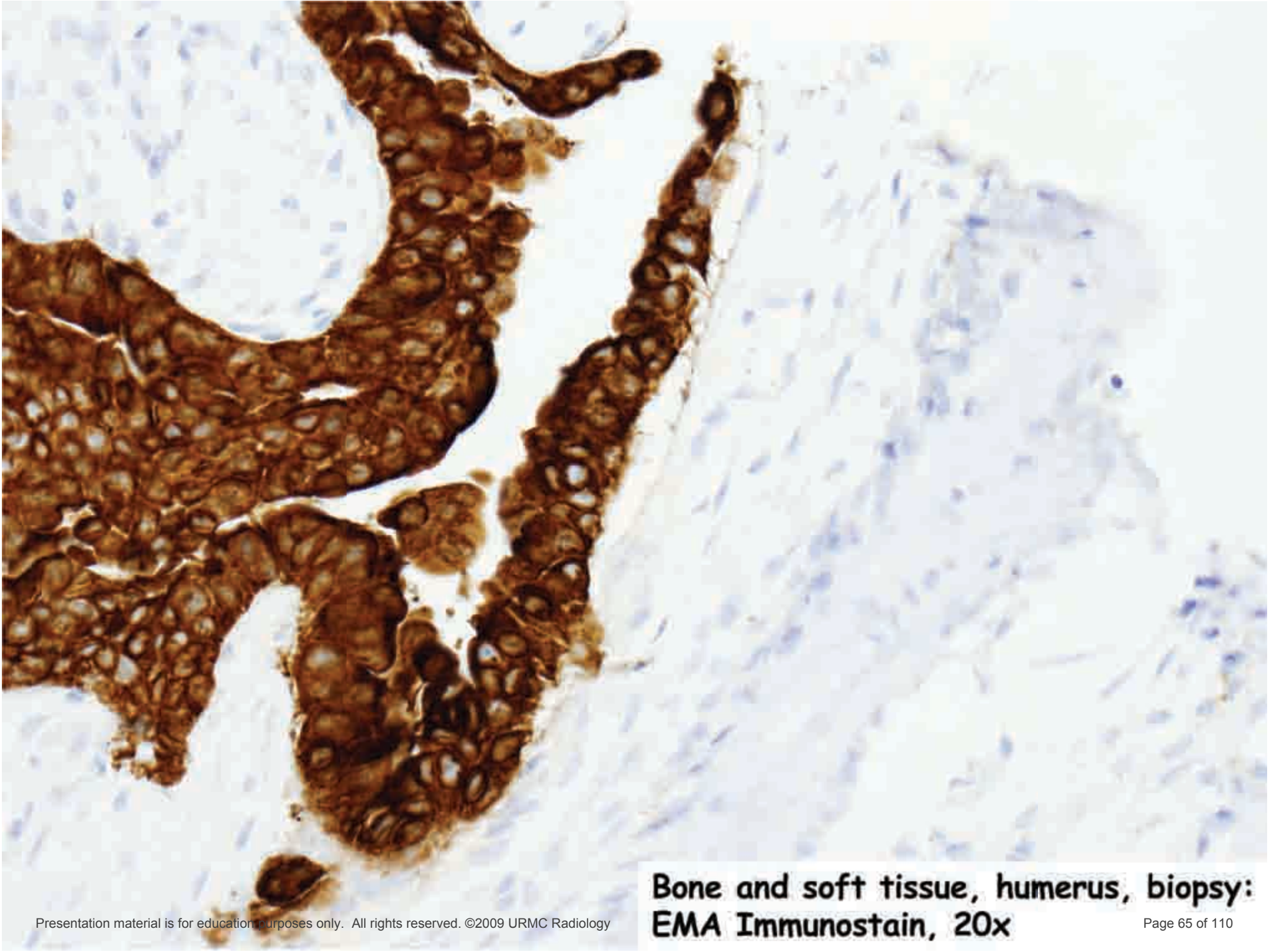
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Bone and soft tissue, humerus, biopsy:
CK 7 Immunostain, 20x





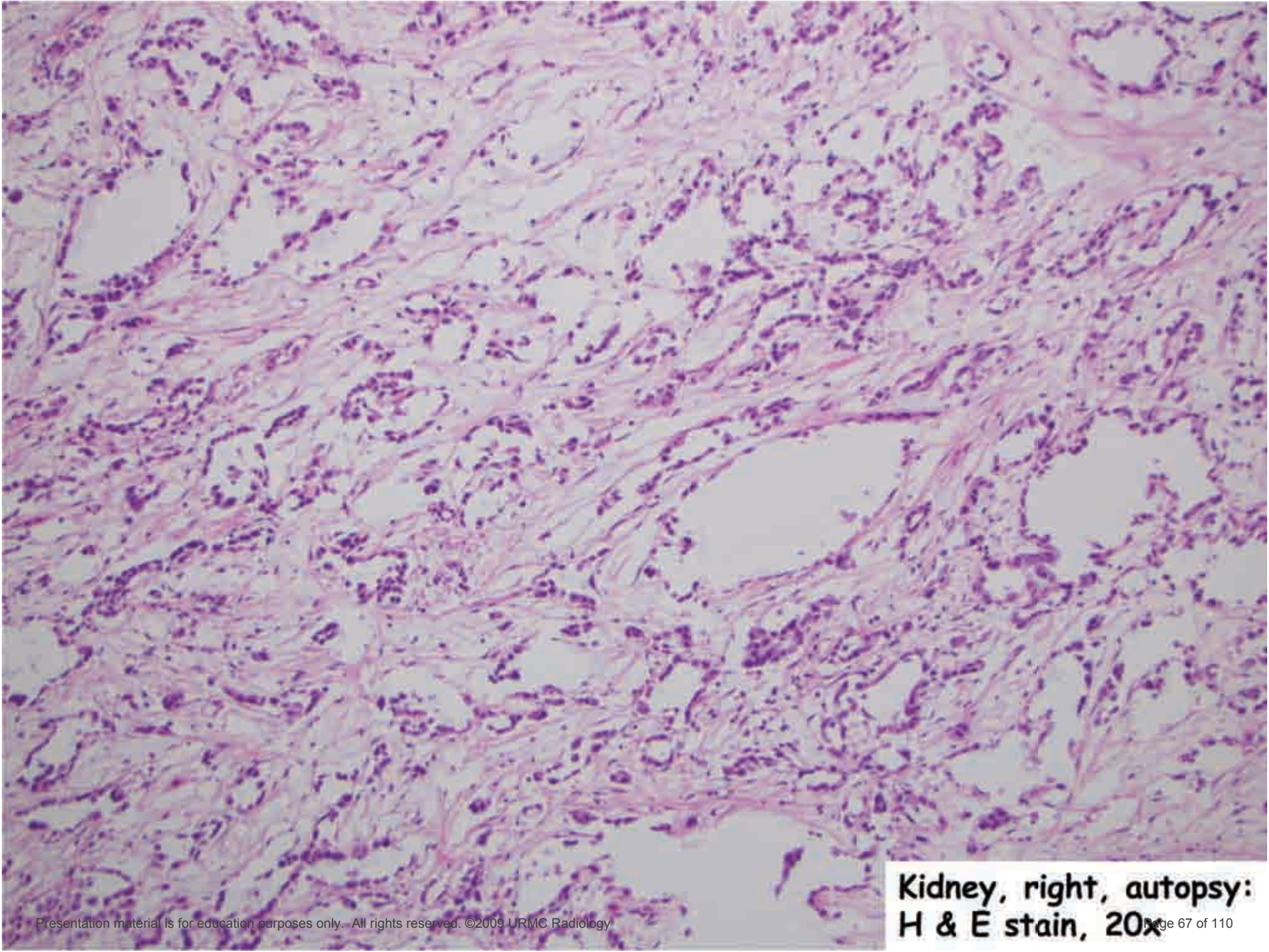
**Bone and soft tissue, humerus, biopsy:
AE1/AE3 Immunostain, 20x**



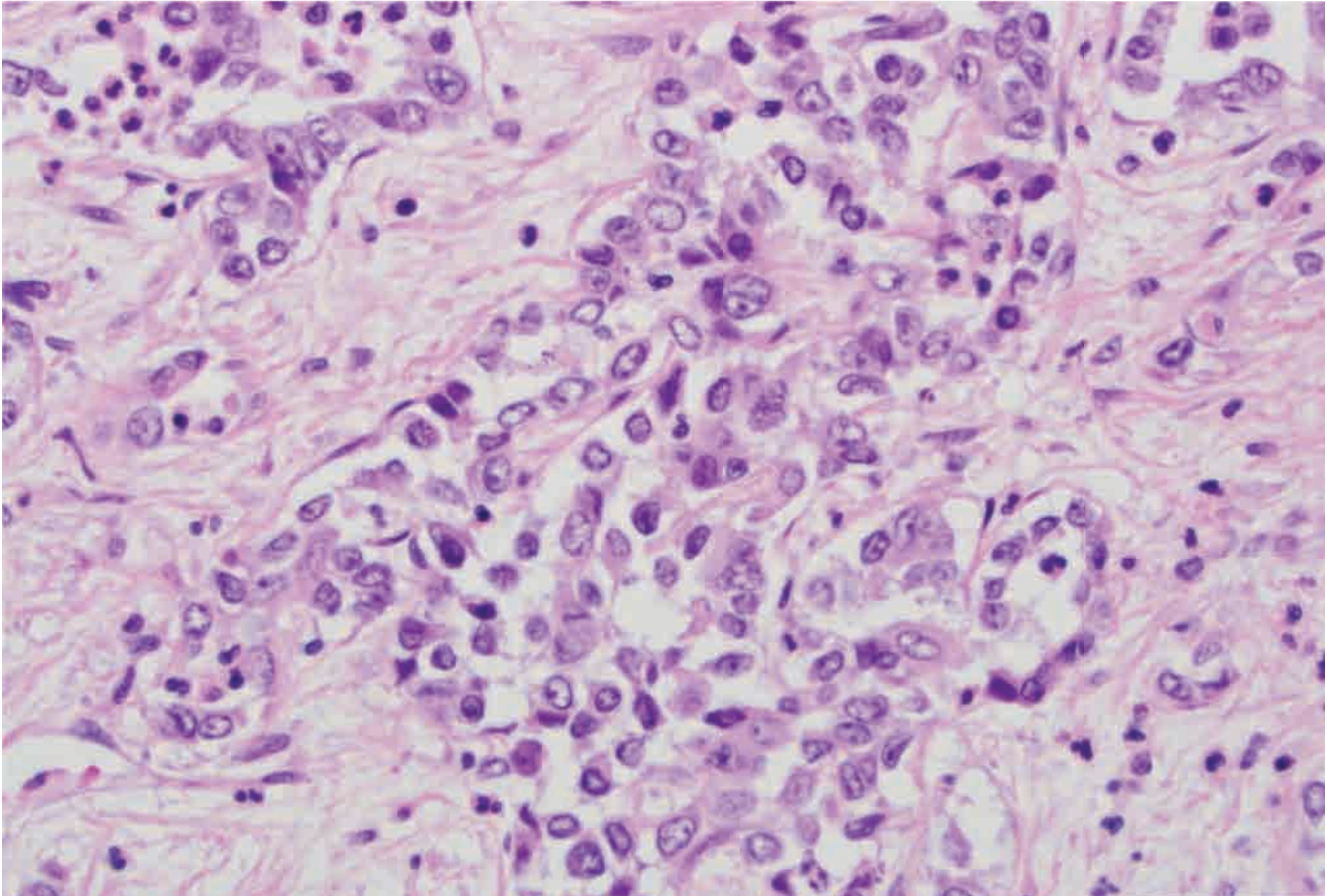
**Bone and soft tissue, humerus, biopsy:
EMA Immunostain, 20x**

**The patient expired 4 days after the procedure.
Autopsy results revealed cause of death to be
*metastatic renal medullary carcinoma.***

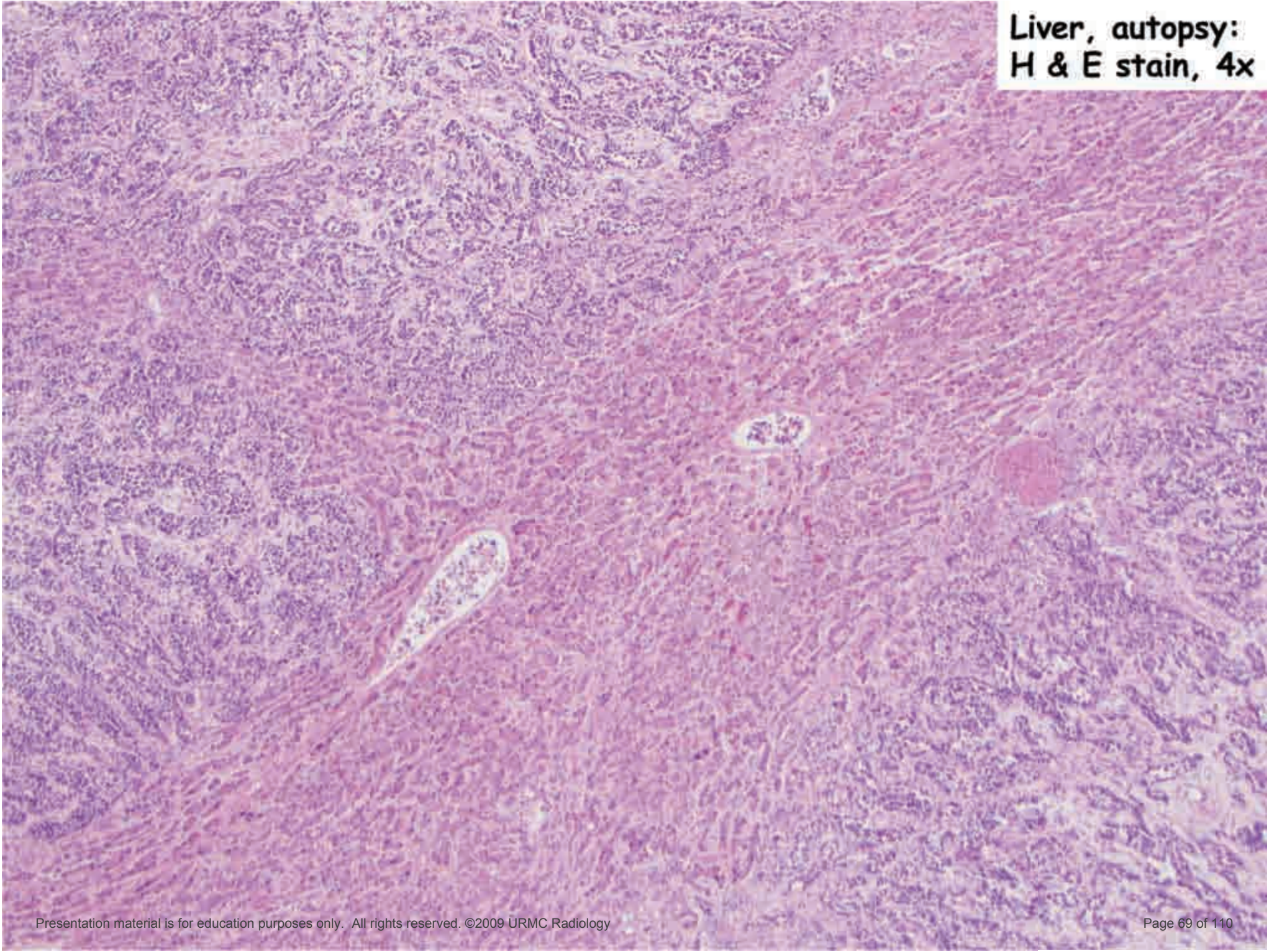
- **Primary renal medullary ca – right kidney**
- **Massive hepatic metastasis**
- **Right humeral metastasis**
- **Extensive mediastinal lymph node metastasis**
- **Bilateral lung & hilar lymph node metastasis**
- **Bilateral adrenal gland metastasis**
- **Peripancreatic lymph node metastasis**



Kidney, right, autopsy:
H & E stain, 20x



**Kidney, right, autopsy:
H & E stain, 40x**

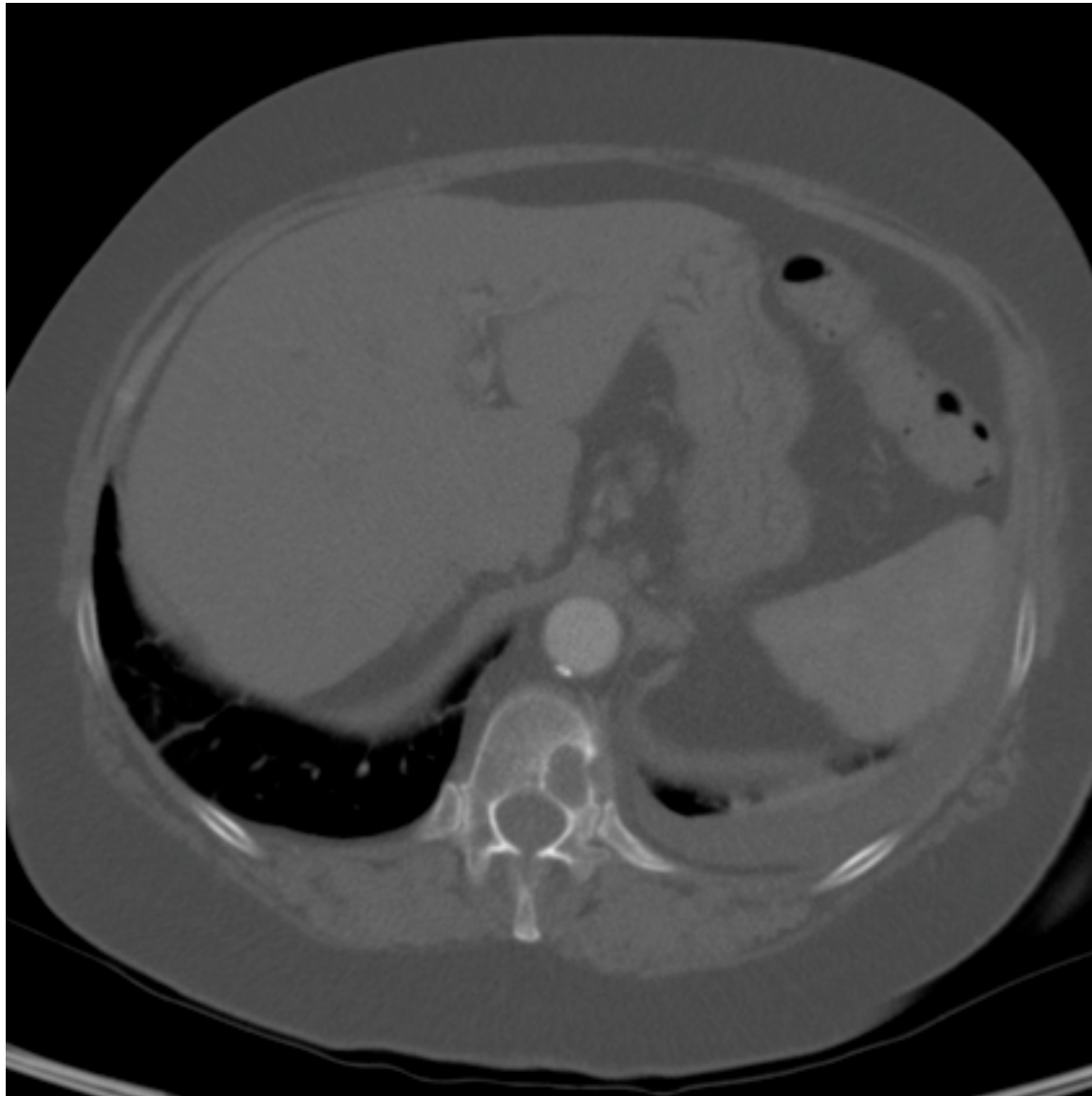


Case 4

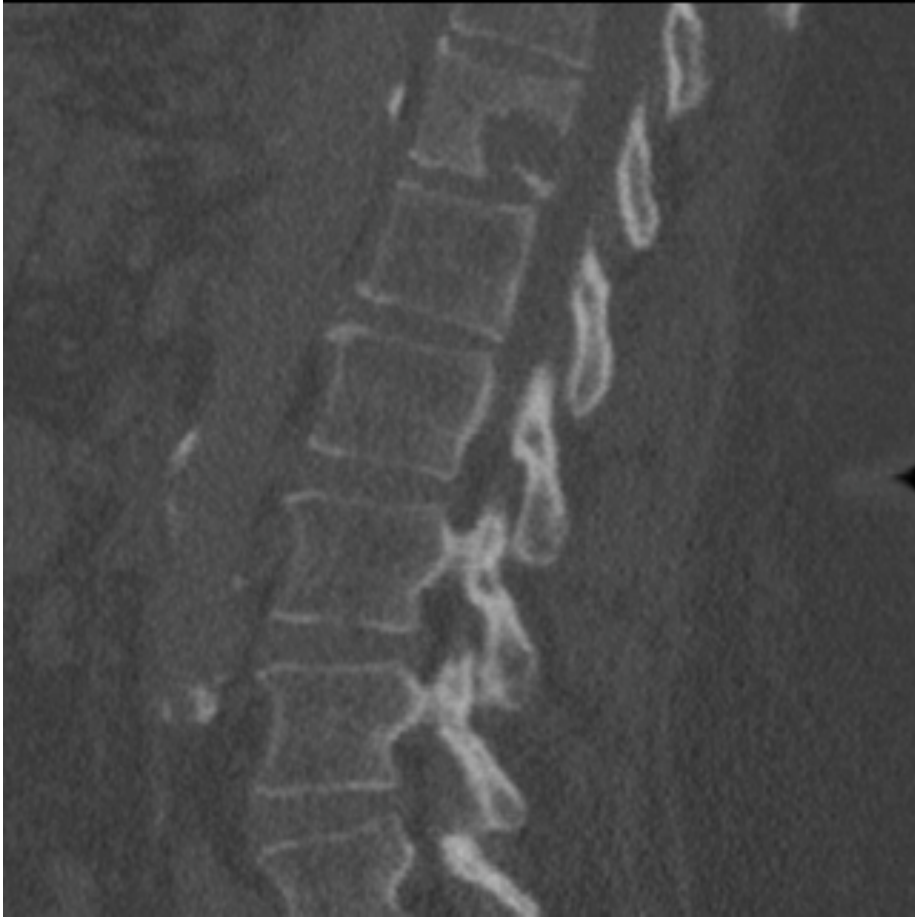
Case 4

- 56 y/o woman referred from outside institution with back pain and new lytic lesion in thoracic spine. Remote history of urothelial bladder cancer.

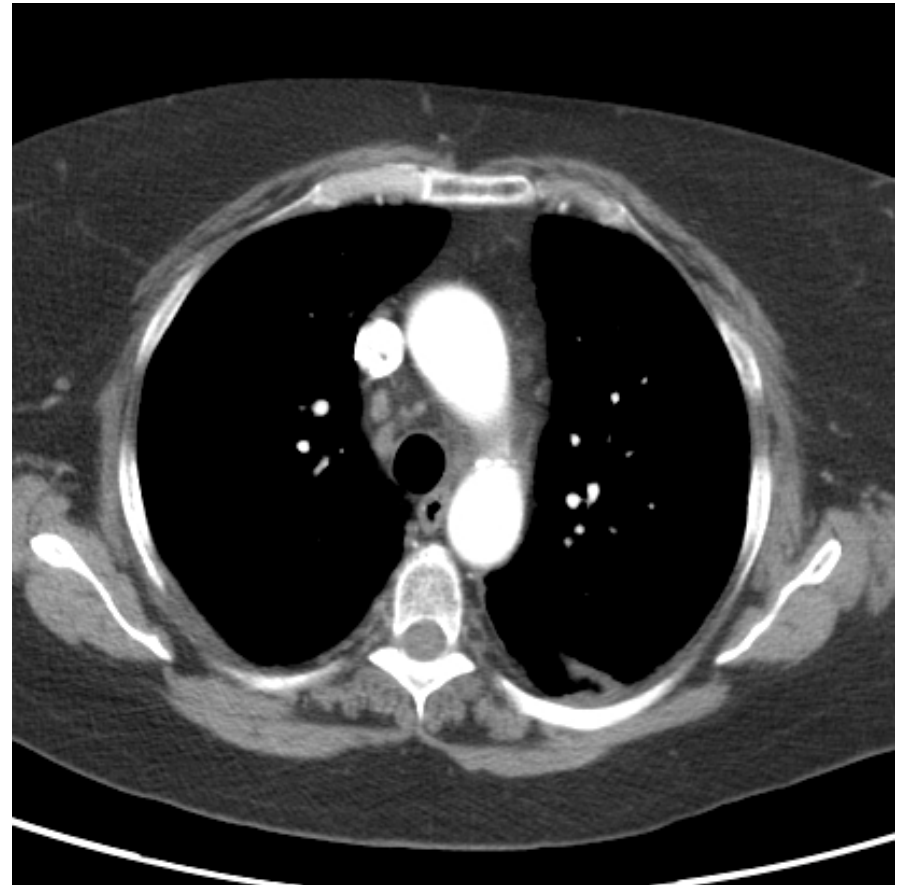
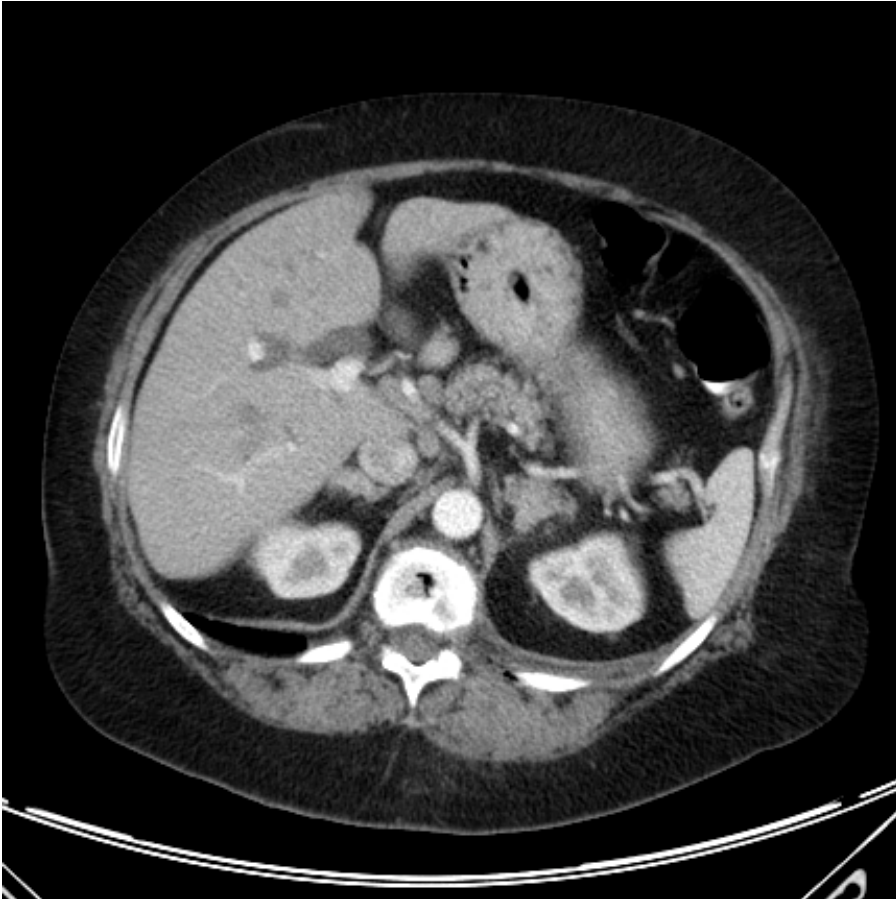
Case 4



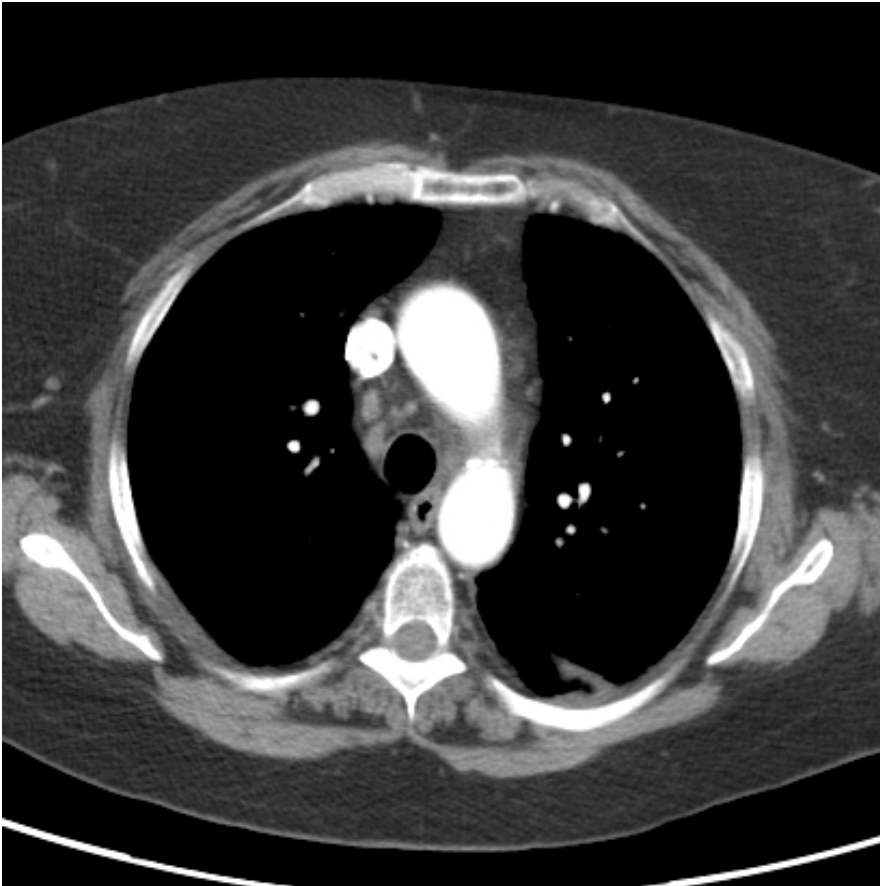
Case 4



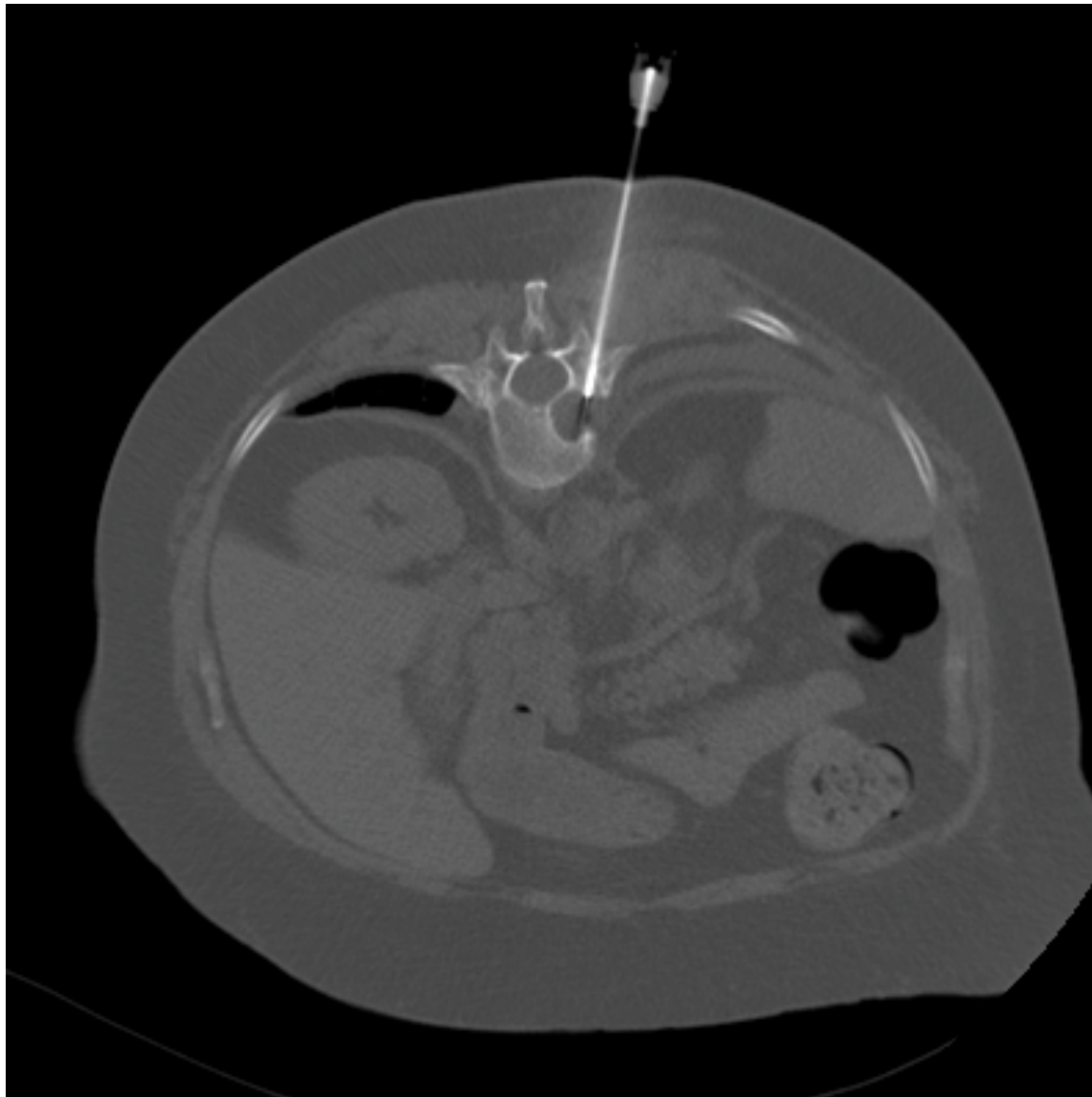
Case 4



Case 4



Case 4



Case 4

- Single or multiple lesions?
- Axial or appendicular?
- Lytic or sclerotic margins?
- Periosteal reaction?
- Age of patient? Pediatric vs adult patient, status of physes

Case 4

- Ddx single mixed lytic/sclerotic bone lesion:
 - Osteomyelitis
 - Tuberculosis
 - Ewing sarcoma
 - Metastatic disease to bone
 - Osteosarcoma

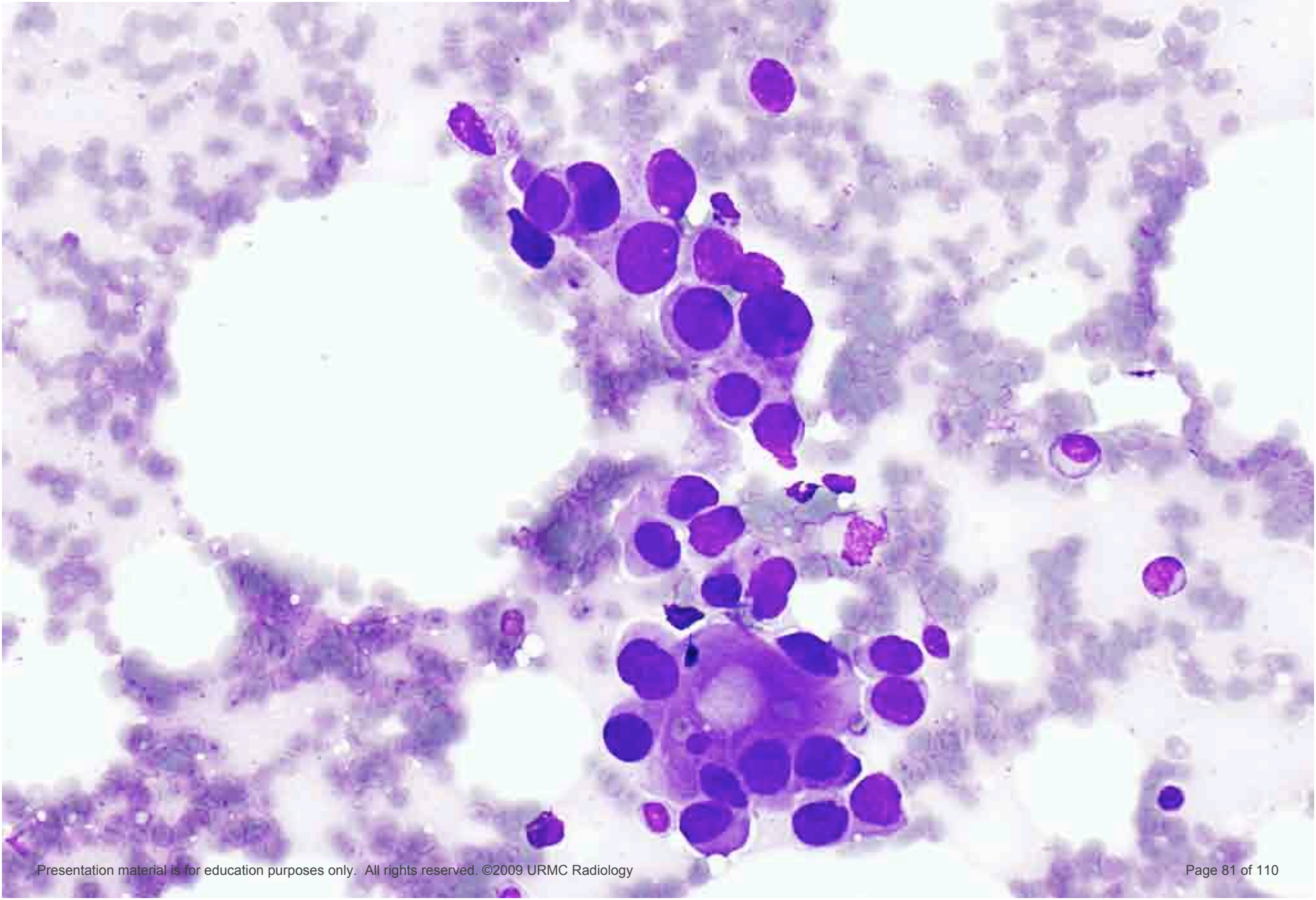
Case 4

- Metastatic disease to bone:
 - metastatic disease outnumbered primary bone neoplasms 25:1
 - 50% of people with cancer will eventually develop metastatic disease to bone
 - 80% of all metastatic bone lesions are due to lung, breast, pancreas, kidney
 - predilection for red marrow spaces, therefore skull, spine, ribs, pelvis, humeri, femora

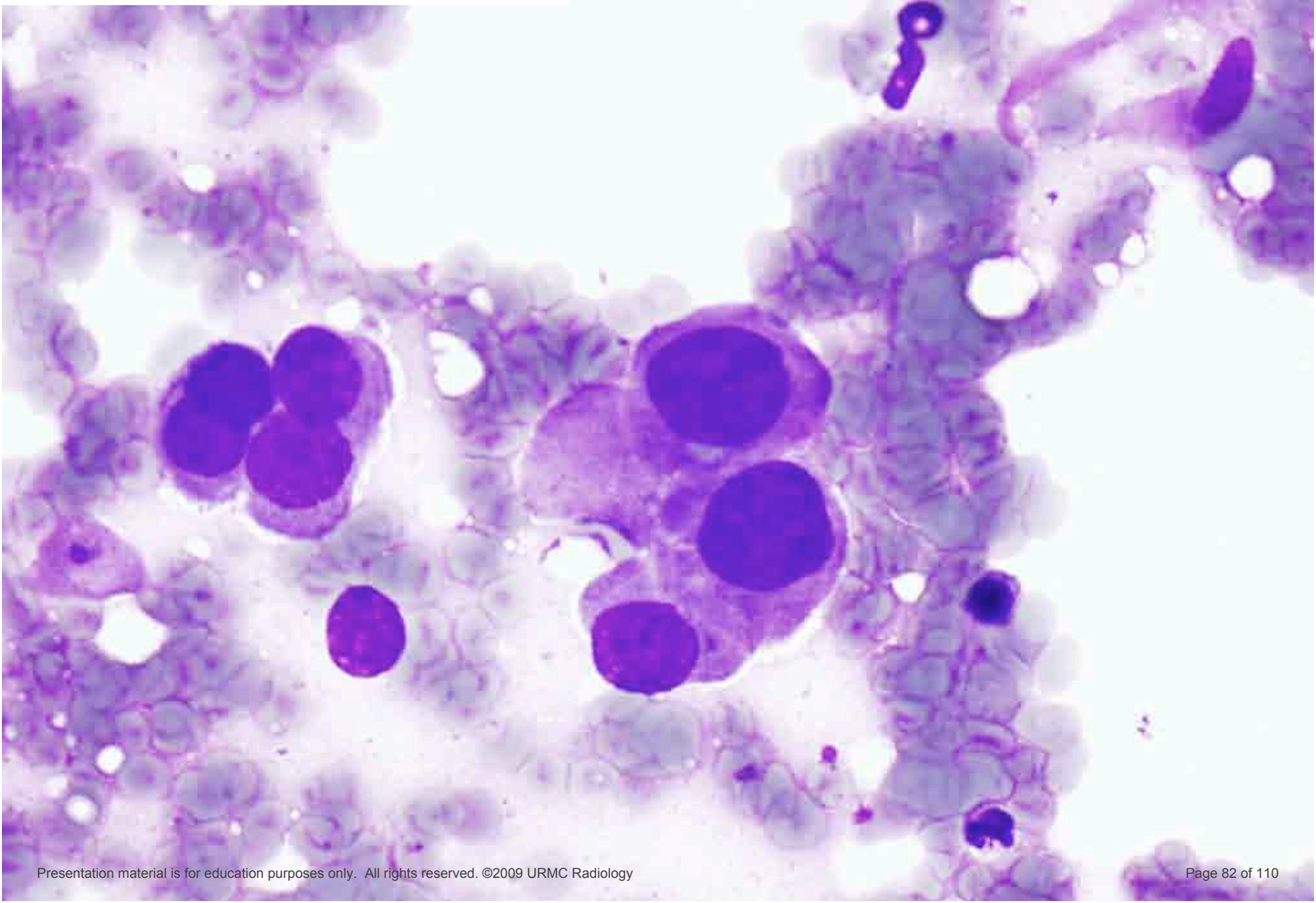
Case 4

- Ddx adrenal mass:
 - adrenal adenoma (absolute HUs vs. contrast and washout value)
 - metastases
 - lymphoma (primary or metastatic)
 - pheochromocytoma (larger, may have calcifications or necrosis; often component of syndromes including MEN II and III, NF, vHL, Carney syndrome, tuberous sclerosis)
 - adrenal carcinoma (larger, “claw sign”)
 - adrenal hyperplasia

**Bone, vertebrae, T12, CT-guided
FNA: Diff-Quik stain, 20x**



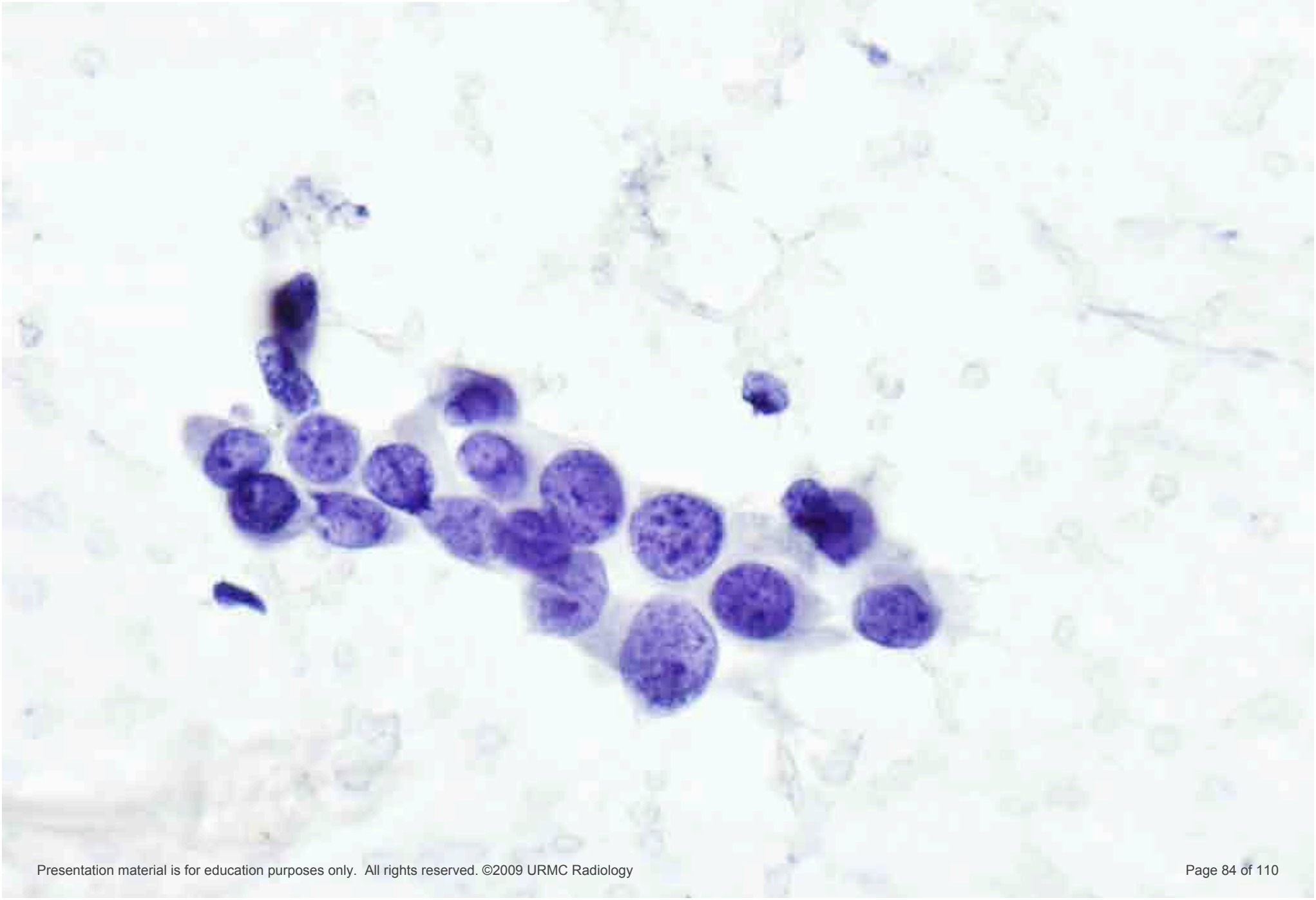
**Bone, vertebrae, T12, CT-guided
FNA: Diff-Quik stain, 40x**



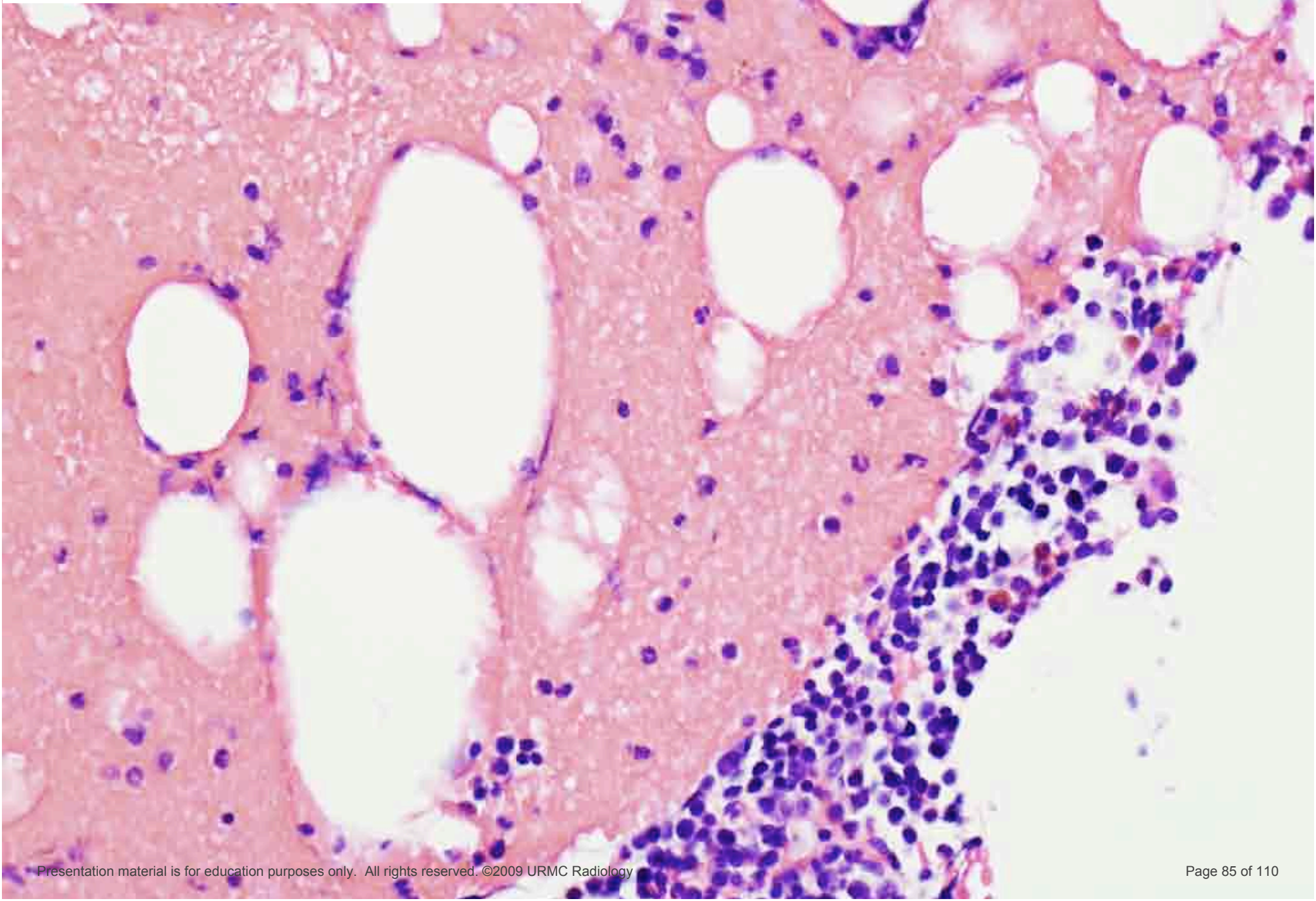
**Bone, vertebrae, T12, CT-guided
FNA: Papanicolaou stain, 20x**



**Bone, vertebrae, T12, CT-guided
FNA: Papanicolaou stain, 40x**



**Bone, vertebrae, T12, CT-guided
FNA, Cell block, H & E stain, 20x**



Bone, vertebrae, T12, CT-guided fine needle aspiration:

Malignant tumor cells present derived from carcinoma.

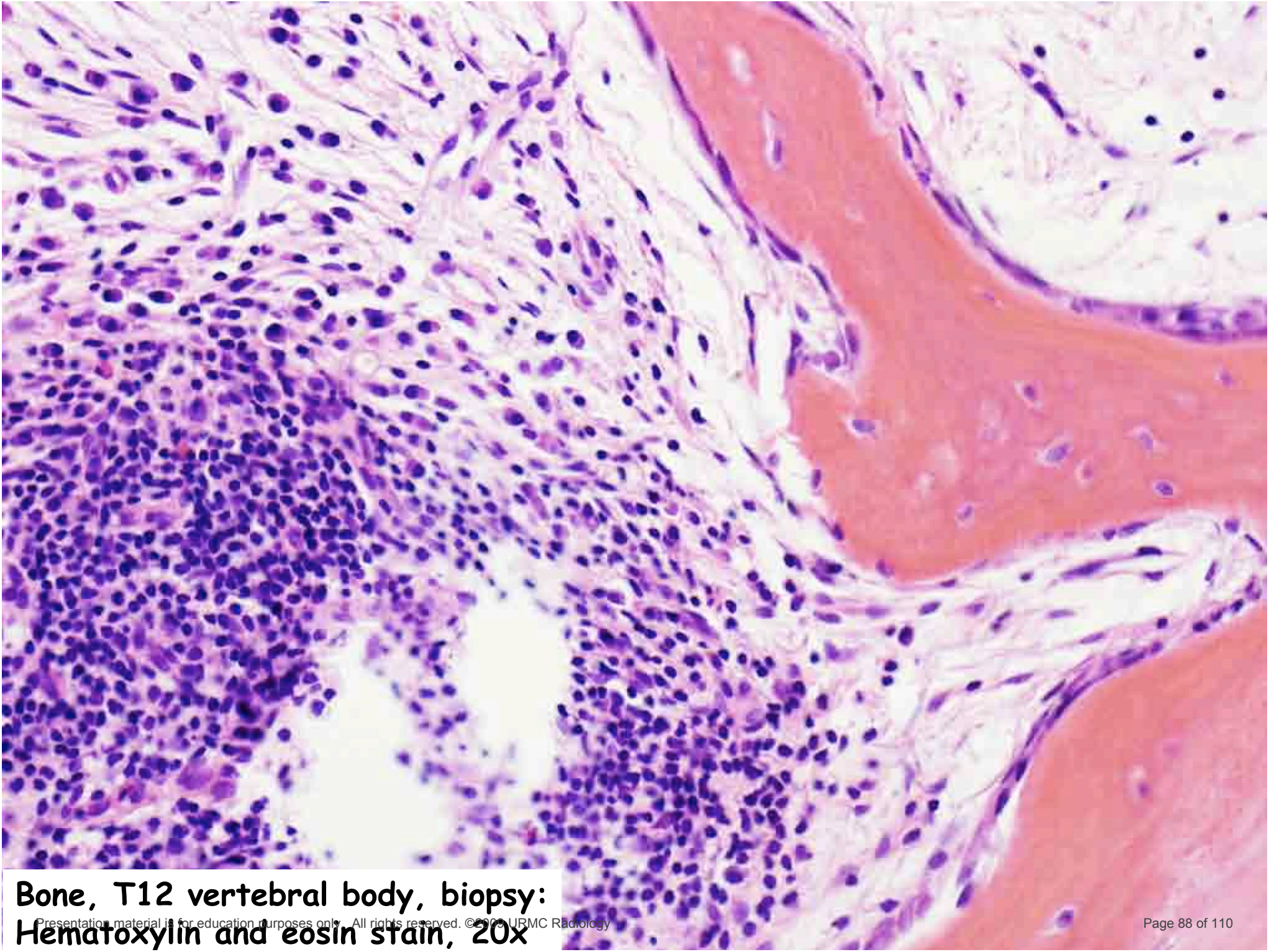
Comment: Immunohistochemical stains for CK 7, CK 20, p63 and TTF-1 are non-contributory. Morphologically, this tumor would be consistent with the patient's clinical history of urothelial carcinoma. Clinical correlation recommended.

Cell block and cytologic preparations examined.

Bone, T12 vertebral body, left side,
true cut biopsy:

Chronic osteomyelitis.

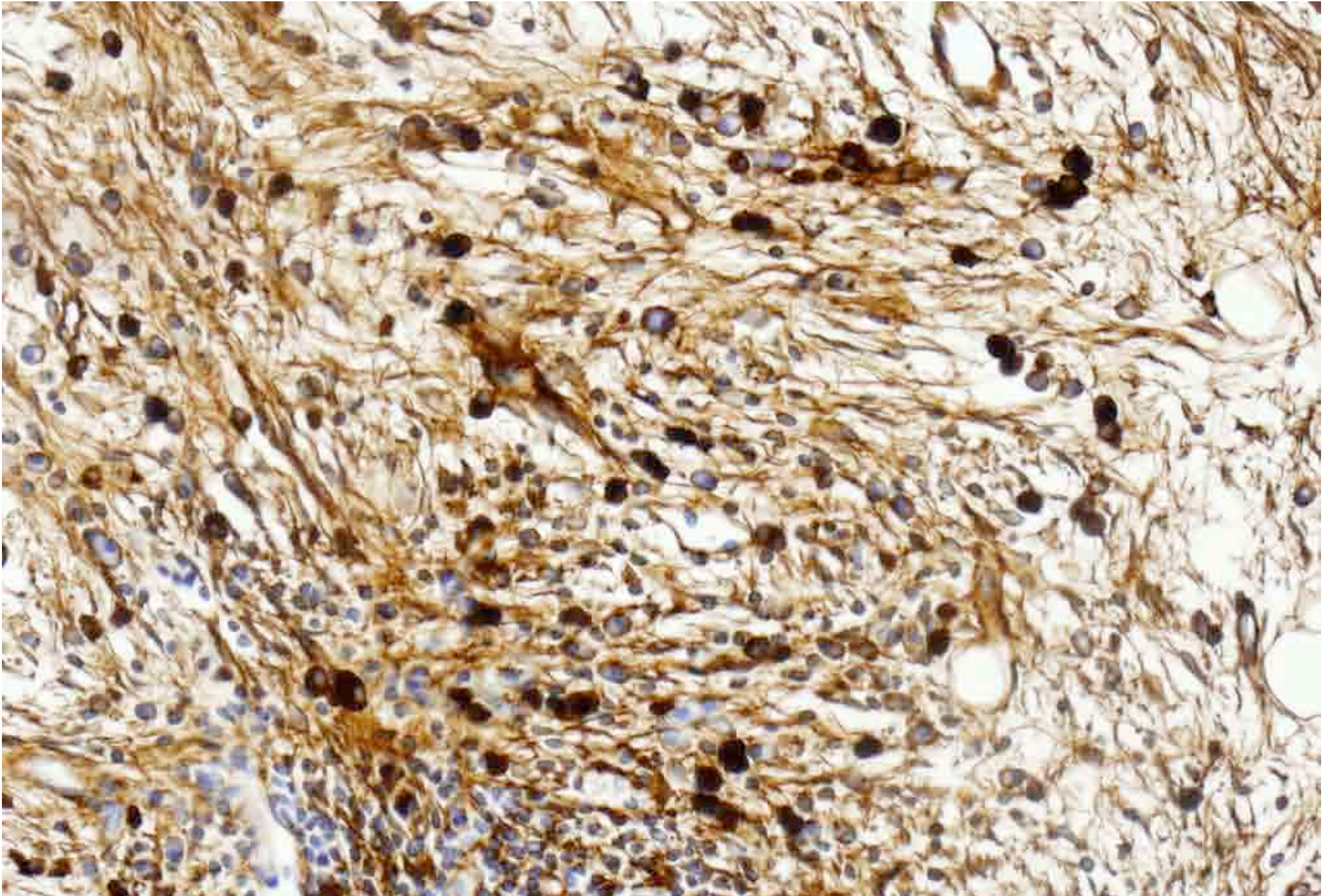
Comment: Sections show fragments of bone with diffuse fibrosis with plasma cells and lymphocytes in bone marrow spaces. Focal lymphoplasmocytic aggregate is identified. Polyclonal plasma cells are highlighted with Kappa and Lambda immunohistochemical stains.



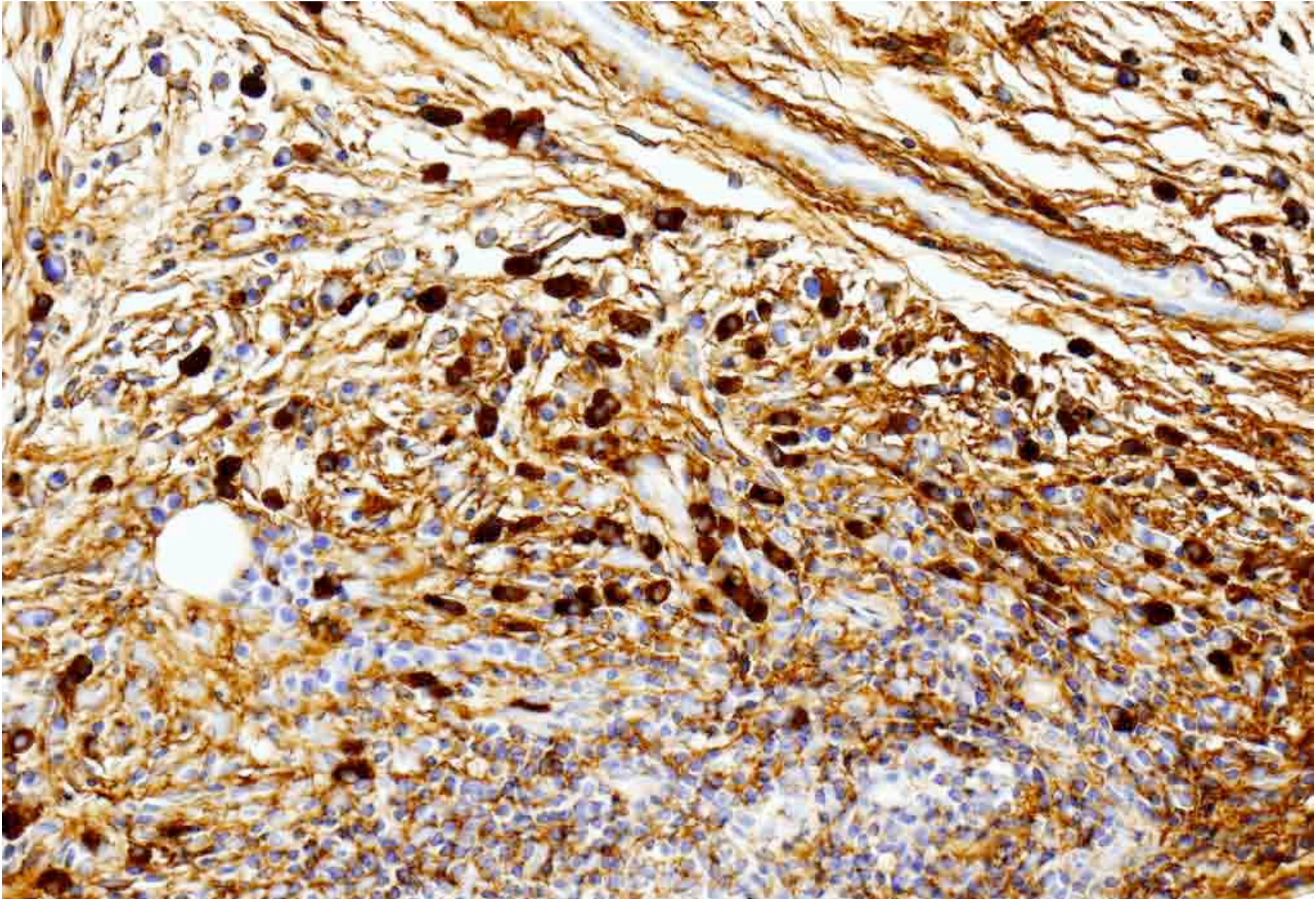
Bone, T12 vertebral body, biopsy:

Hematoxylin and eosin stain, 20x

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Bone, T12 vertebral body biopsy:
Kappa Immunostain, 20x



**Bone, T12 vertebral body biopsy:
Lambda Immunostain, 20x**

Bone, vertebral body, T12, biopsy:

Changes suggestive of a previous fracture site. No malignancy identified.



**Bone, vertebral body, T12, biopsy:
H & E stain, 20x**

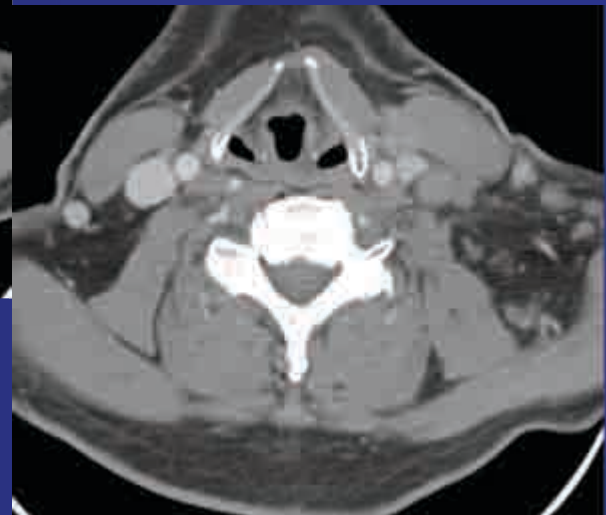
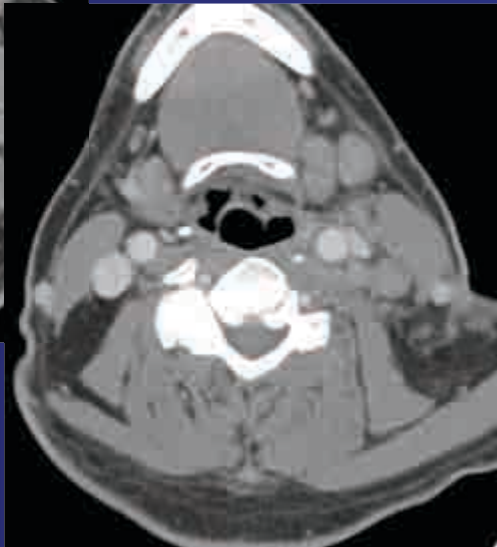
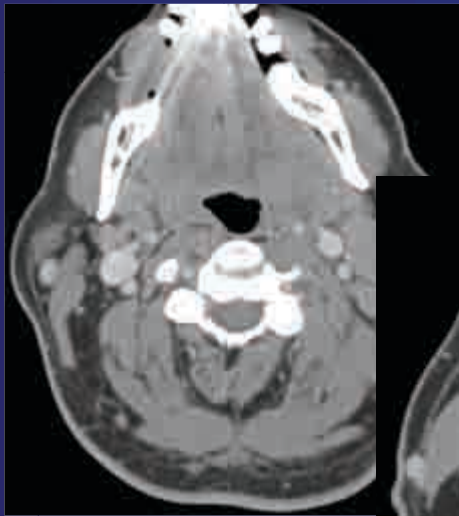
Case 5

Case 5

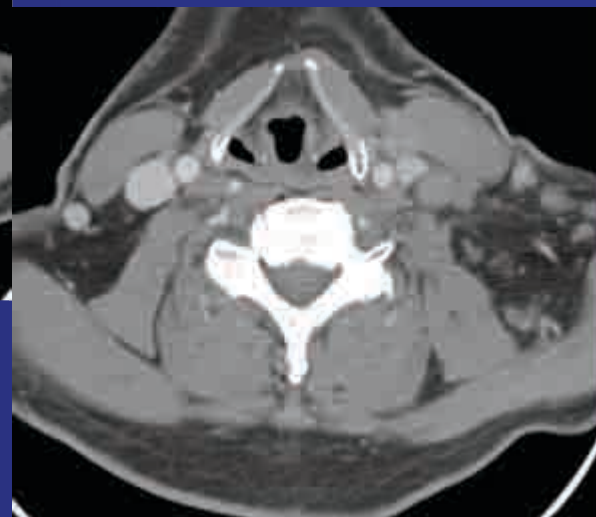
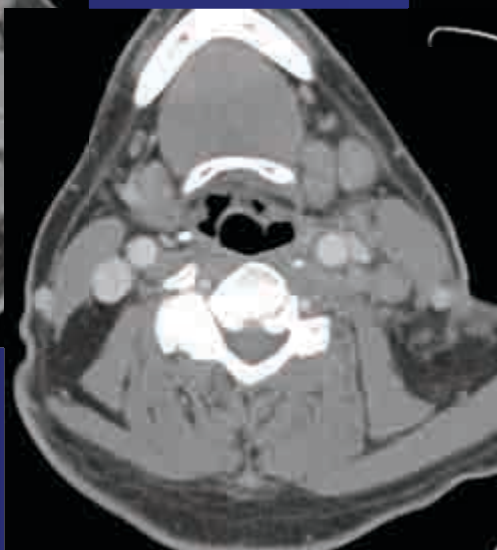
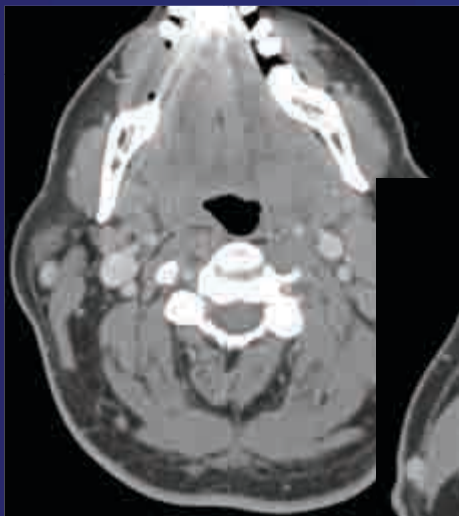
- 53 year old male with left neck pain and swelling.

Case 5

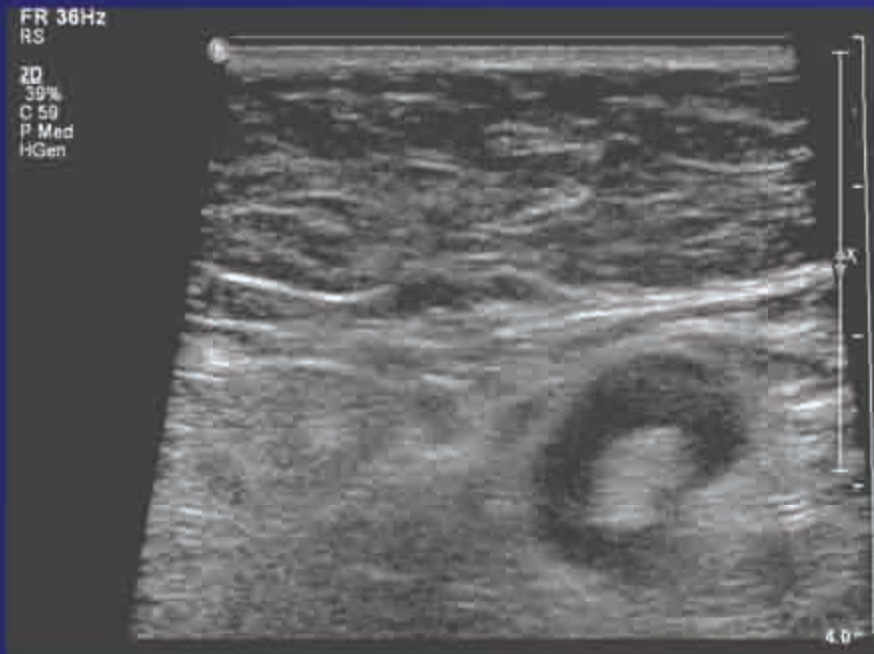
Case 5



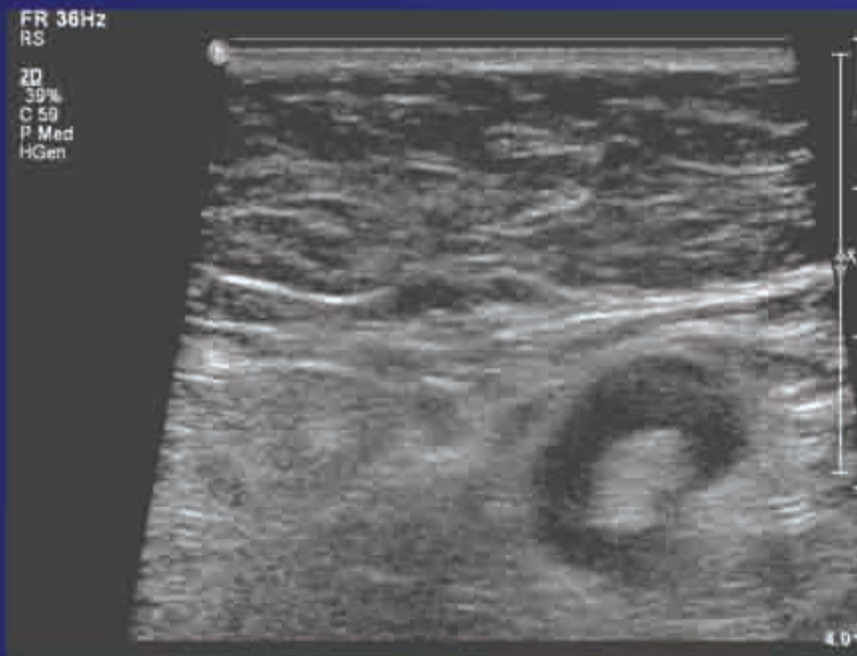
Case 5



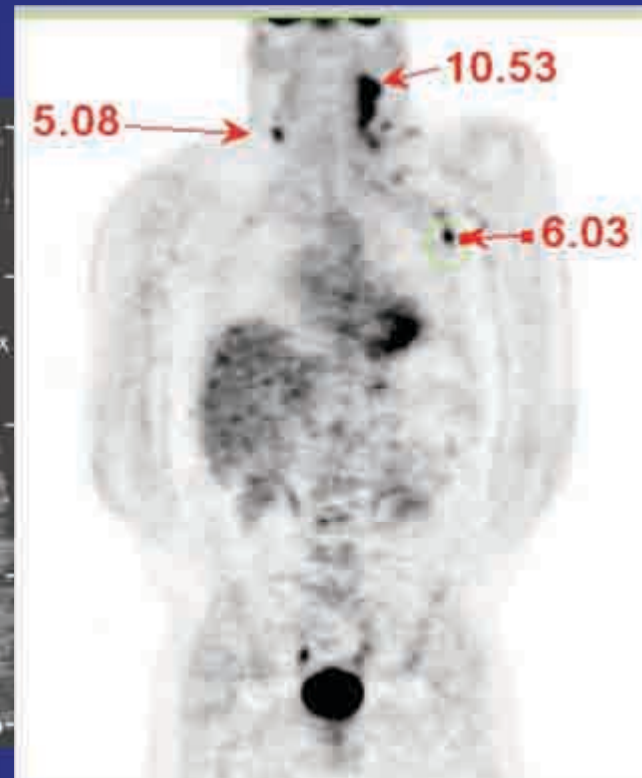
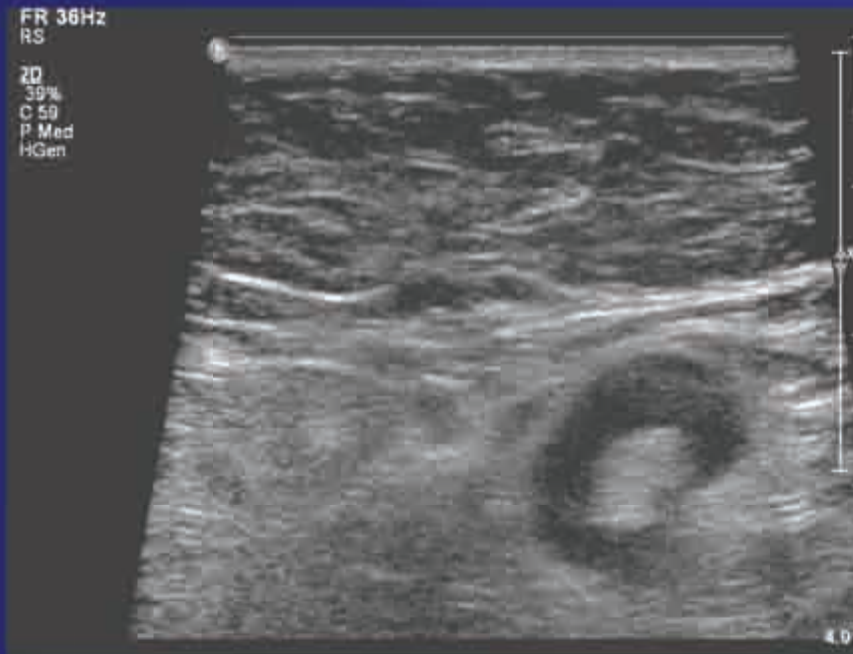
Case 5

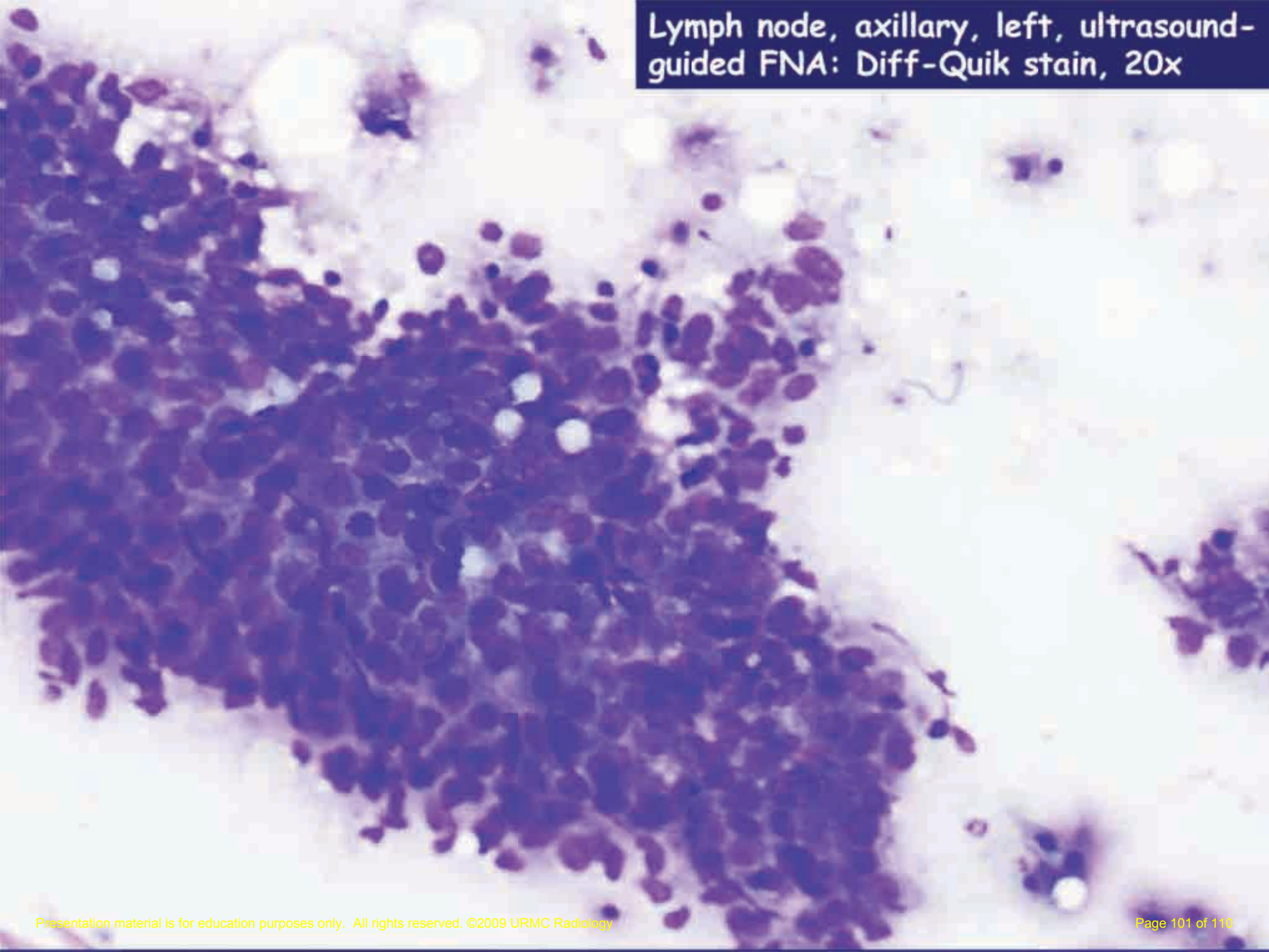


Case 5

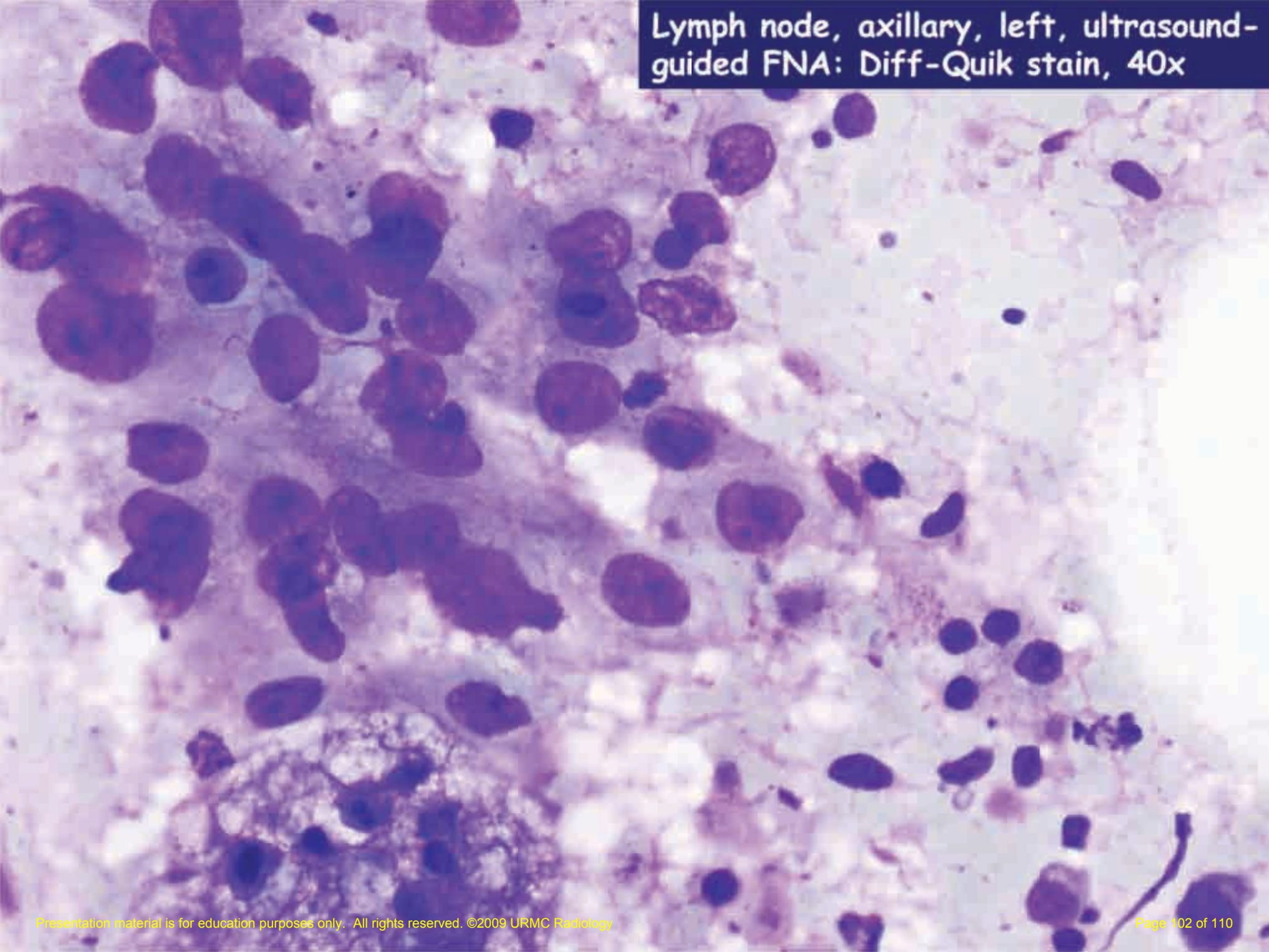


Case 5

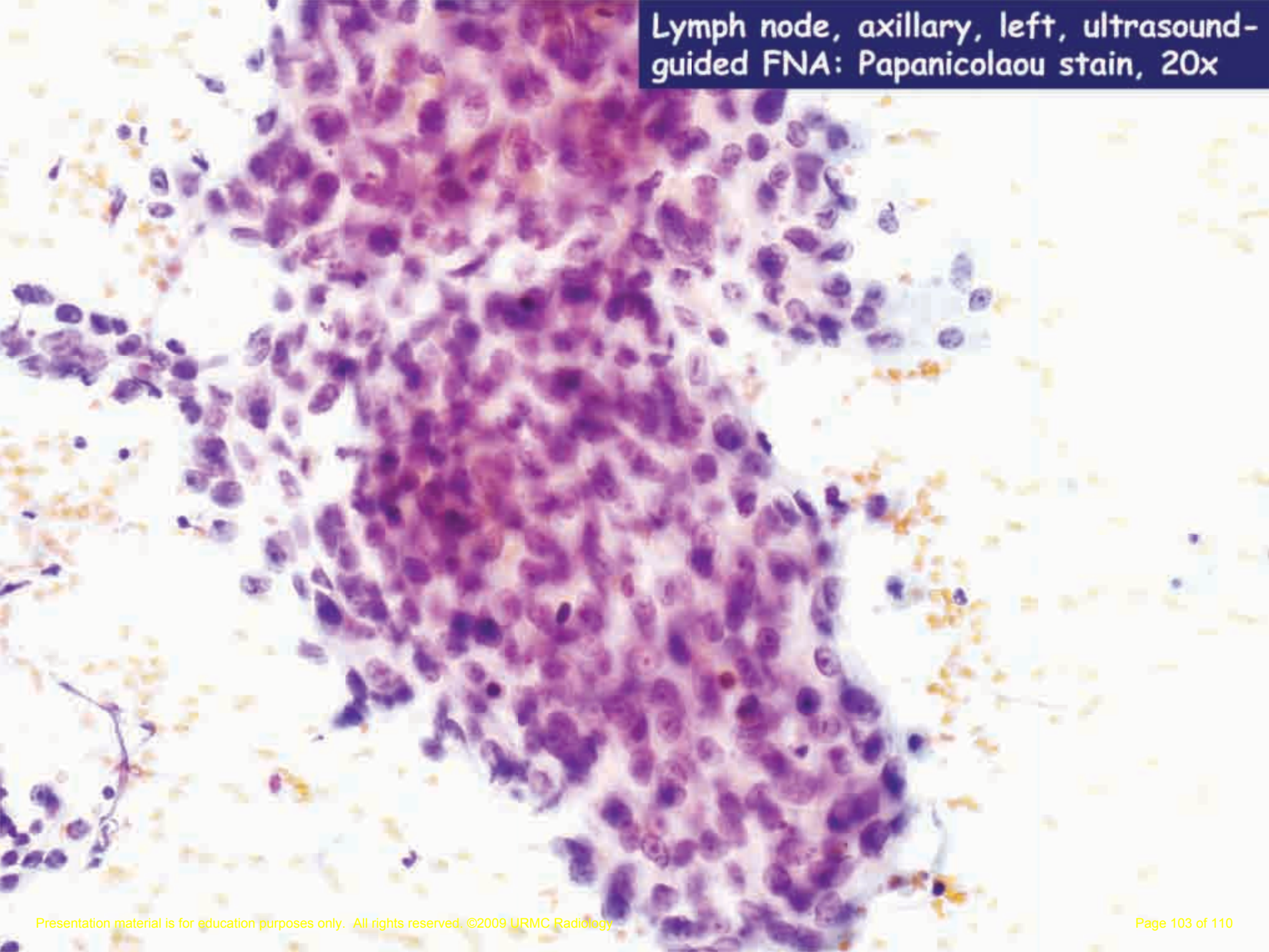


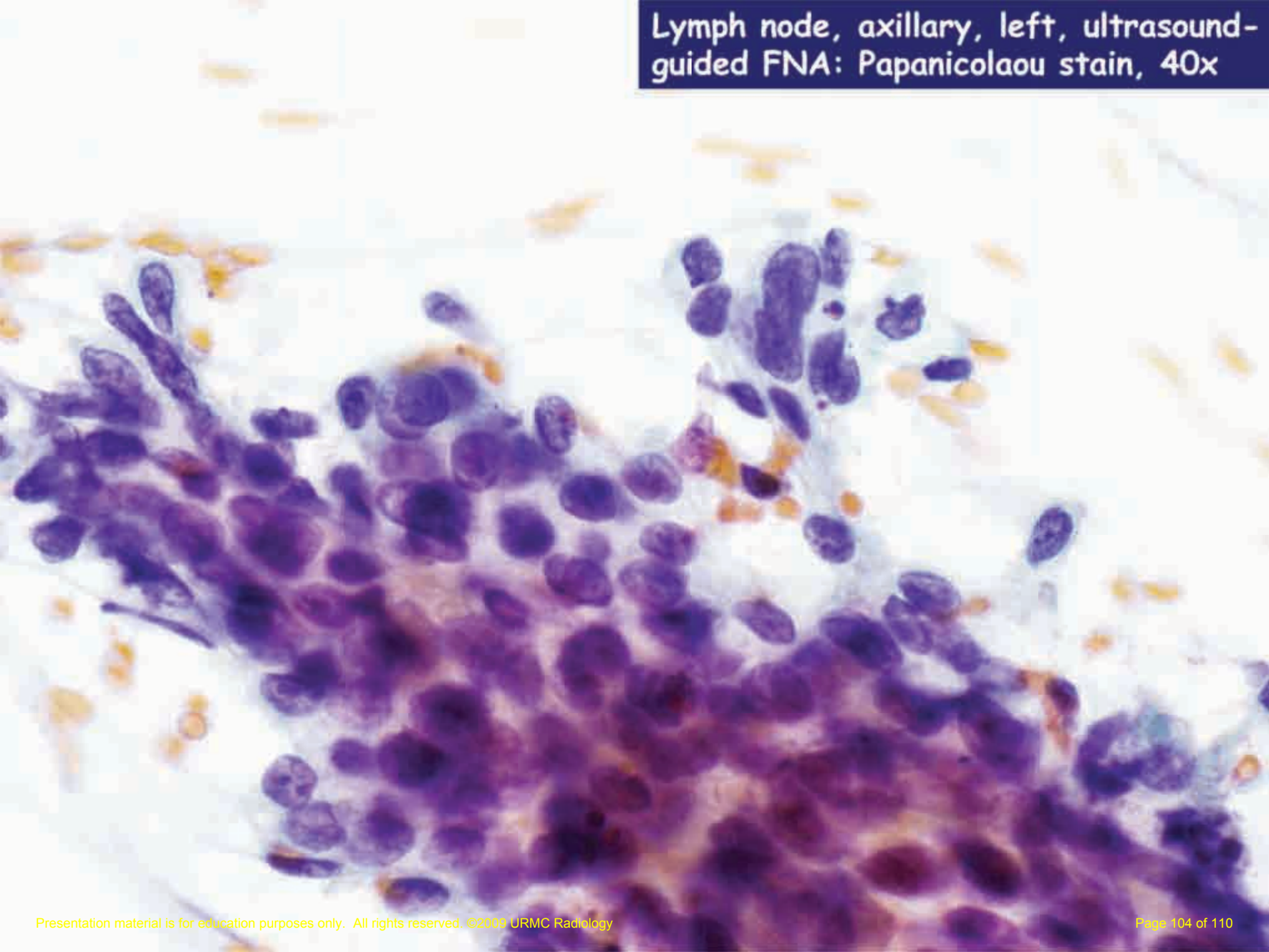


Lymph node, axillary, left, ultrasound-guided FNA: Diff-Quik stain, 40x

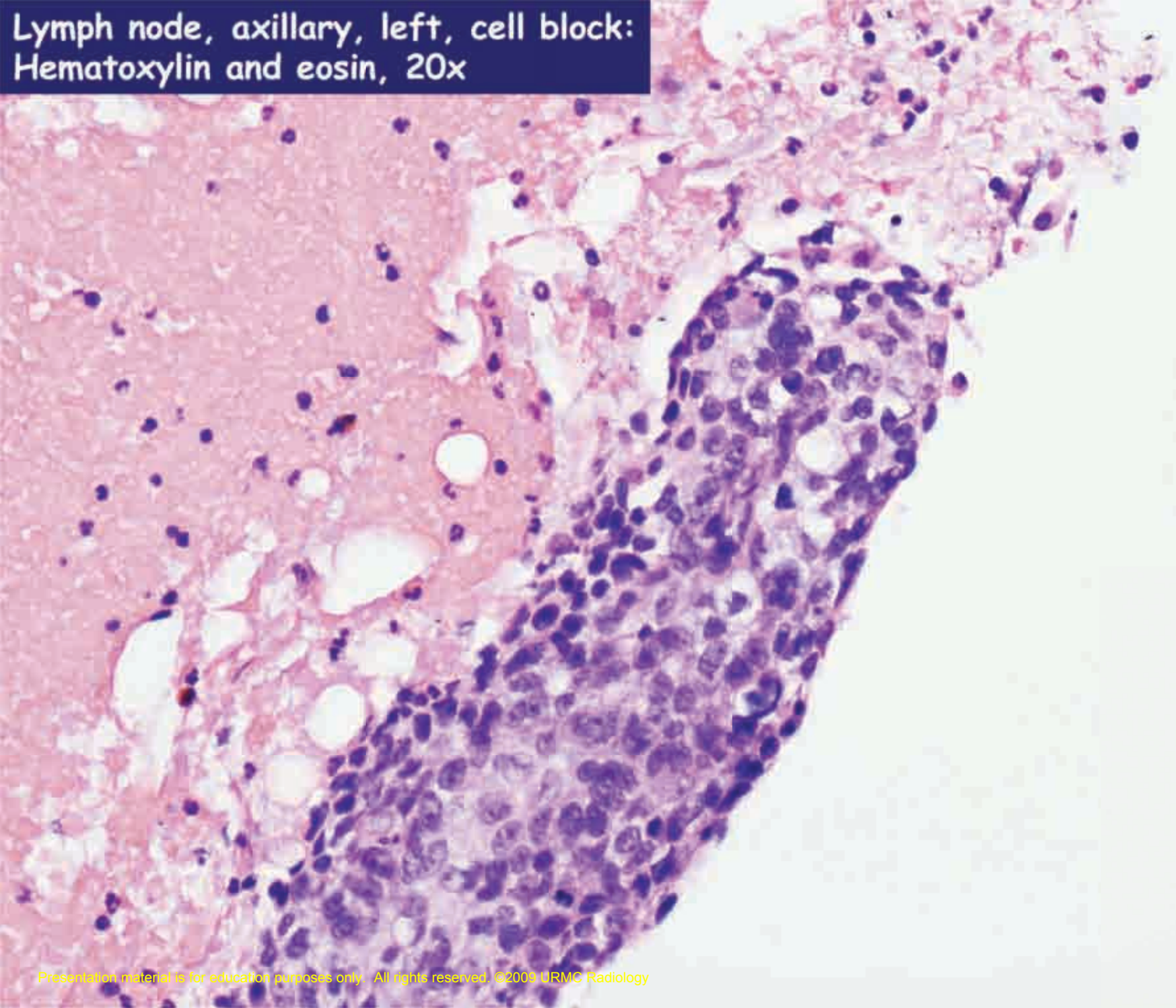


Lymph node, axillary, left, ultrasound-guided FNA: Papanicolaou stain, 20x

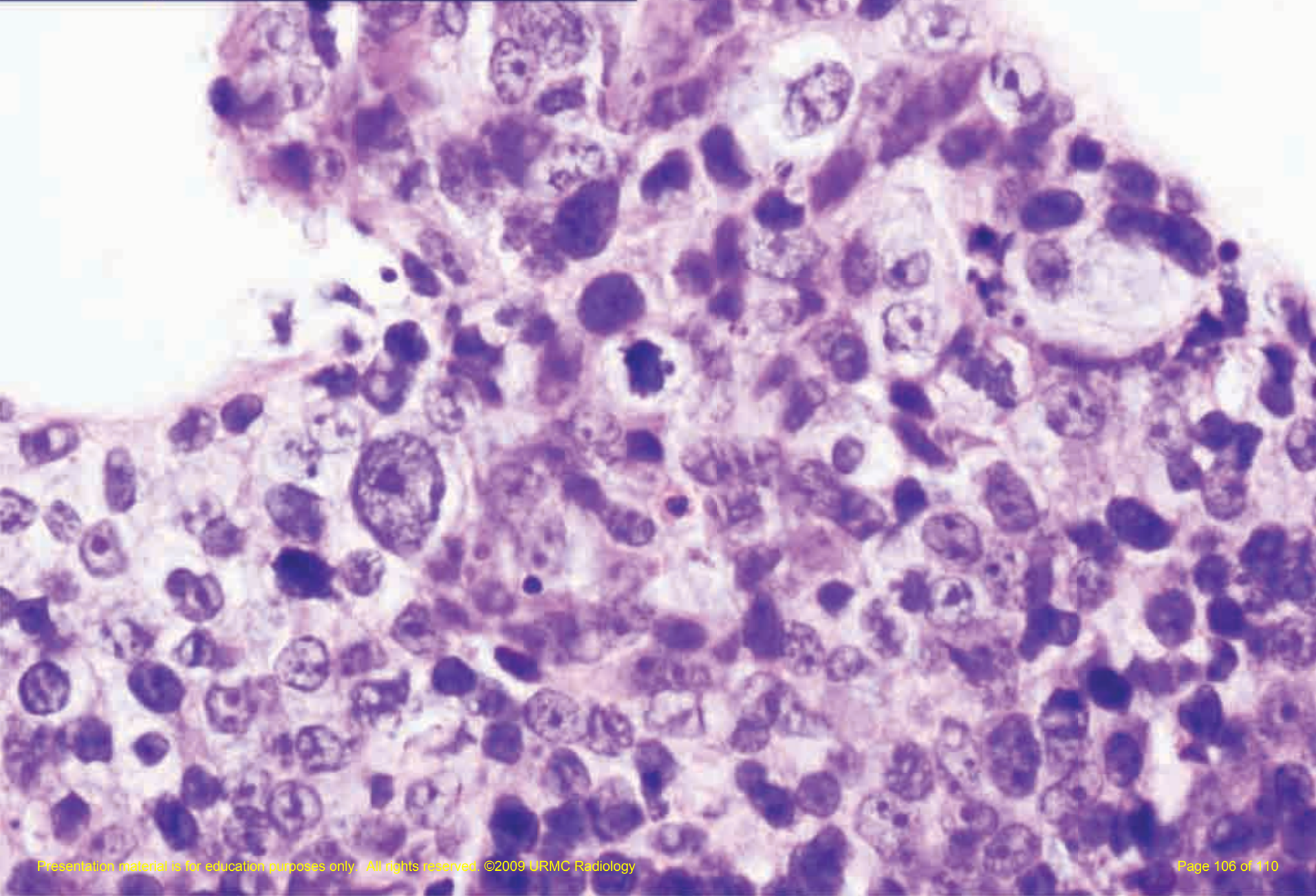




Lymph node, axillary, left, cell block:
Hematoxylin and eosin, 20x



Lymph node, axillary, left, cell block:
Hematoxylin and eosin, 40x



Lymph node, axillary, left,
ultrasound-guided fine needle
aspiration:

Malignant tumor cells present, consistent
with squamous cell carcinoma.

Cell block and cytologic preparations
examined.

**Soft tissue, left neck, excision:
(outside slide consultation)**

**Metastatic poorly differentiated squamous
cell carcinoma involving lymph node and
soft tissue.**

Angiolymphatic invasion is identified.

Neck, radical dissection, tonsil
left biopsy: (outside slide
consultation)

Tonsil, left biopsy: Moderately to poorly
differentiated squamous cell carcinoma.

Neck, radical dissection: Metastatic
squamous cell carcinoma involving
seventeen of twenty-seven lymph nodes.

Suggested Panels for the Classification of Various Tumors

Tumor Type	First Tier	Second Tier
Carcinomas (Epithelial Tumors)	Pankeratin	CEA, EMA, B72.3, TTF-1, CalR, CK 5/6
Lymphomas	CD45	CD 3, CD 20, CD 30, Kappa, Lambda, CD 15
Sarcomas (Mesenchymal Tumors)	Vimentin	Myogenin, MSA, SMA, Sarc, F-8, S-100
Melanoma	Vim, S-100	HMB-45, Mel A, NSE
Neural/NE	NSE, NF	Chromo, Leu-7, PGP Synap, GFAP