ZEBRAS AND UNICORNS IN CYTOLOGY

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UAB Department of Pathology

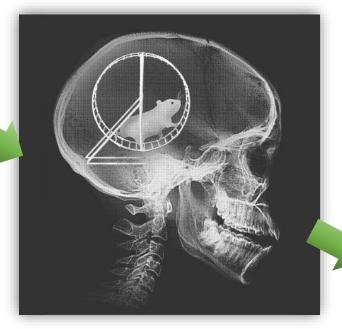




OUTLINE

- Case based scenarios and approach
- Difficult and unusual diagnoses





AND YOU DON'T SPEAK SPANISH

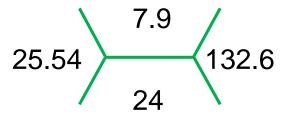
No conflicts of interest to declare

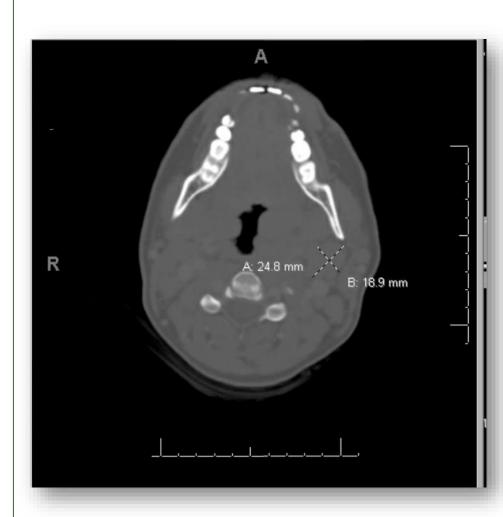
CASE #1



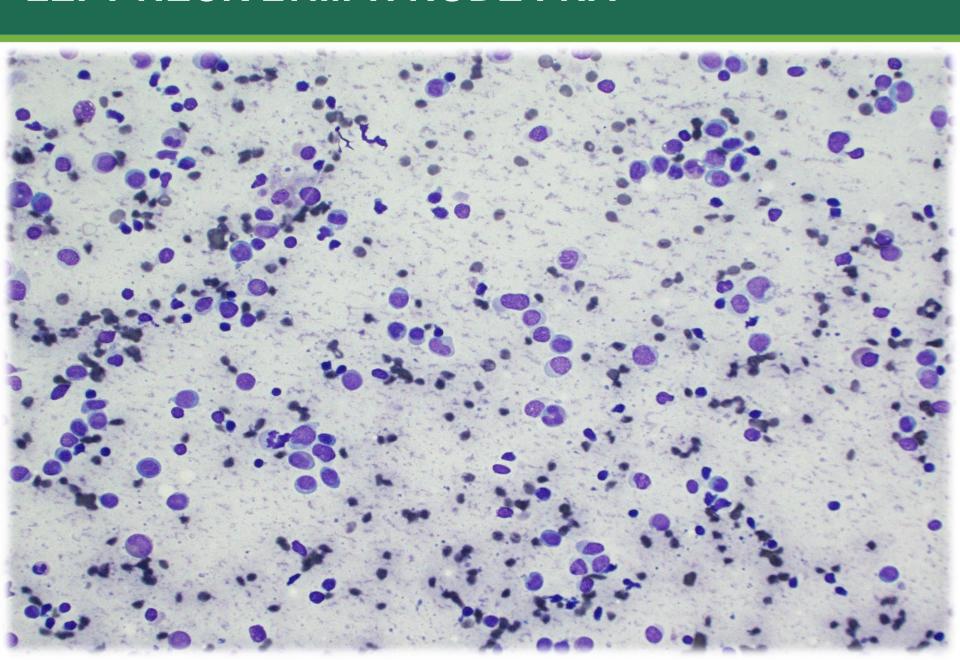
CLINICAL HISTORY AND IMAGING

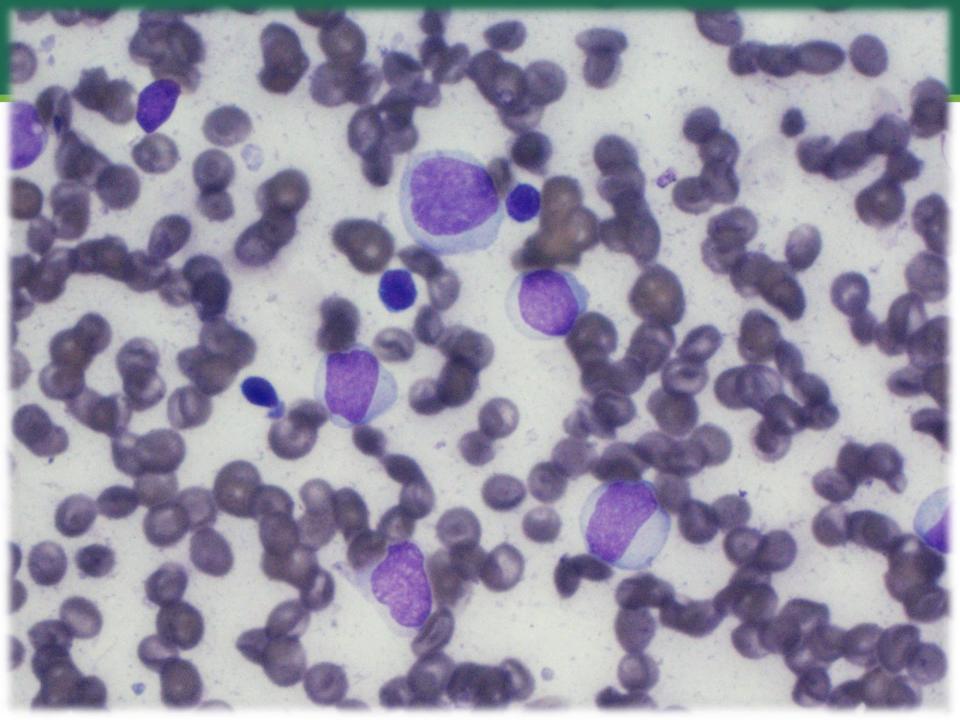
- 40 year old female.
- URI symptoms and associated left sided LAD x 6m.
- Also slow healing lesions of the skin.
- CT of her neck with prominent jugular LN bilaterally.

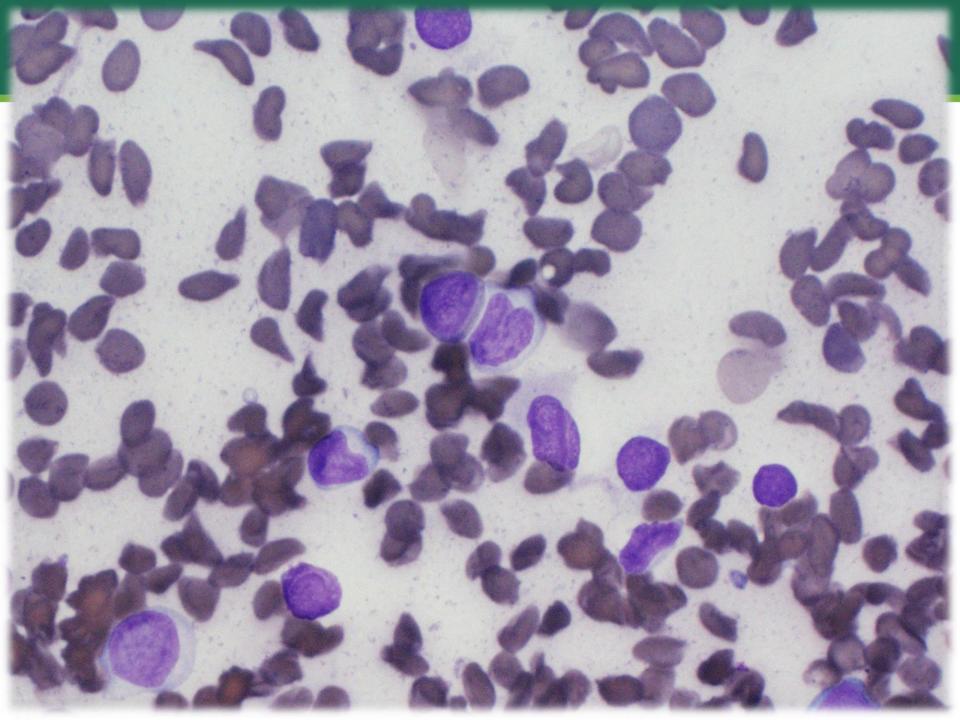


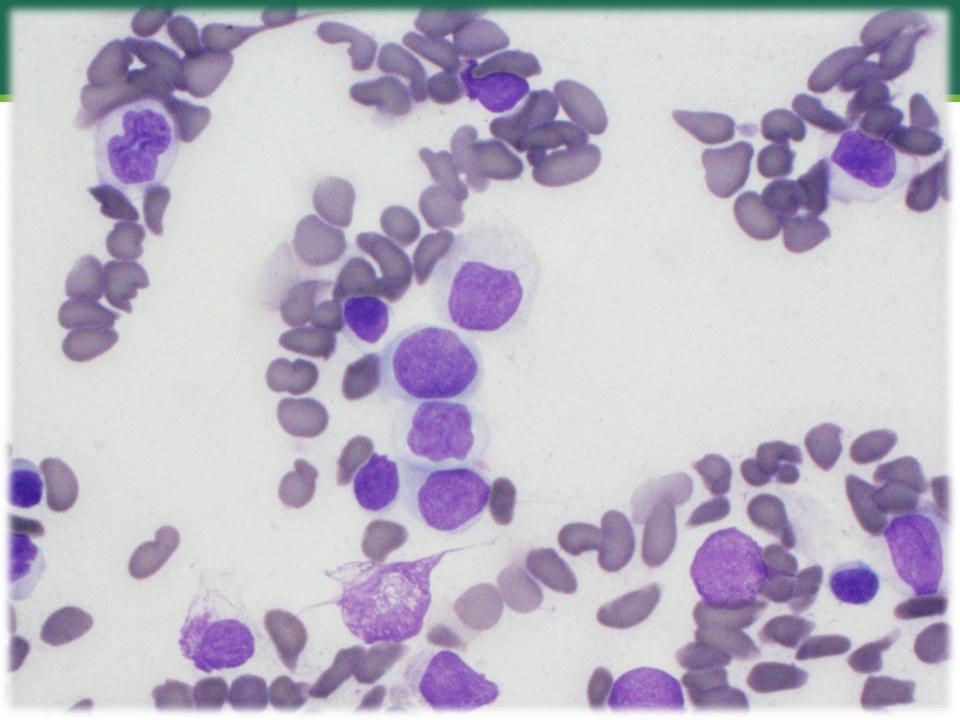


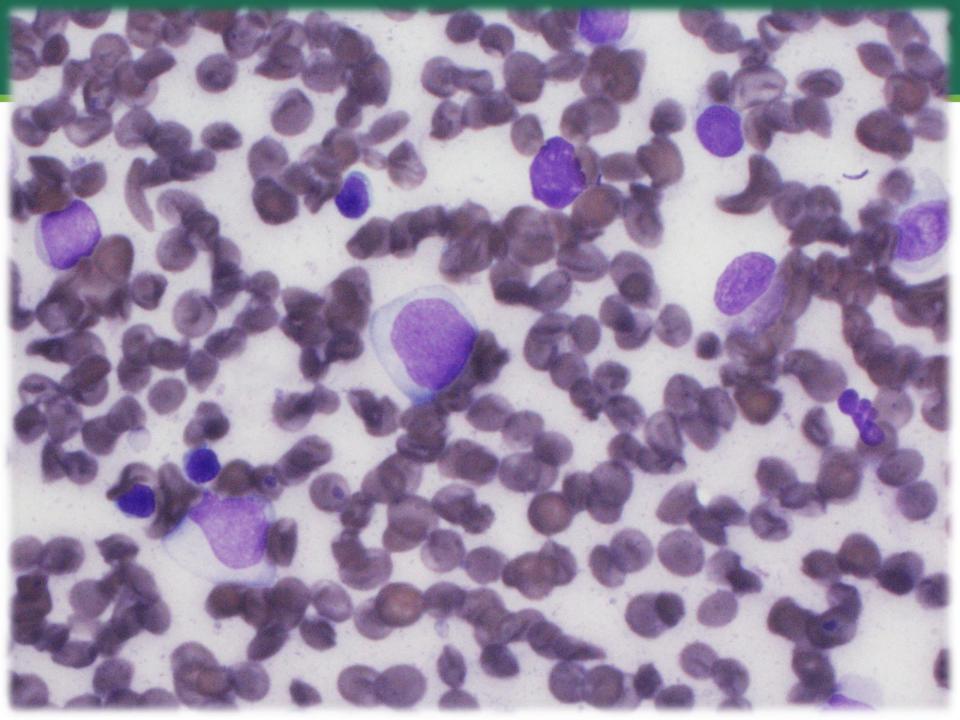
LEFT NECK LYMPH NODE FNA



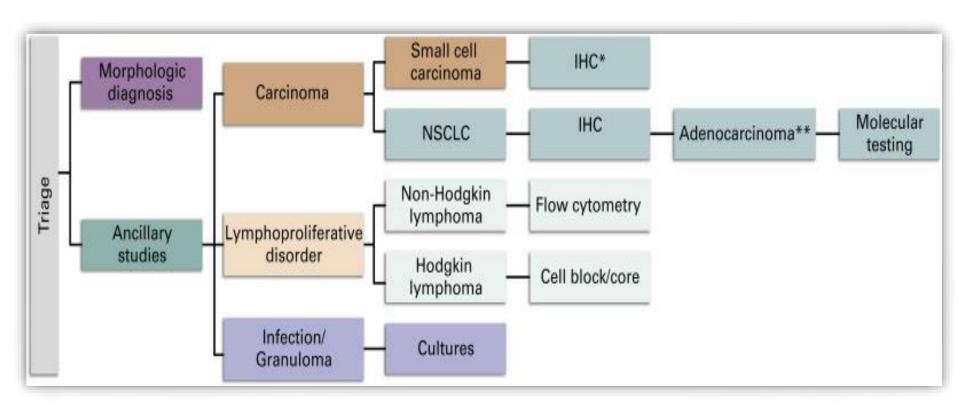








SPECIMEN TRIAGE – RAPID ON-SITE EVALUATION





DIAGNOSTIC APPROACH

Lymphoproliferative neoplasm

Age

- Pediatric
- Adult

Immune status

- Primary immune disorder-related
- HIV-related
- Post-transplant

Location

- Lymph node
- Skin
- GI tract
- Visceral organs

Bone marrow

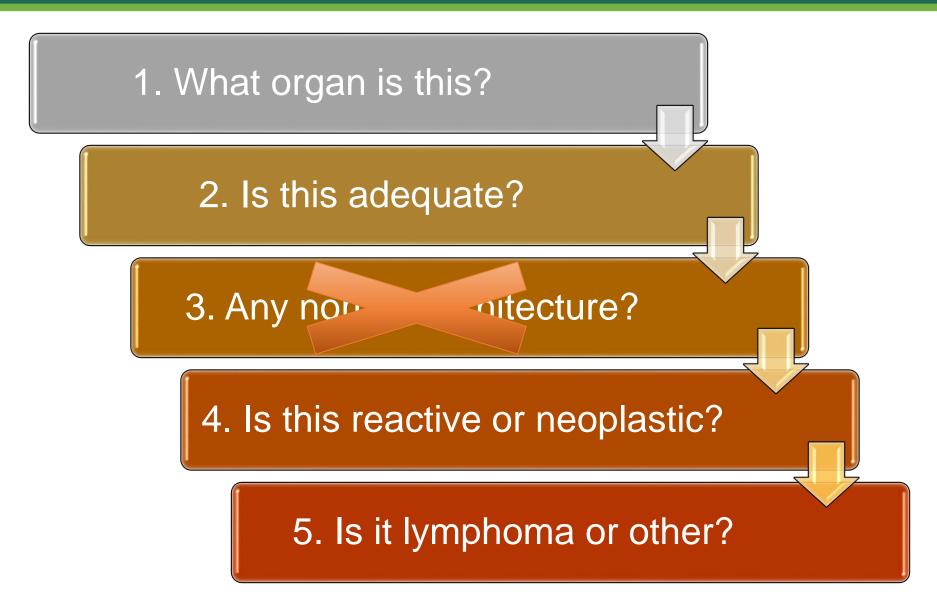
Mediastinum

Spleen

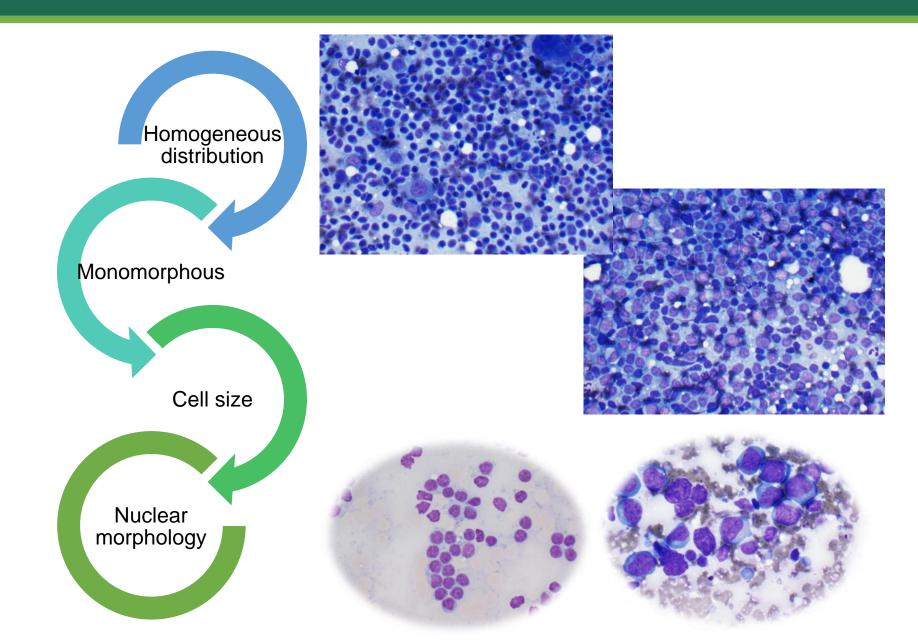
Body cavities



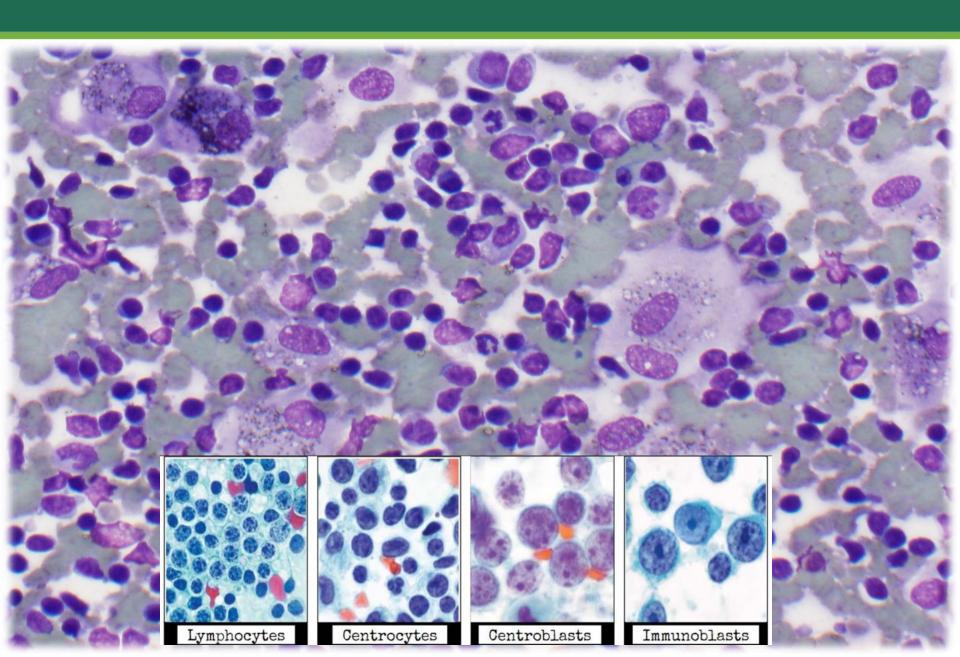
BIOPSY AND EXCISION BASIC QUESTIONS



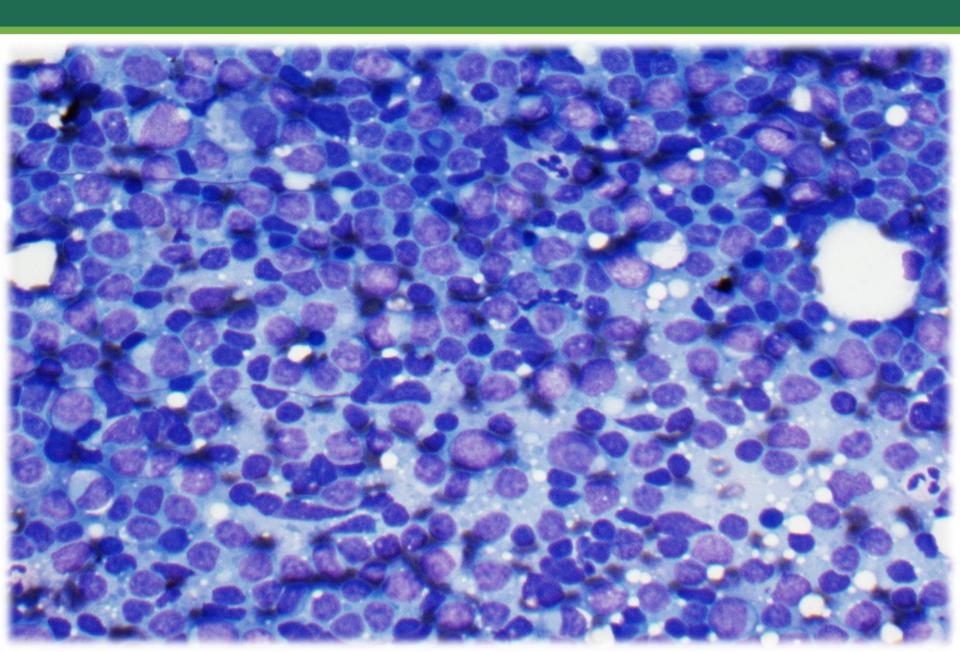
CYTOLOGY APPROACH



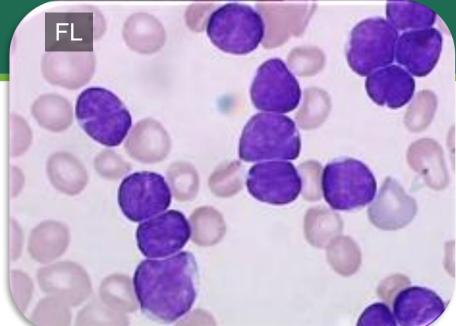
POLYMORPHOUS LYMPHOID POPULATION

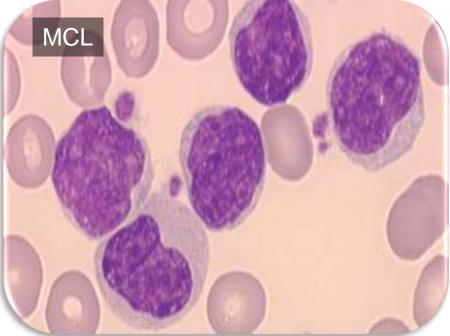


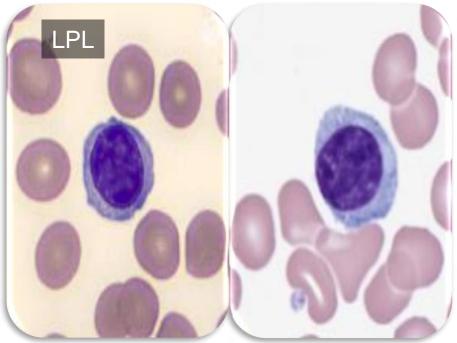
MONOTONOUS LYMPHOID POPULATION

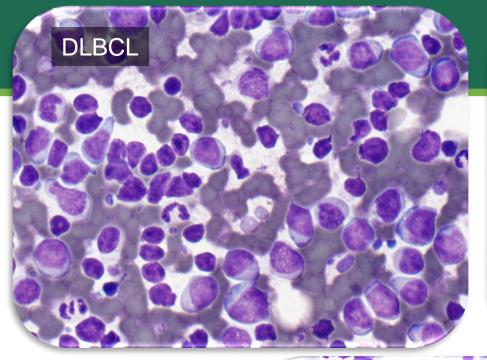


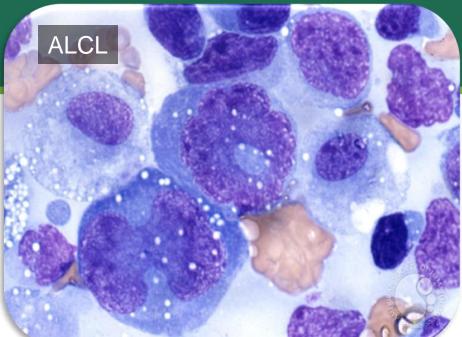


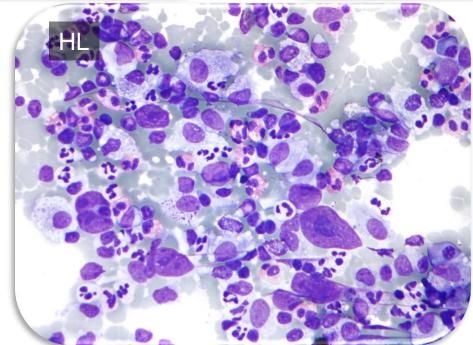




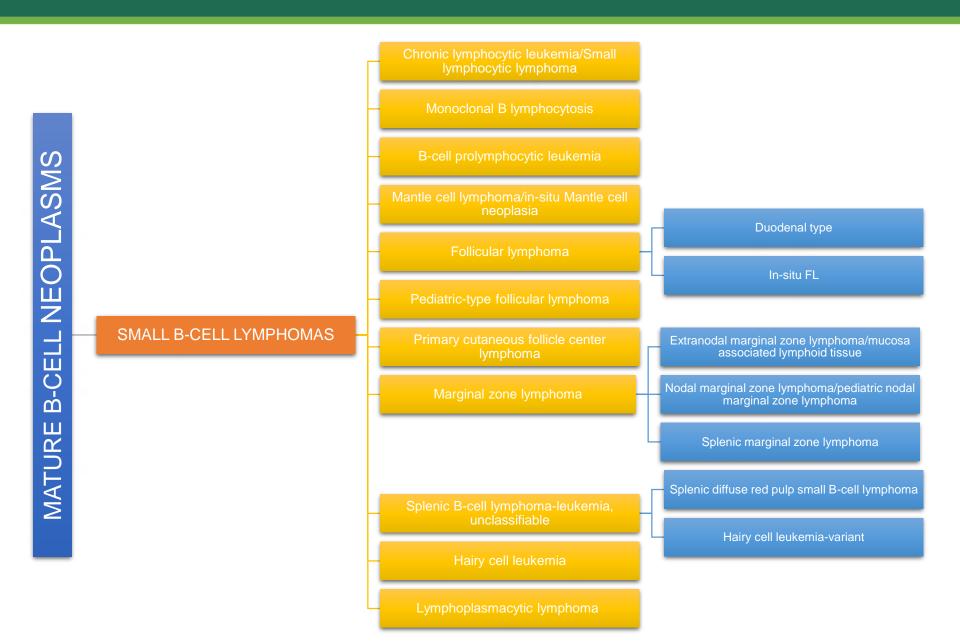








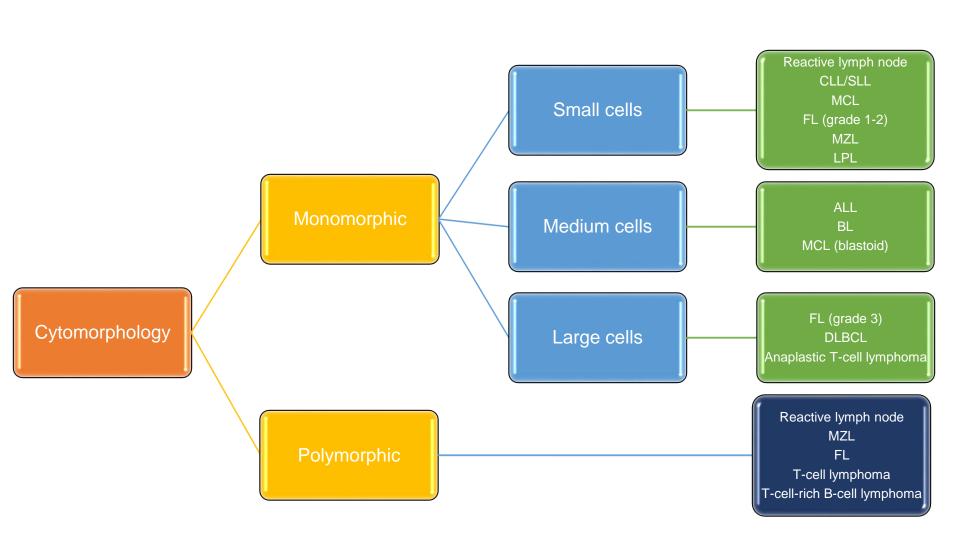
2016 WHO CLASSIFICATION



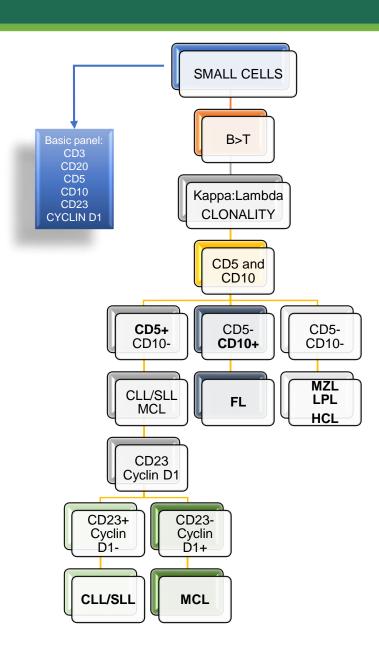
2016 WHO CLASSIFICATION

Germinal center B-cell type Activated B-cell type MATURE B-CELL NEOPLASMS Primary cutaneous DLBCL, leg type DLBCL associated with chronic LARGE B-CELL LYMPHOMAS Is there an easier way??? Intravascular LBCL HHV8+ DLBCL, NOS

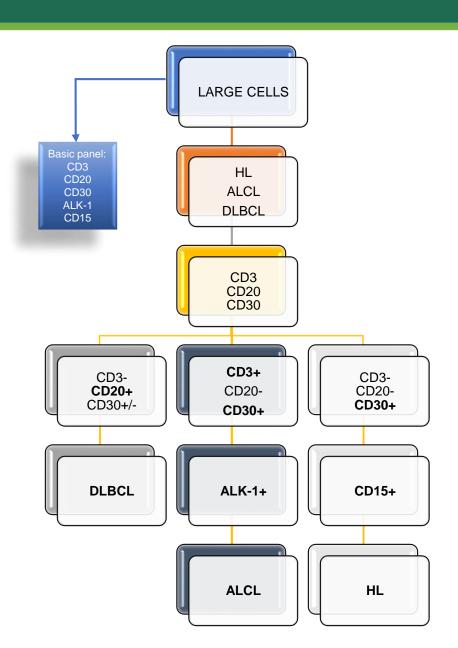
CYTOLOGY ALGORITHM



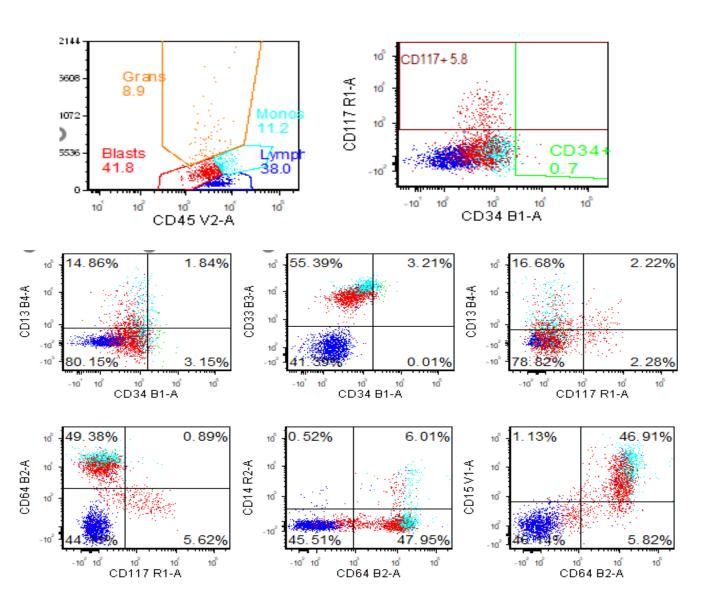
SIMPLE ALGORITHM - SMALL CELLS



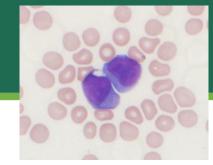
SIMPLE ALGORITHM - LARGE CELLS

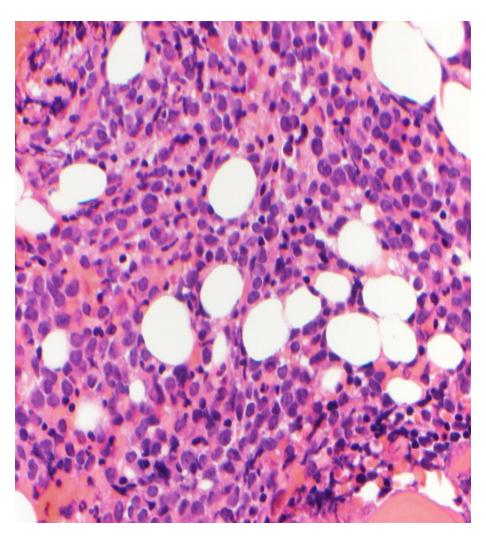


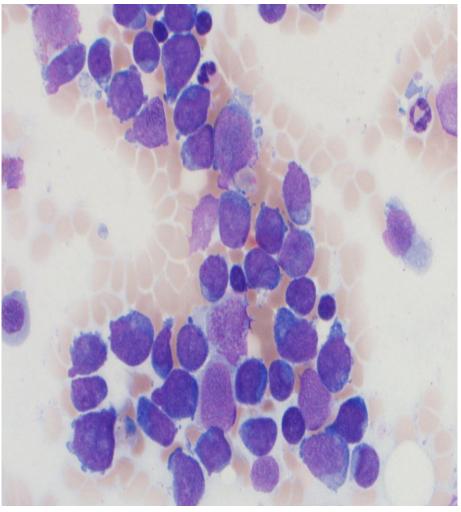
FLOW CYTOMETRY



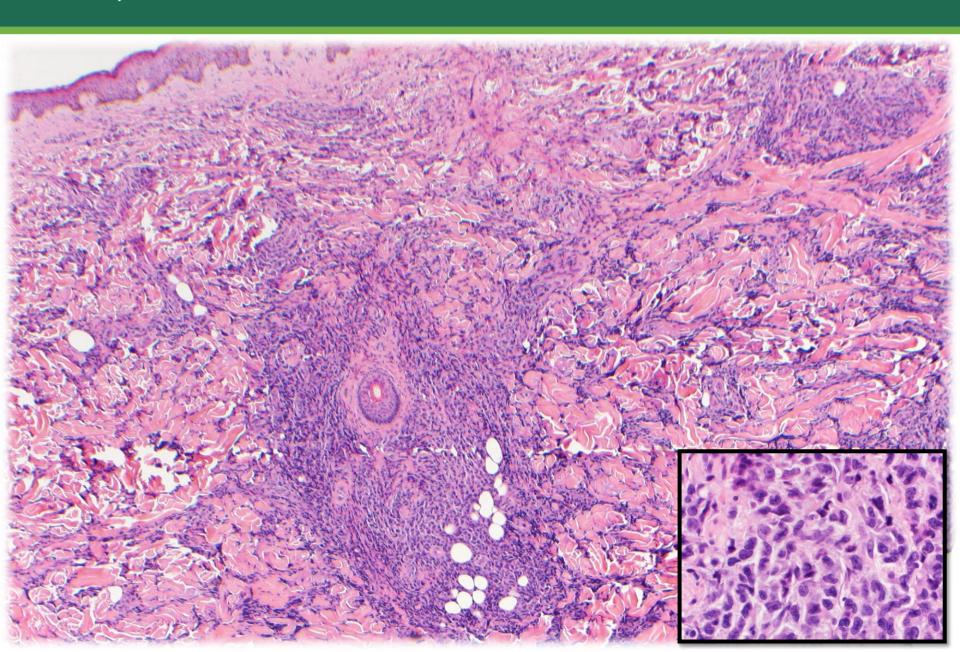
PERIPHERAL BLOOD AND BONE MARROW

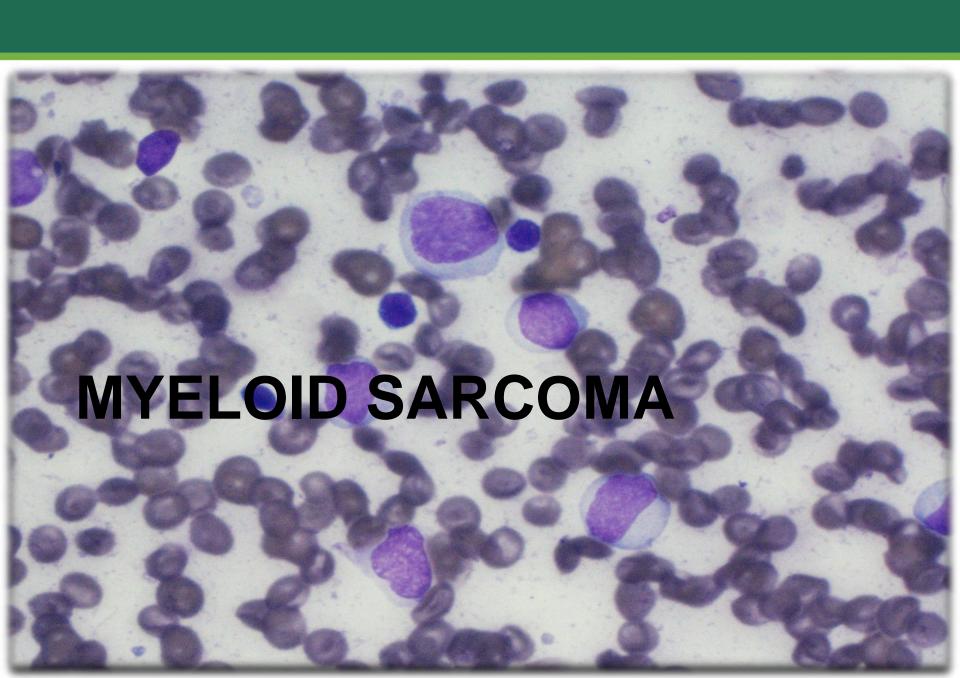






SKIN, RIGHT ARM





MEYLOID SARCOMA AT UAB

- 2001-2017
- 74 confirmed cases of MS
- 63 patients (85%) had adequate follow-up data (minimum 12 months)

Age (years)	54 (22–88)
Sex	
Male	39 (66%)
Female	20 (33%)
Race	
Caucasian	47 (80%)
African American	12 (20%)

Location	
Skin	30 (51%)
Lymph node	9 (15%)
Bone	5 (9%)
Nasopharynx	4 (7%)
Gastrointestinal	4 (7%)
Other	7 (12%)



PRESENTATION

Leukaemic phase at diagnosis of MS		
Prior	21 (36%)	
Concurrent	17 (29%)	
None	16 (27%)	
After	5 (9%)	

Prior malignancy	
AML	21 (36%)
Breast cancer	5 (8%)
Uterine cancer	1 (2%)
Laryngeal cancer	1 (2%)
Uterine cancer	1 (2%)
BCC	1 (2%)

- (1) de novo MS;
- (2) MS with concomitant AML;
- (3) MS following myelodysplastic syndrome, myeloproliferative neoplasm, or MDS/MPN; and
- (4) MS as a recurrence of AML



GENETIC PROFILE

Conventional karyotype (n = 50)		
Normal	32 (64%)	
Complex	9 (16%)	
≤2 abnormalities	9 (16%)	
Trisomy 8	3	
7q-	1	
t(6:12)	1	
Other	4	

FISH (n = 30)		
Normal	17 (57%)	
7q-	4 (13%)	
MLL rearrangement	3 (10%)	
t(8;21)	2 (7%)	
Trisomy 8	2 (7%)	
t(16;16)	1 (3%)	
t(15;17)	1 (3%)	

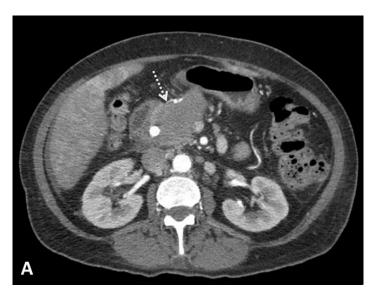


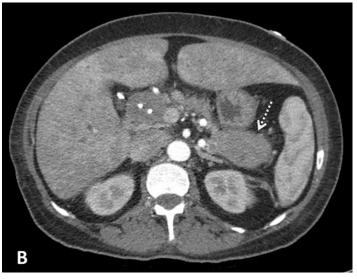
CASE #2



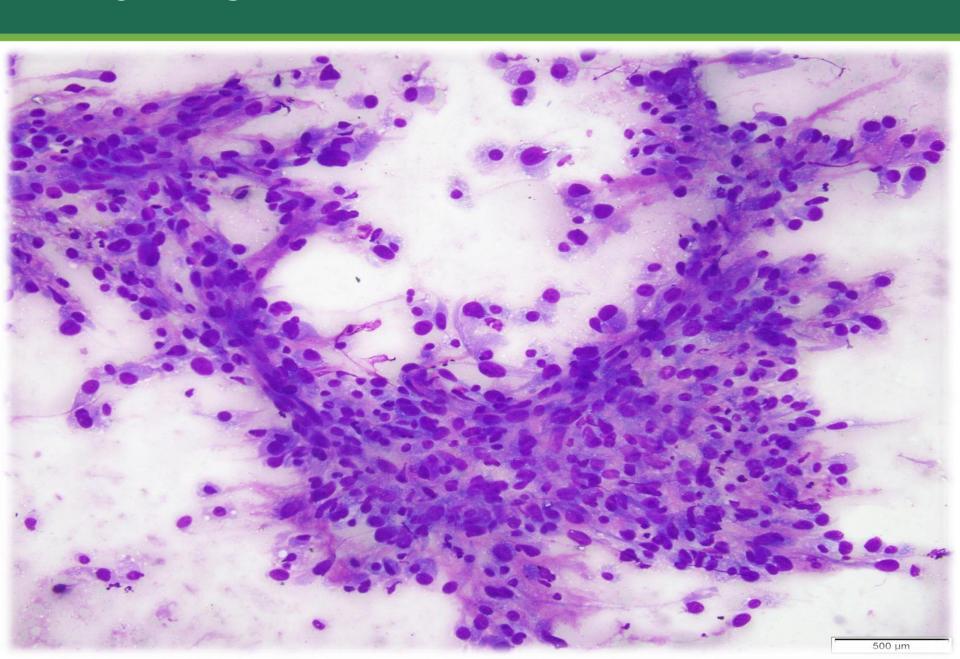
CLINICAL HISTORY AND IMAGING

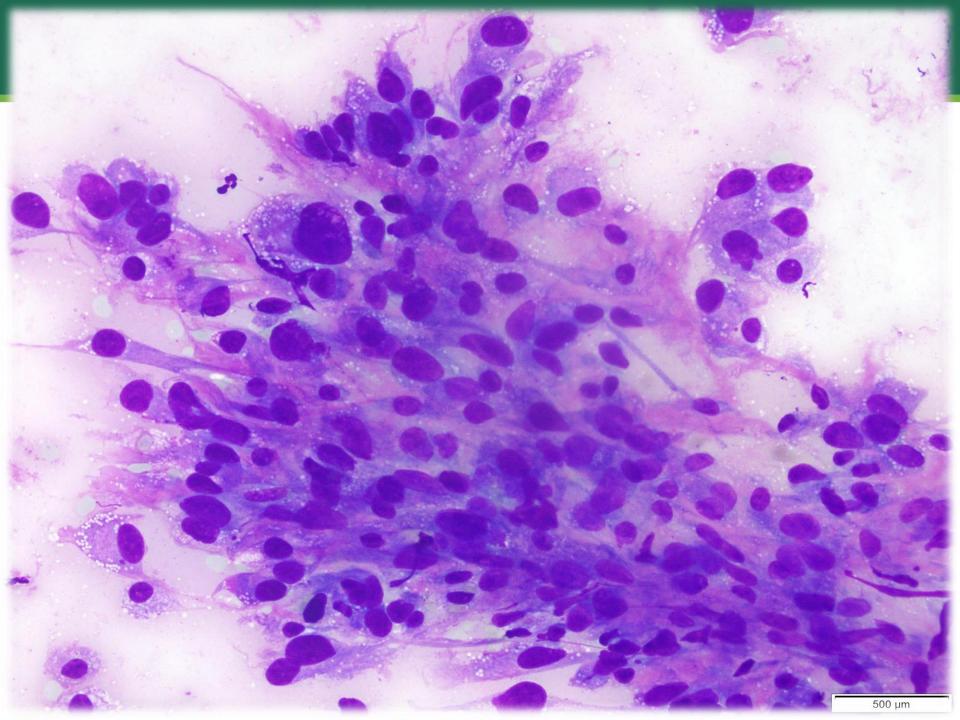
- 51 year old female.
- Abdominal pain and obstructive jaundice.
- Multiple masses
 - Pancreatic head (5 cm),
 - Pancreatic tail (4.1 cm)
 - Two liver masses
 - Periaortic lymphadenopathy suspicious for metastases

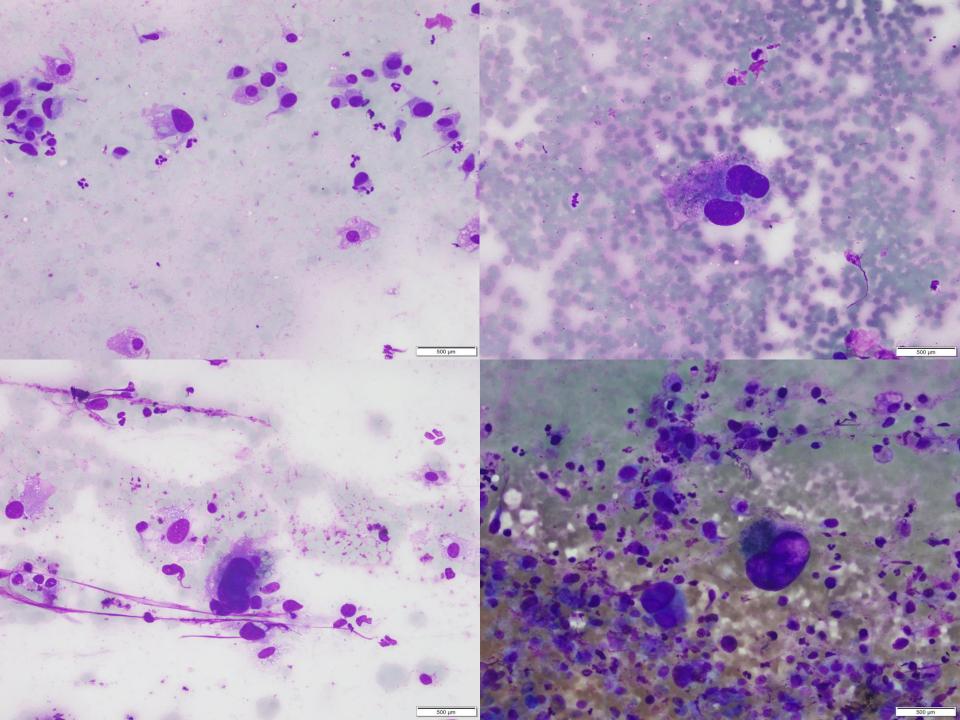


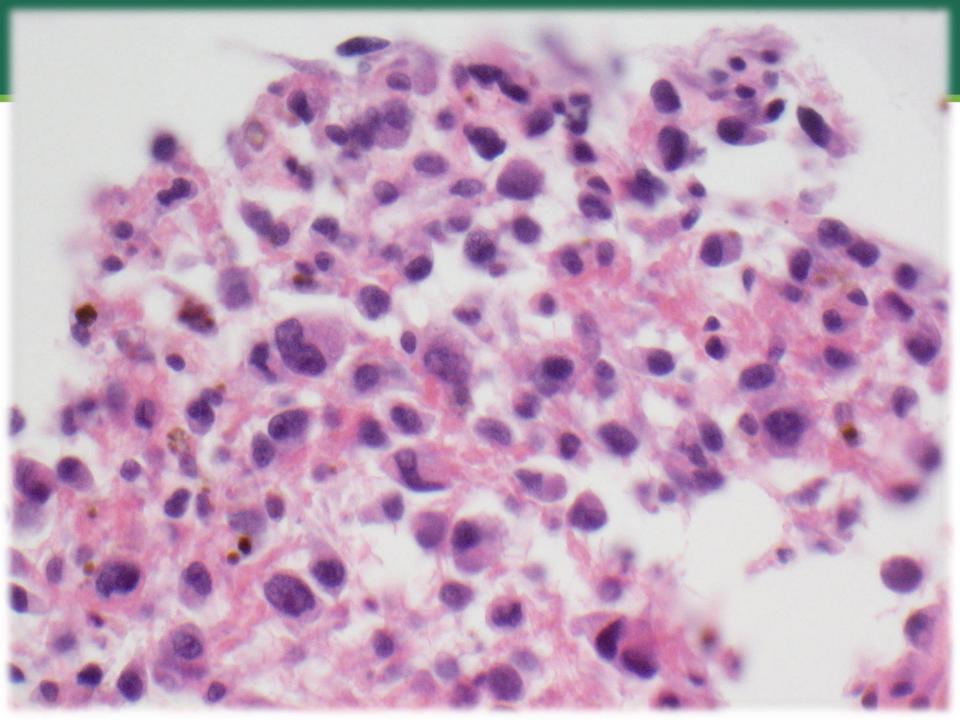


PANCREAS TAIL FNA









DIFFERENTIAL DIAGNOSIS

Ductal adenocarcinoma

• Clusters and single cells, enlarged nuclei, hyperchromasia, irregular nuclear membranes, anisonucleosis of 4:1

Metastatic carcinoma

Lung, breast, kidney and GI tract

Malignant melanoma

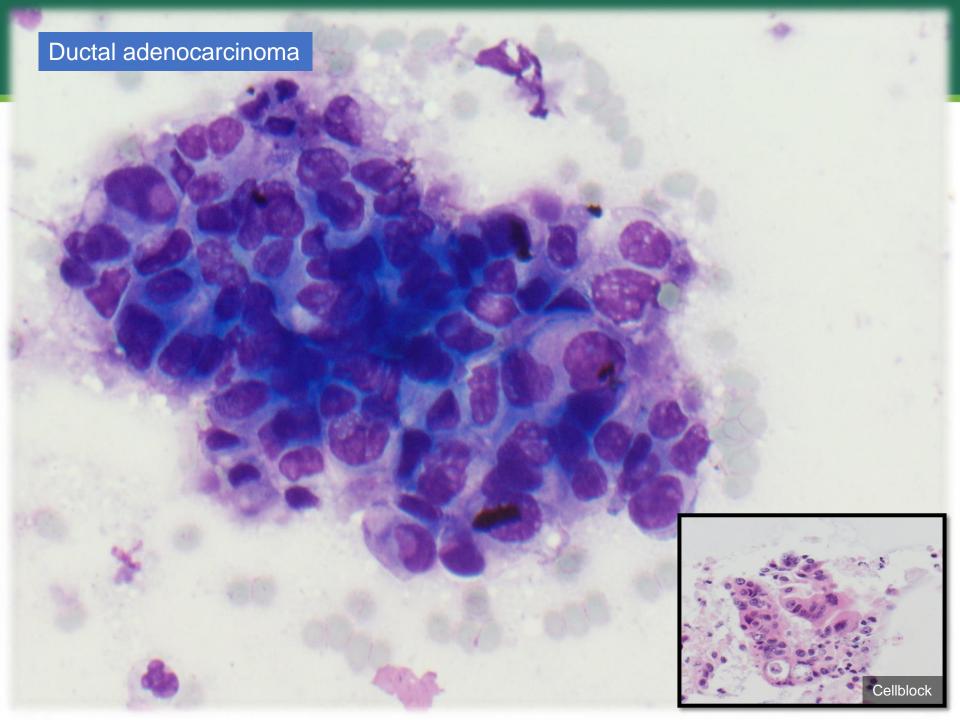
• Large cells, macronucleolus, melanin, melanopahges

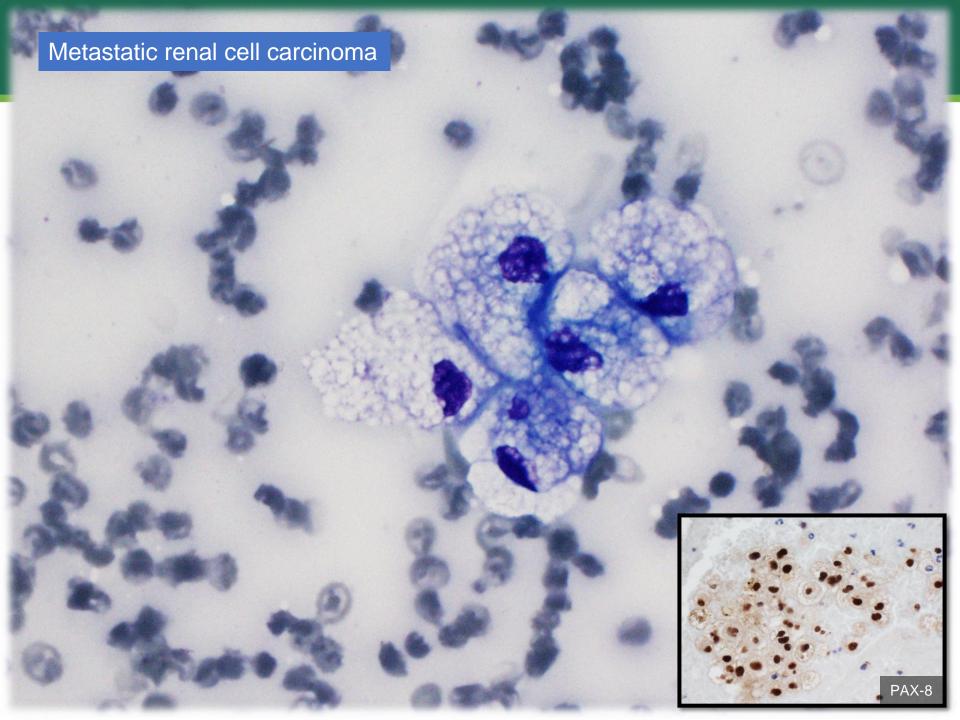
Neuroendocrine neoplasm

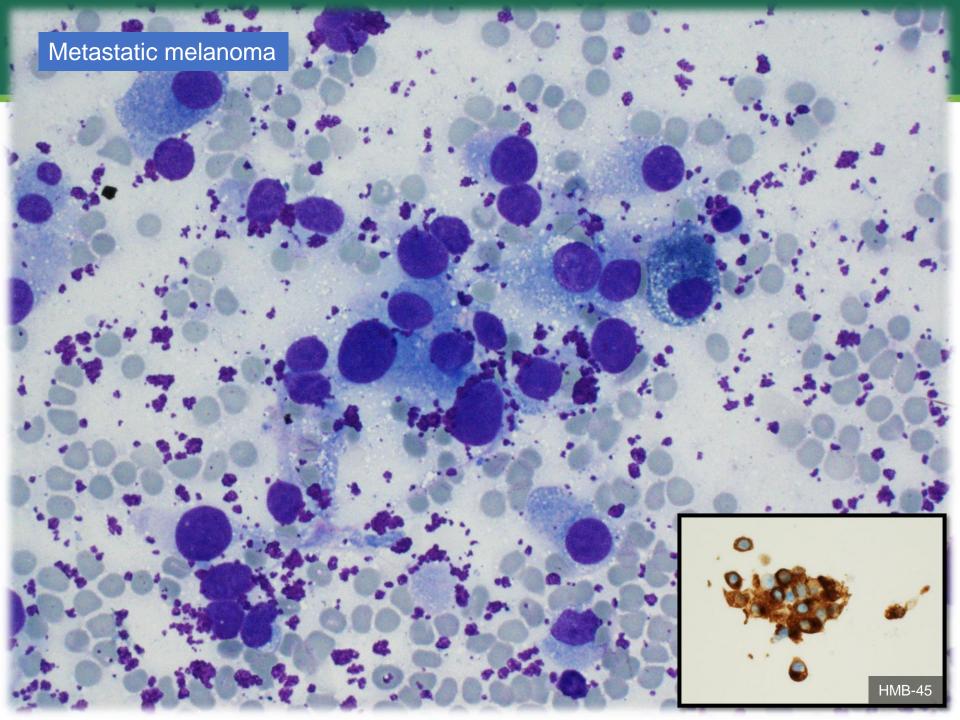
- Isolated cells, uniform round/oval nuclei, plasmacytoid, salt and pepper chromatin, moderate cytoplasm
- Synaptophysin, chromogranin

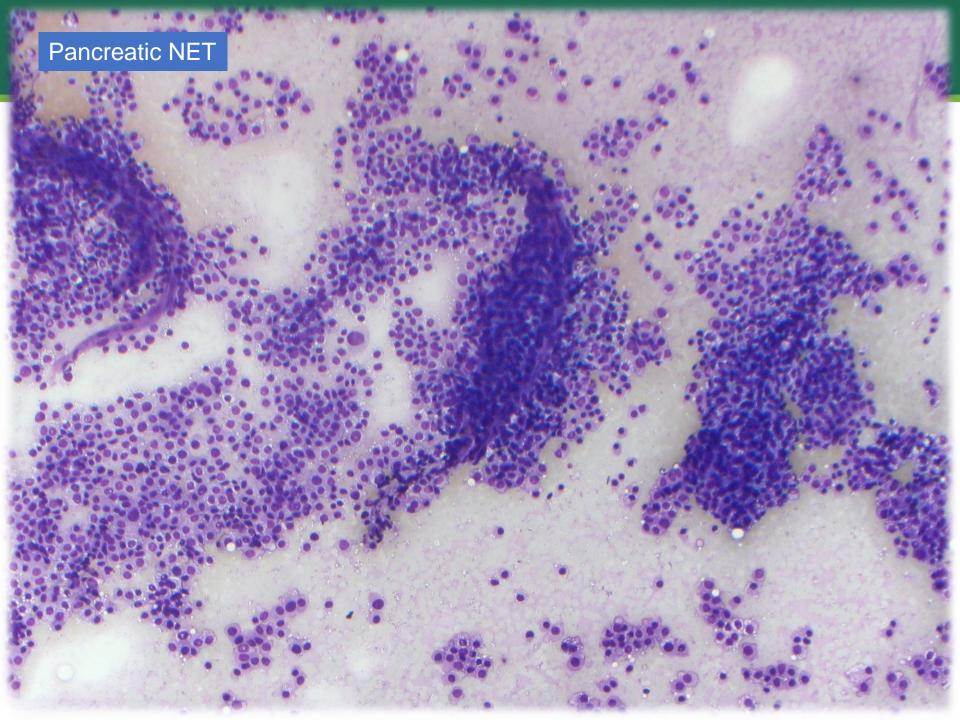
Solid pseudopapillary neoplasm

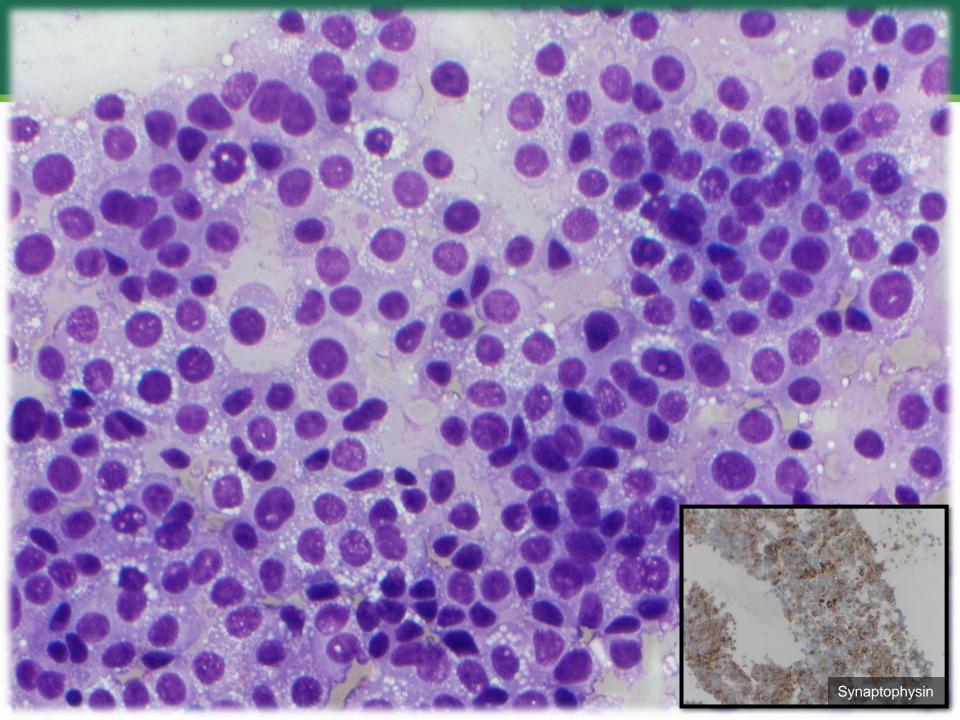
- Fine chromatin, nuclear grooves, pseudopapillae, pink stroma, and hyaline globules
- E-cadherin, beta-catenin, CD10, PR

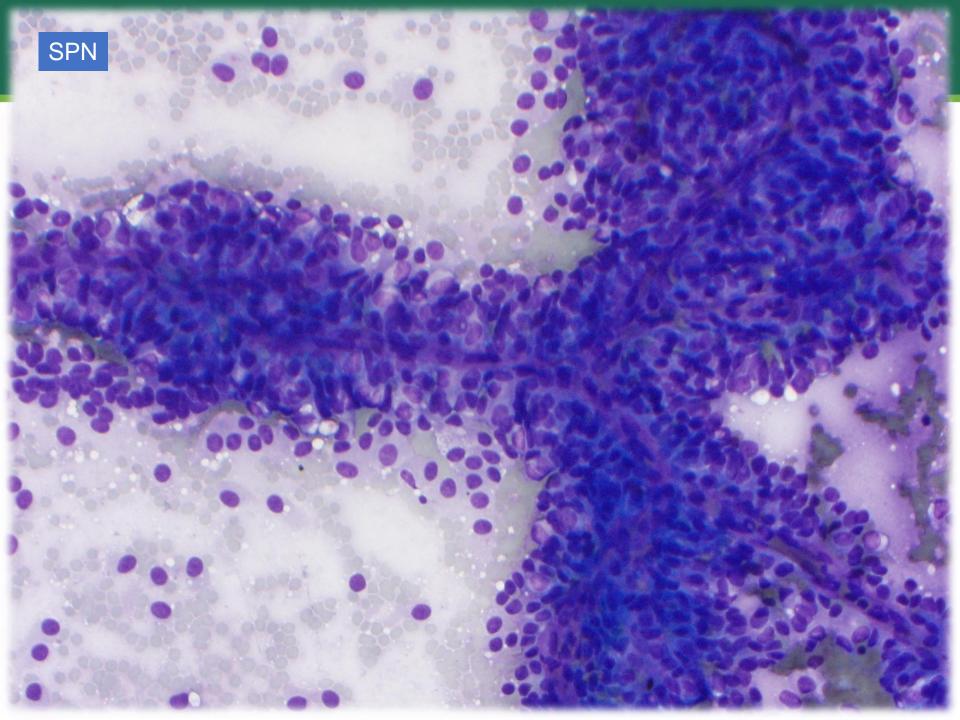


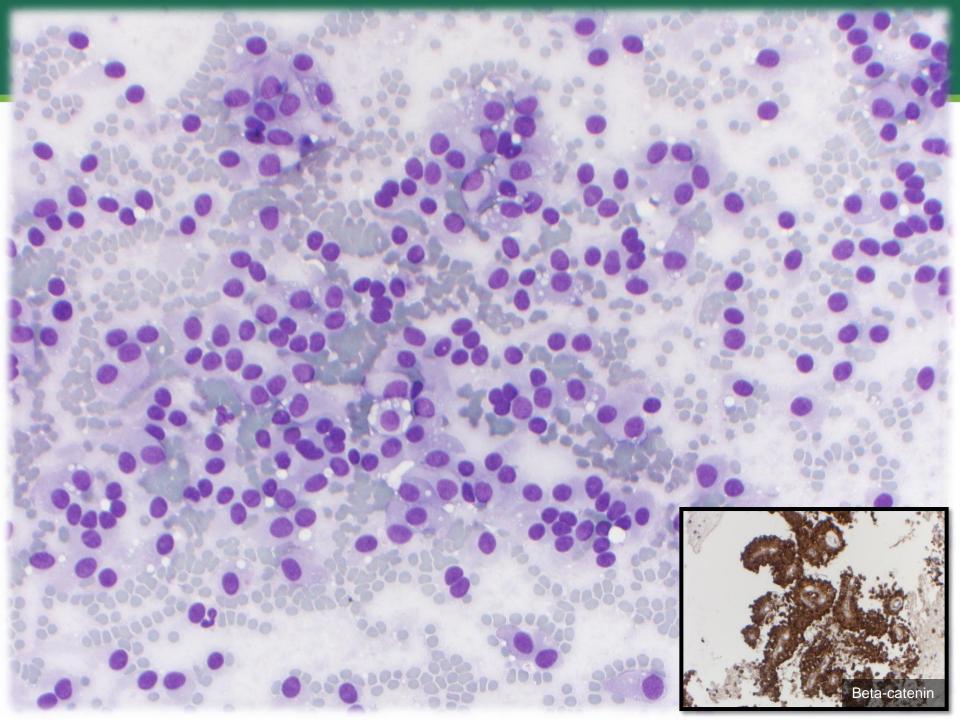


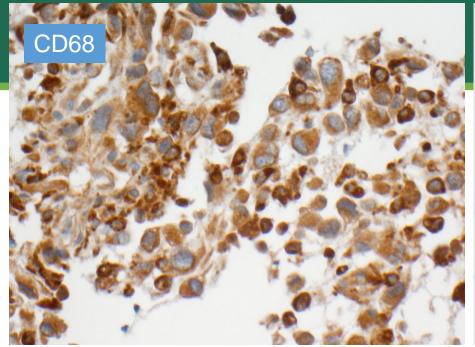


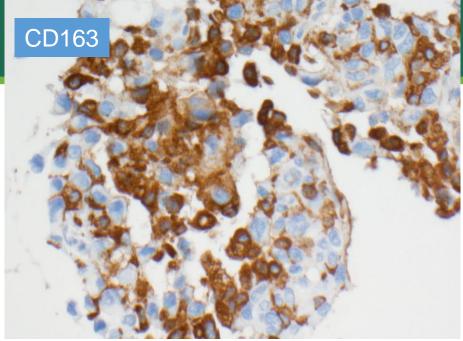


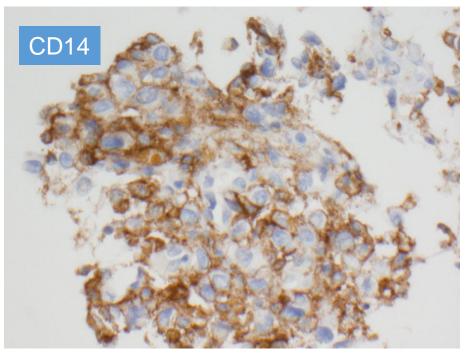










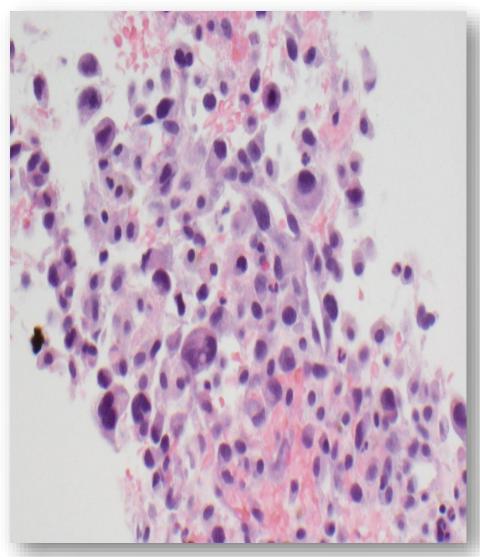


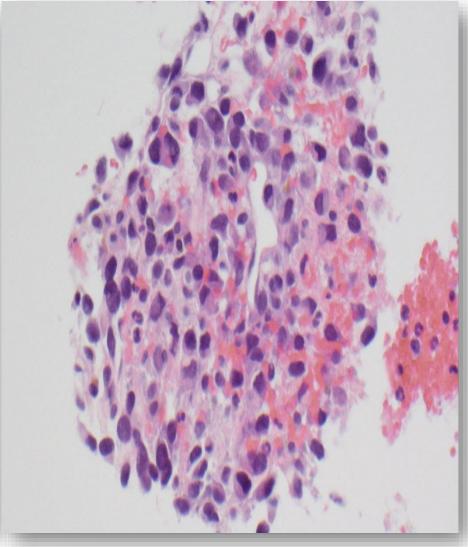
- Negative stains:
 - S-100, HMB-45, Sox10, Pancytokeratin, CK7, HepPar1, RCC antigen, synaptophysin, inhibin, CD45, CD21 and CD123
- Partial positivity:
 - CD45, CD4 and CD56

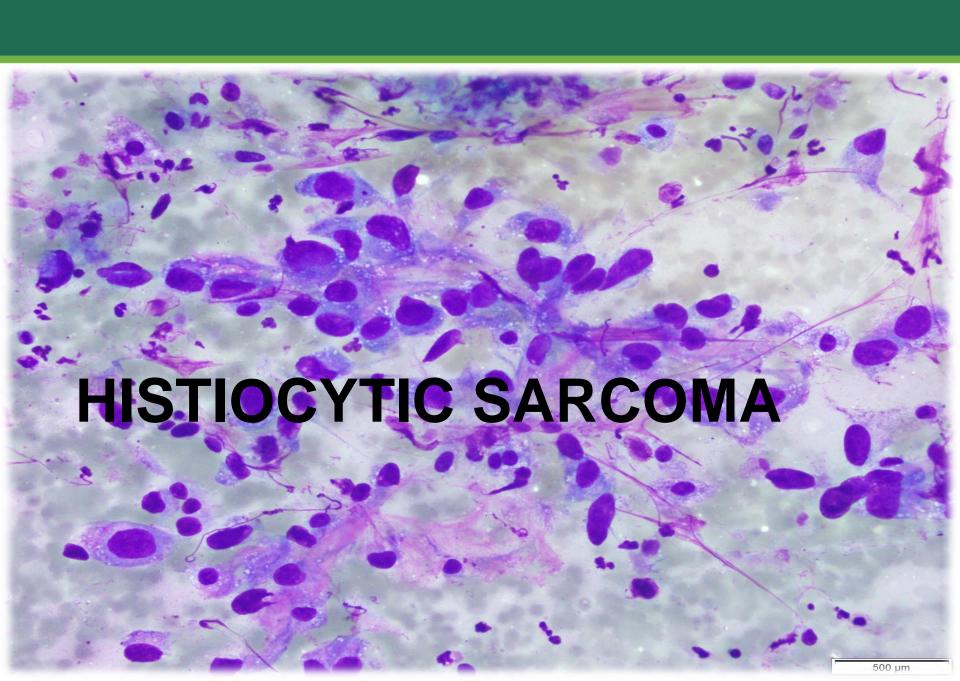
ADDITIONAL SAMPLING

Pancreatic head mass

Mediastinal mas





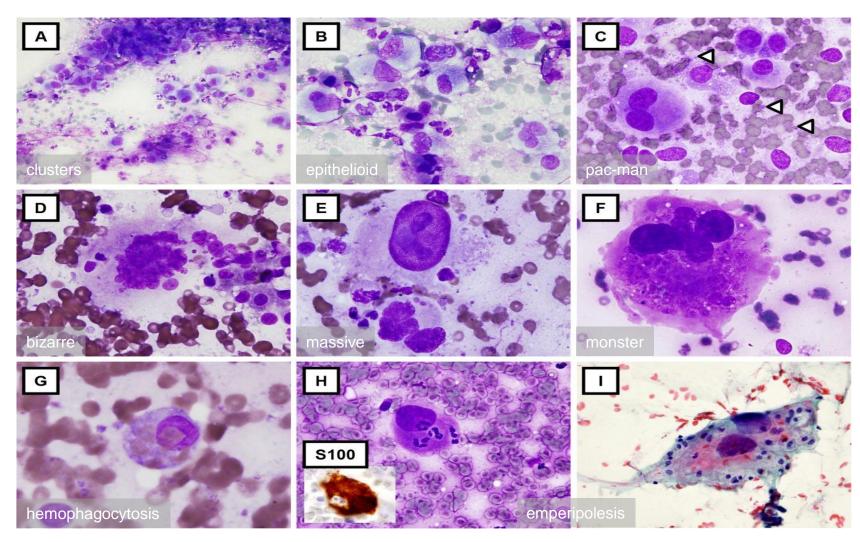


HISTIOCYTIC SARCOMA

- Rare aggressive malignancy of histiocytic origin.
 - Adult males.
 - Gastrointestinal tract, skin and soft tissue.
- Primary malignancy or secondary.
 - Transdifferentiation from low-grade B-cell lymphoma.
 - Post chemotherapy for germ cell tumors.



FNA CYTOMOPRHOLOGY



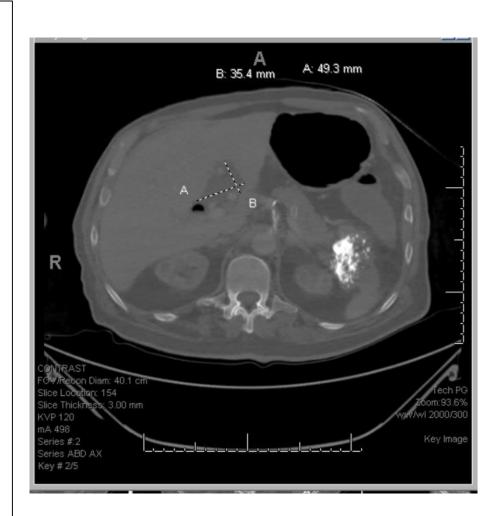


CASE #3

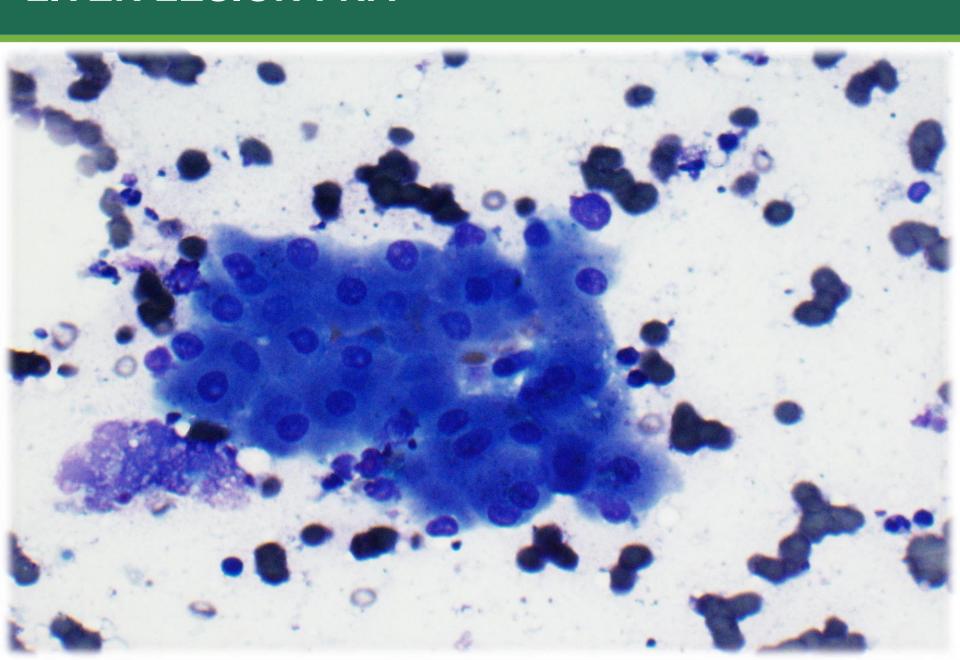


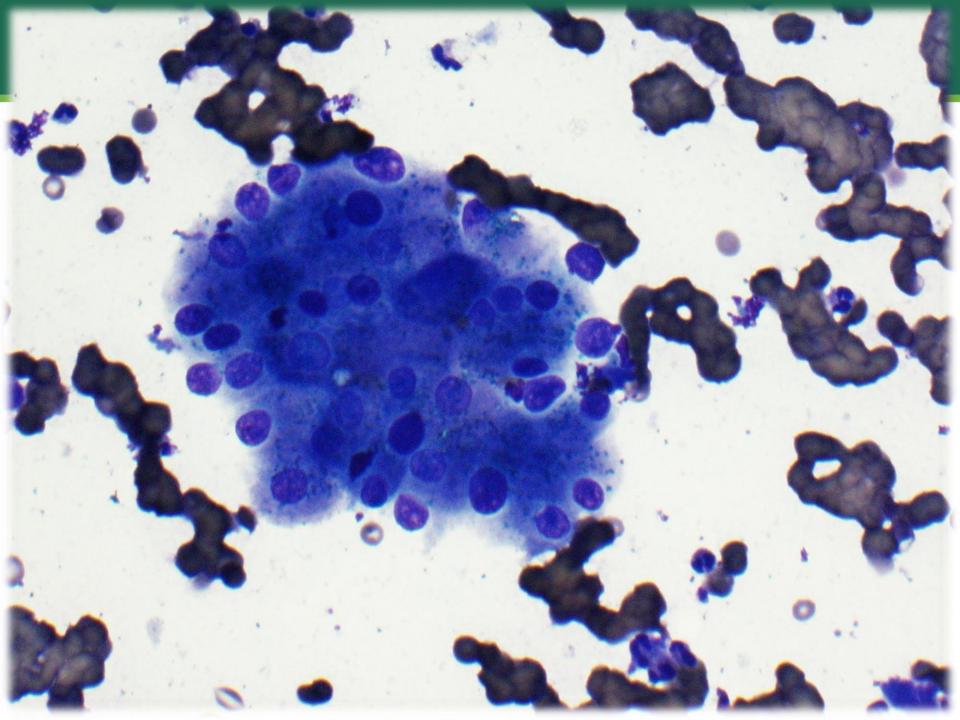
CLINICAL HISTORY AND IMAGING

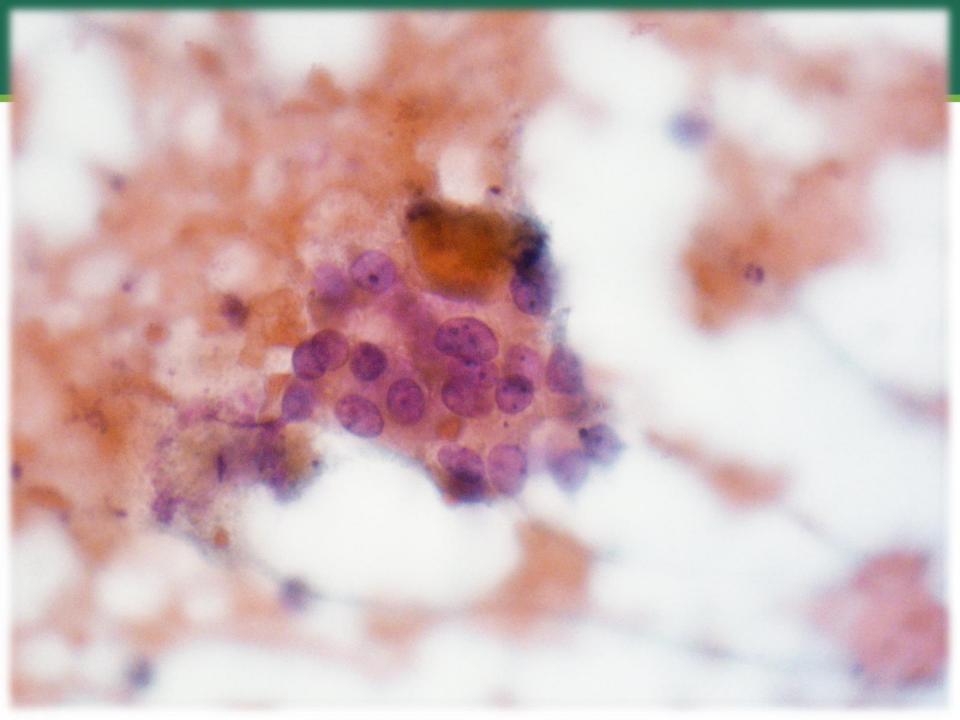
- 66 year old AA male.
- H/o ampullary adenocarcinoma status post Whipple procedure in 2012.
- Presented with abdominal pain, coffee-ground emesis, bloody stool.
- Pancreatic tail and liver lesion.

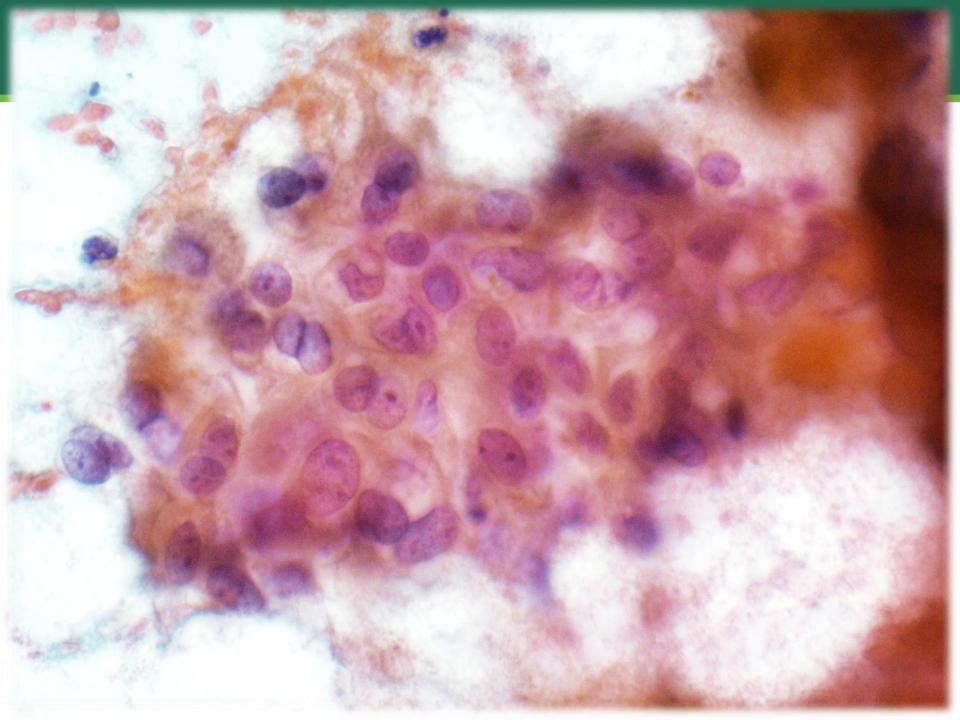


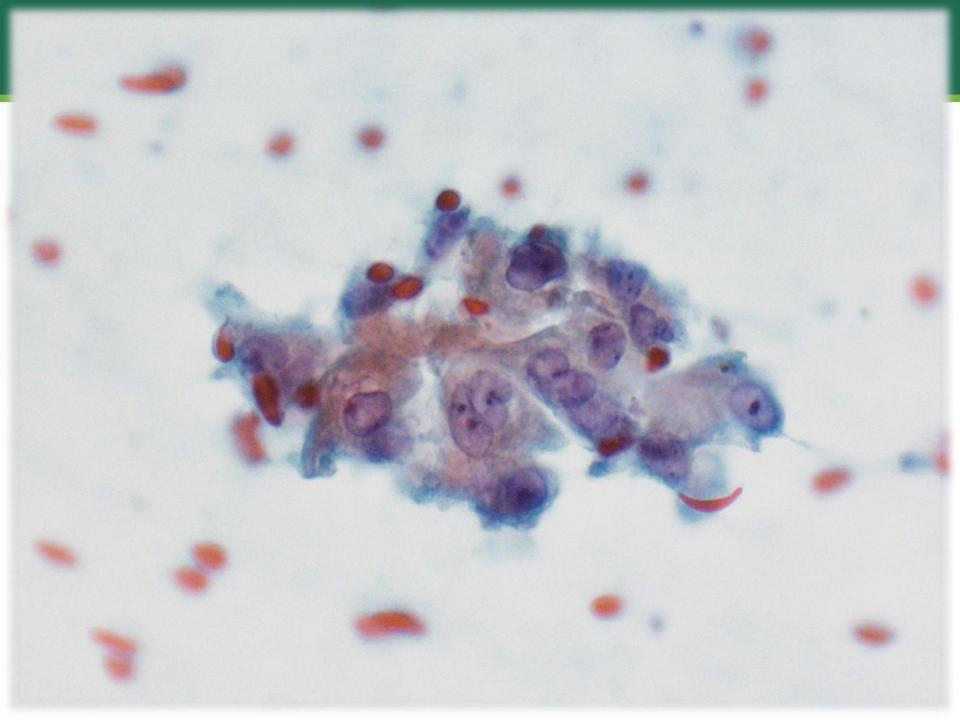
LIVER LESION FNA



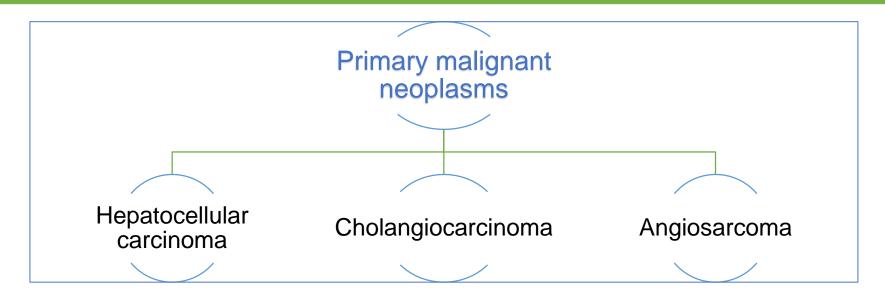


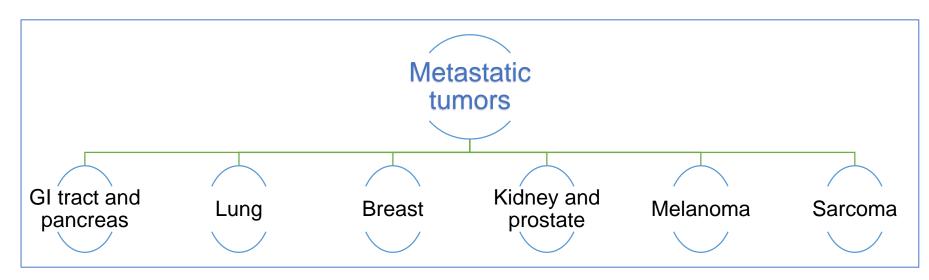


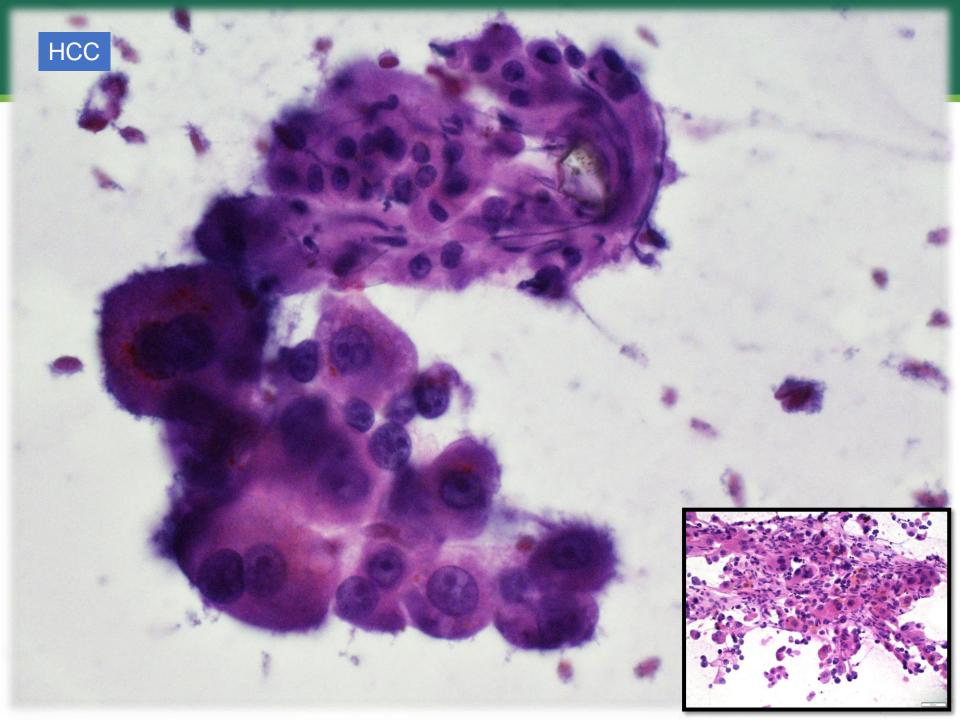


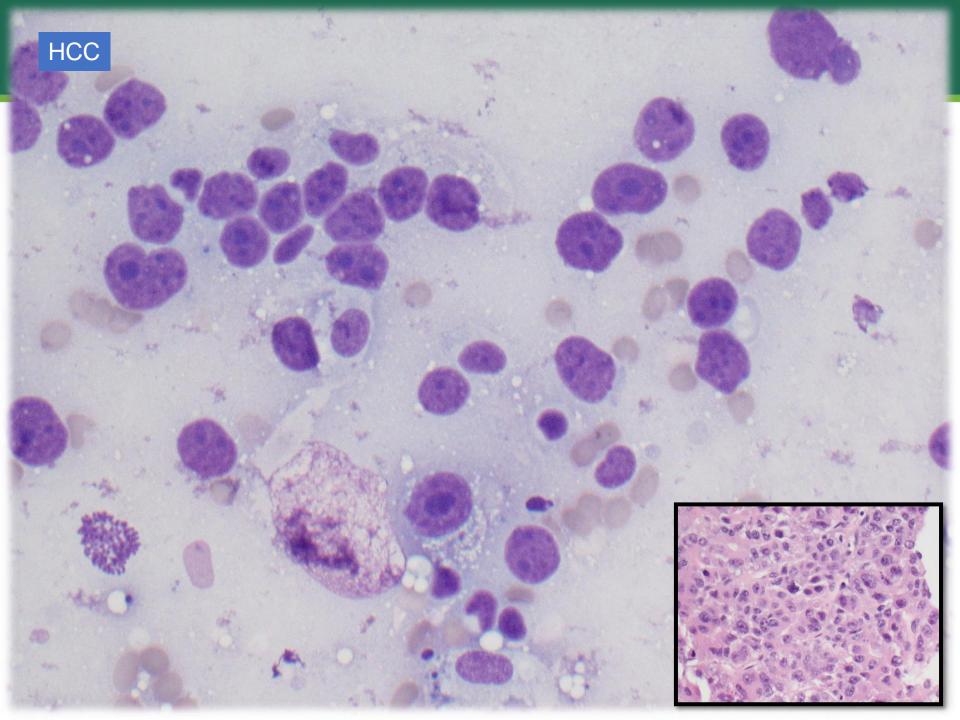


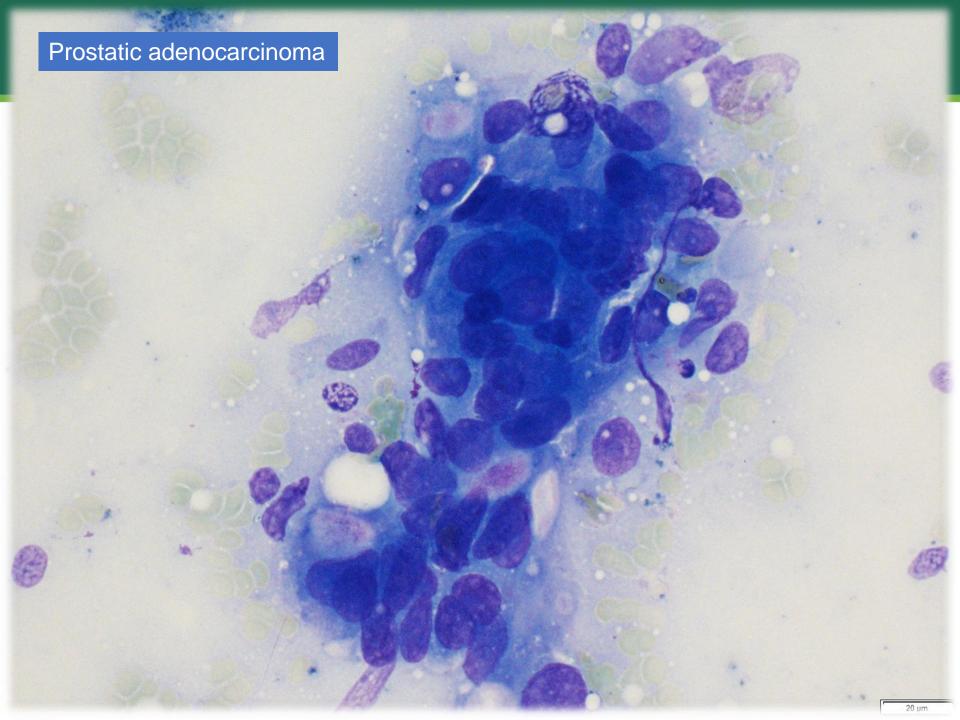
DIFFERENTIAL DIAGNOSIS

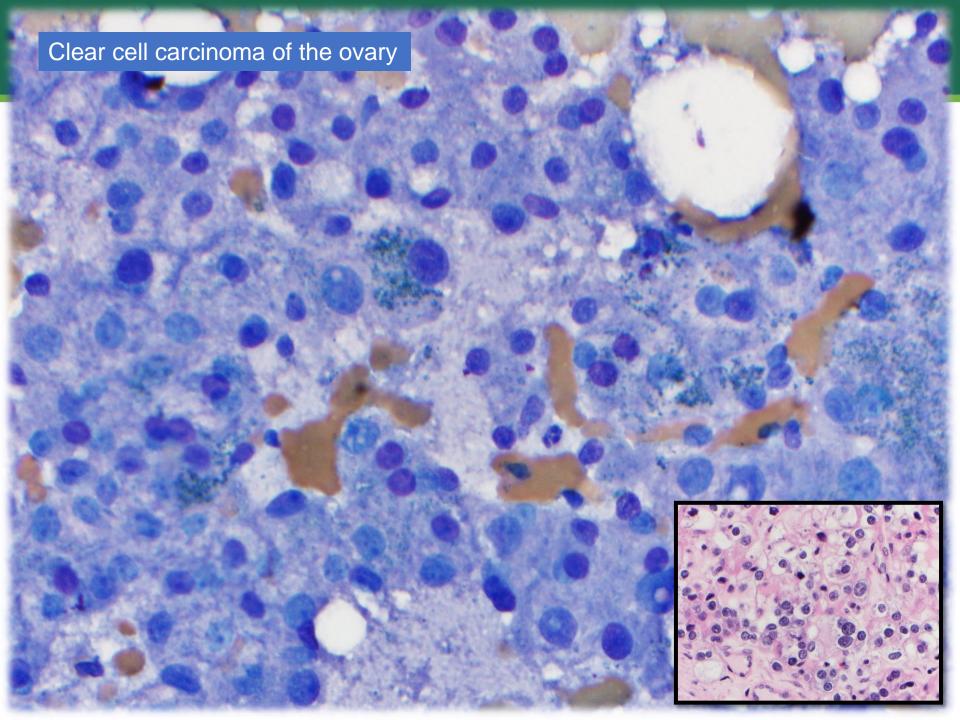


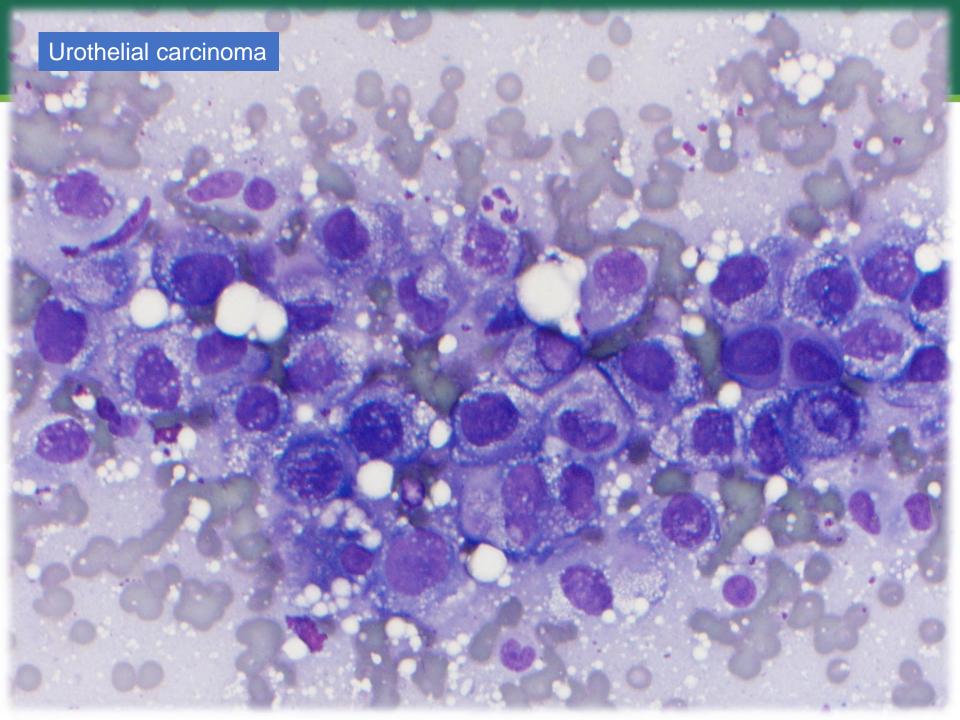




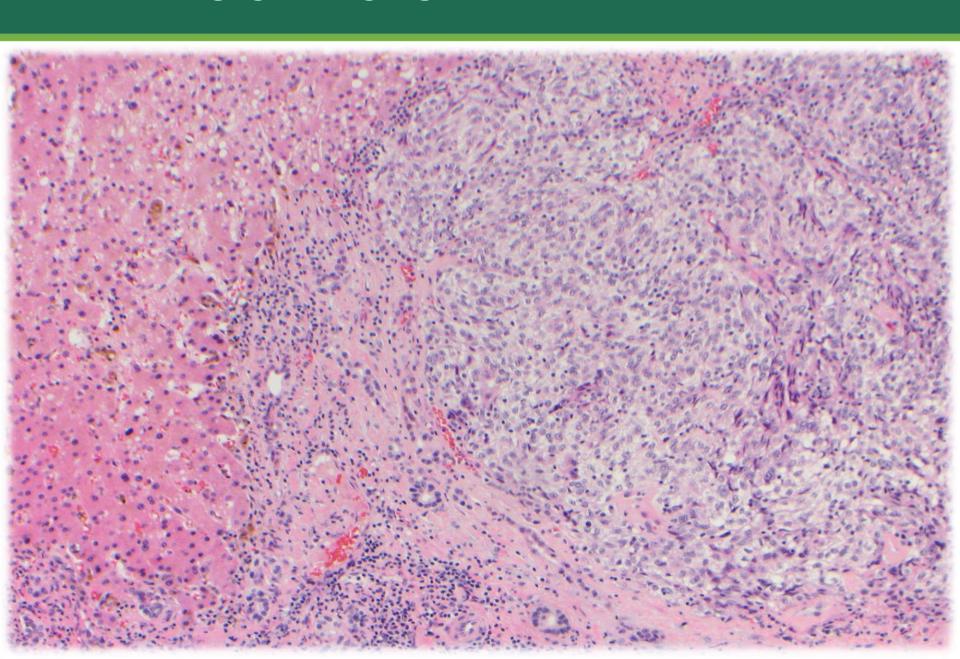


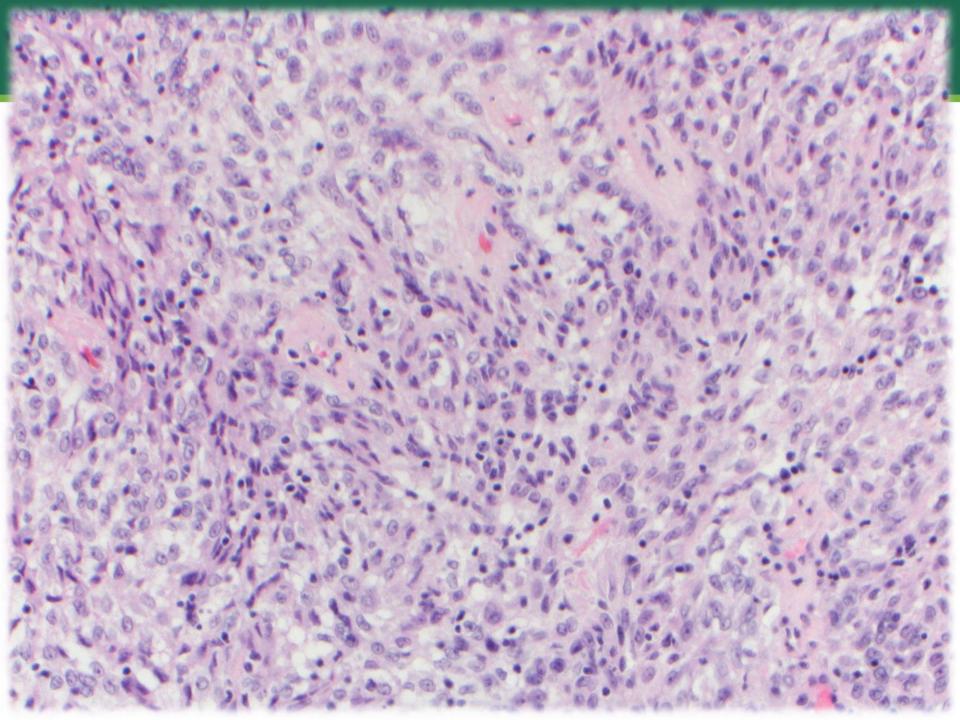


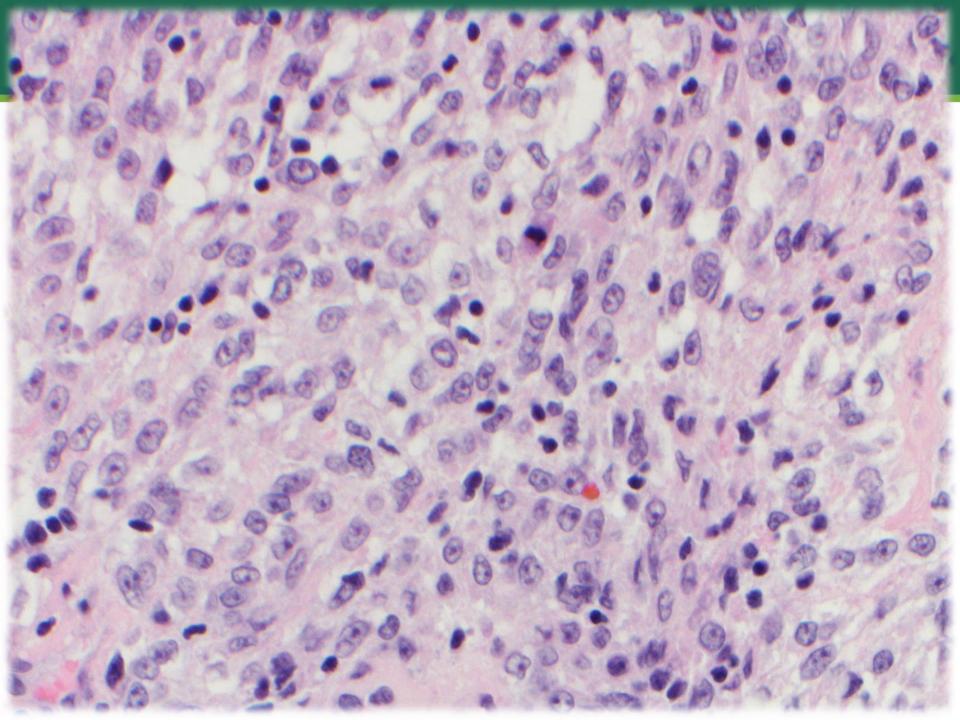


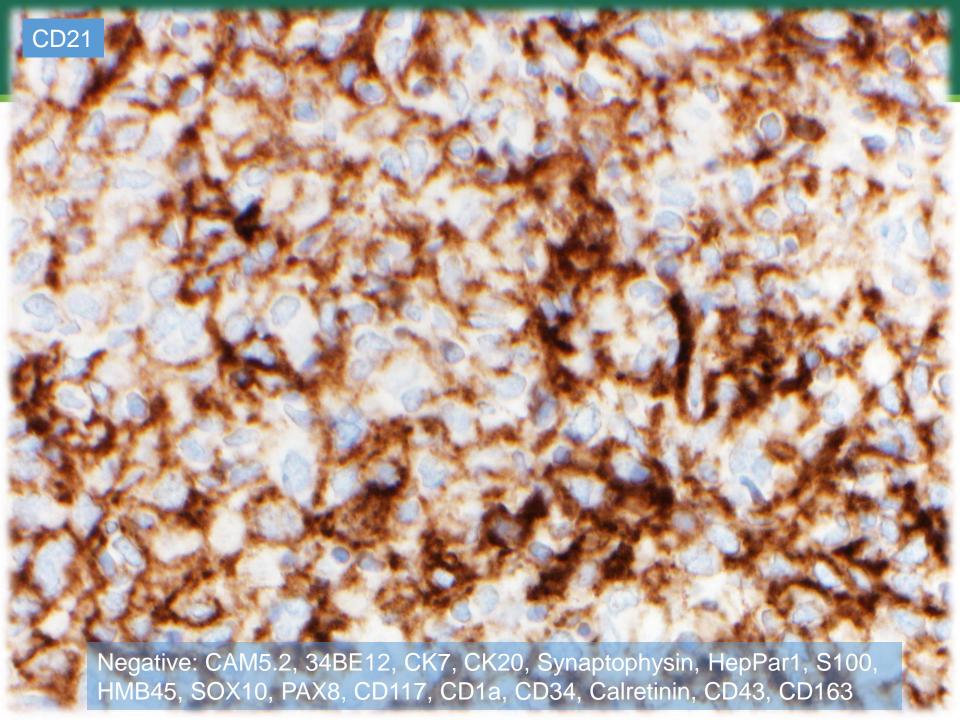


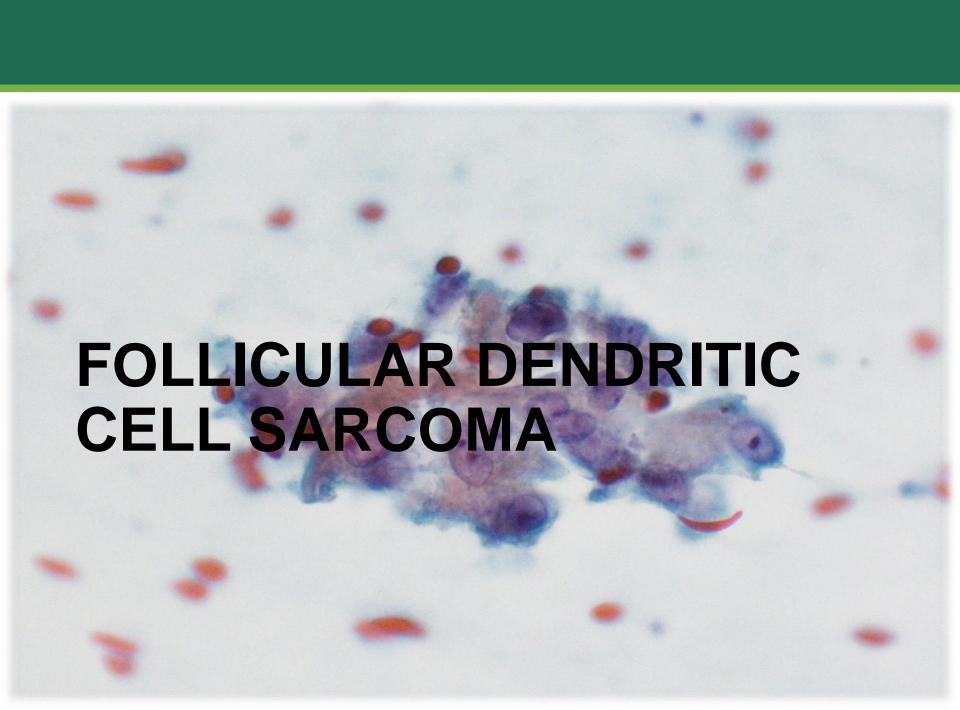
LIVER LESION BIOPSY









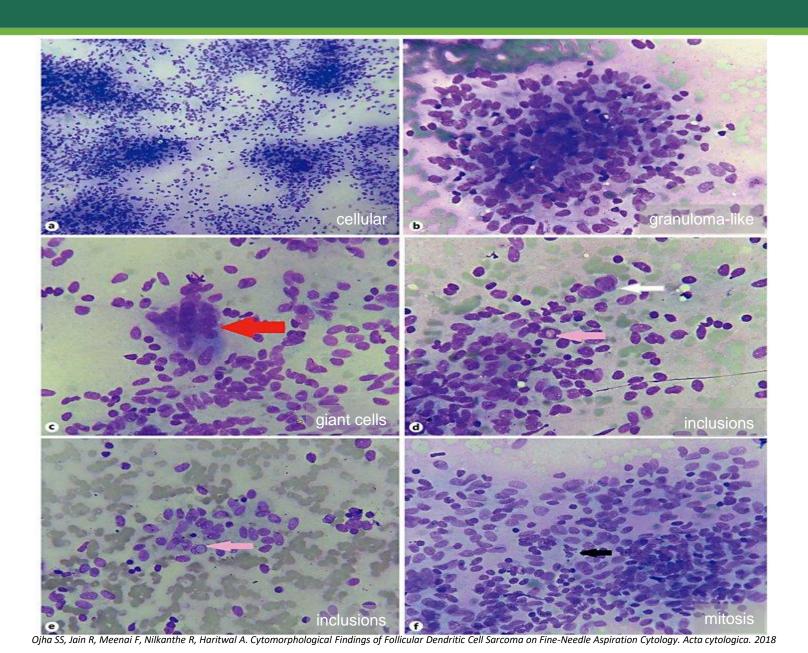


FOLLICULAR DENDRITIC CELL SARCOMA

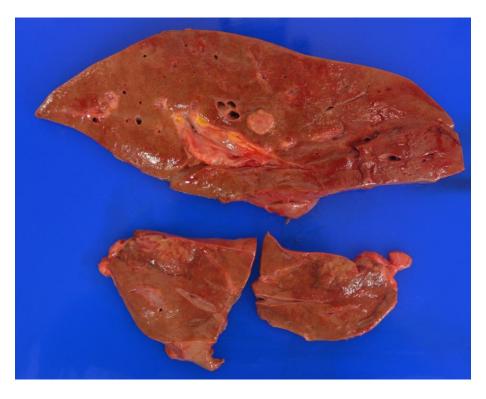
- Rare neoplasm of follicular dendritic cells.
 - Adult predominance.
- Cervical lymphadenopathy.
- Tonsil, oral cavity, gastrointestinal tract, soft tissue, skin, mediastinum, liver and spleen
- Intermediate behavior.
 - Common local recurrences, and risk of metastasis.

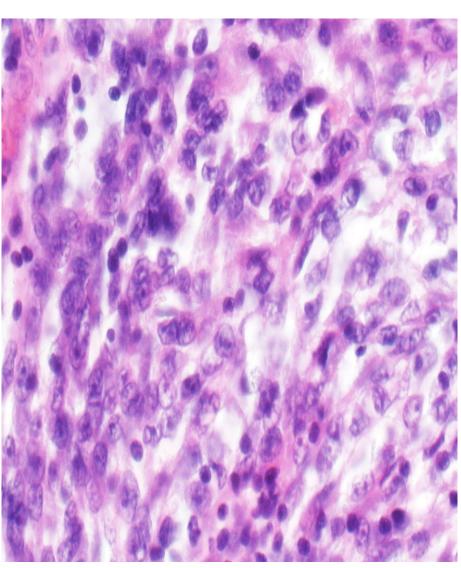


CYTOMORPHOLOGY ON FNA



PATIENT FOLLOW-UP





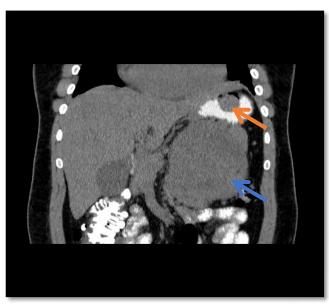


CASE #4



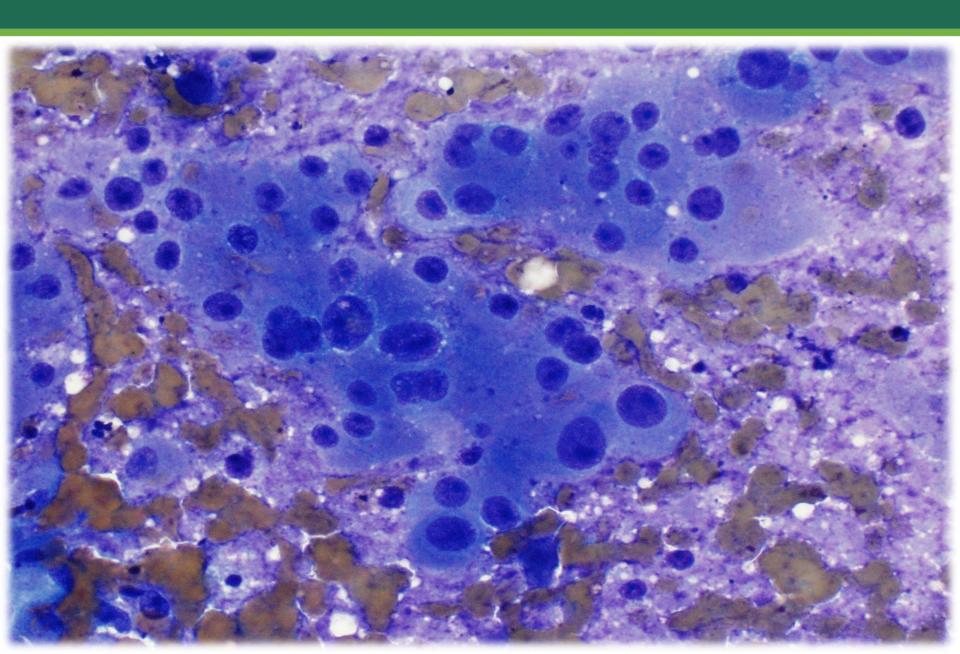
CLINICAL HISTORY AND IMAGING

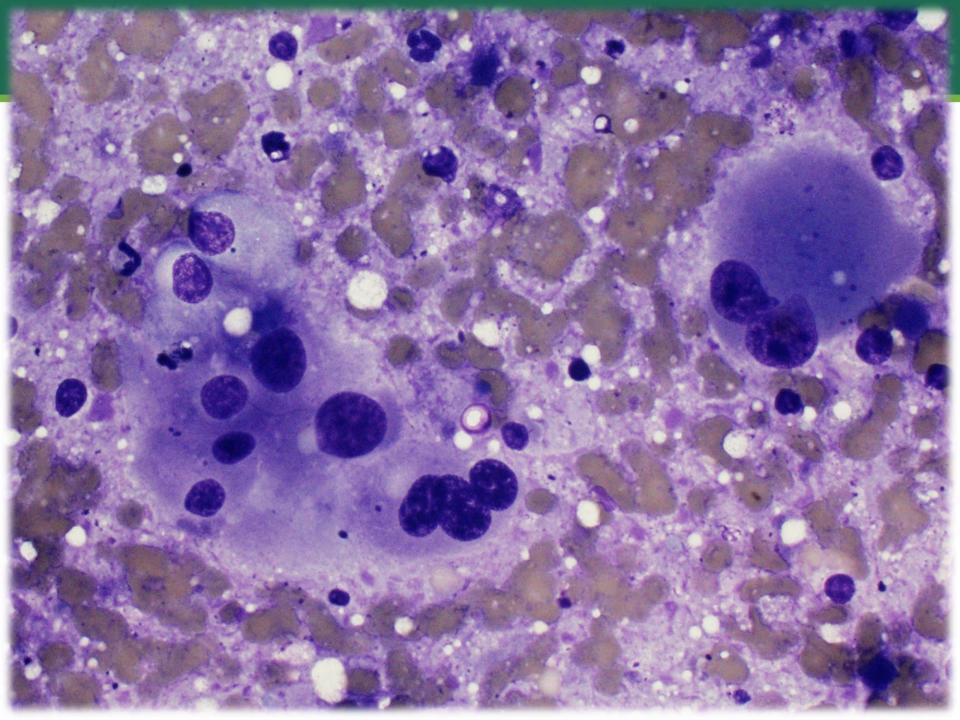
- 22 year old male.
- Abdominal pain, weight gain (120p), hypertension (189/84 mmHg) and skin stria.
- Retroperitoneal mass (12.9 cm) involving L adrenal/kidney/pancreas.
- Gastric body mass (4 cm).
- L testicular nodules (1 cm) x2 with calcifications.

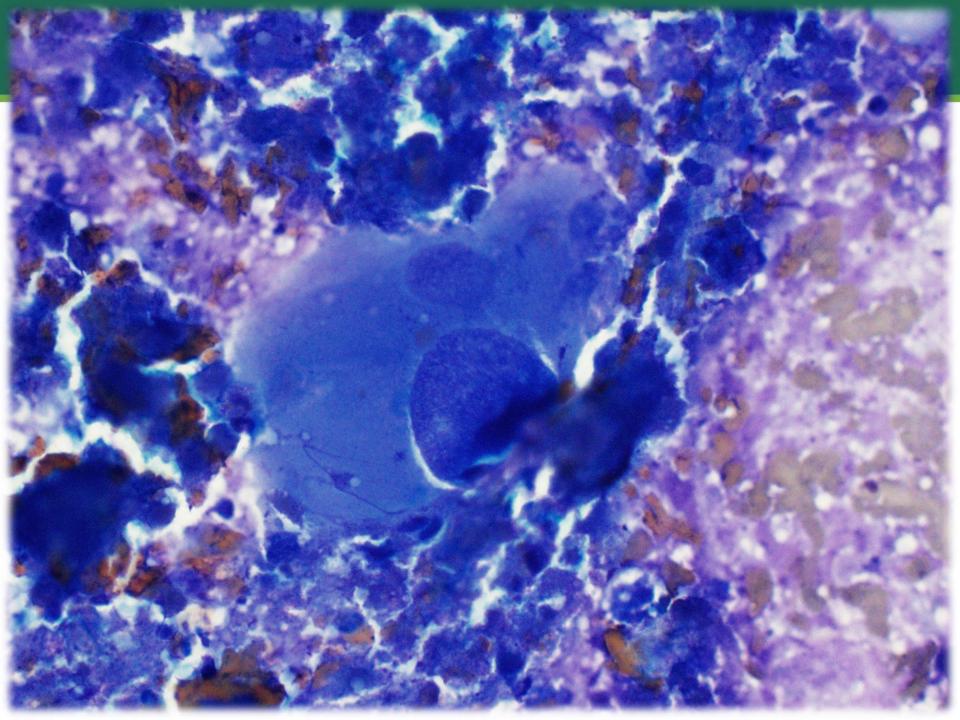


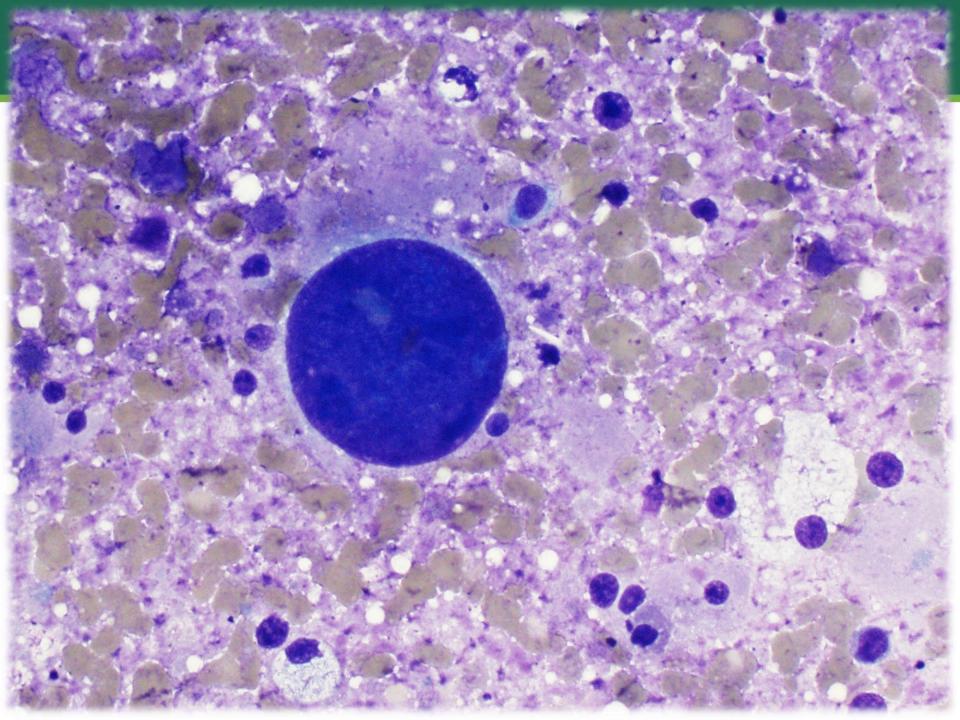


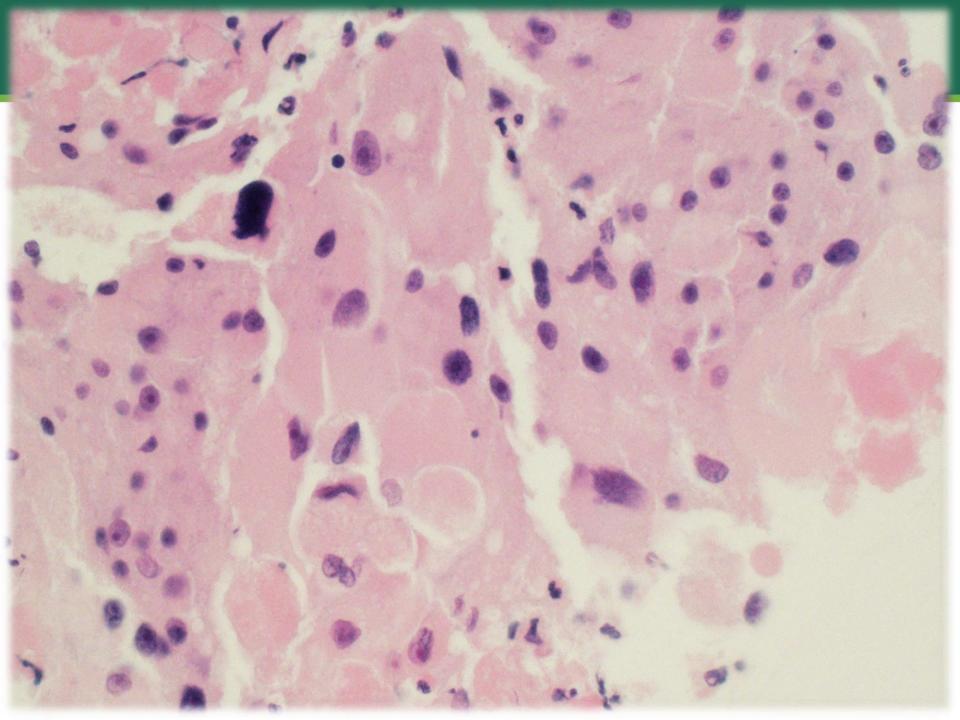
RETROPERITONEAL MASS FNA

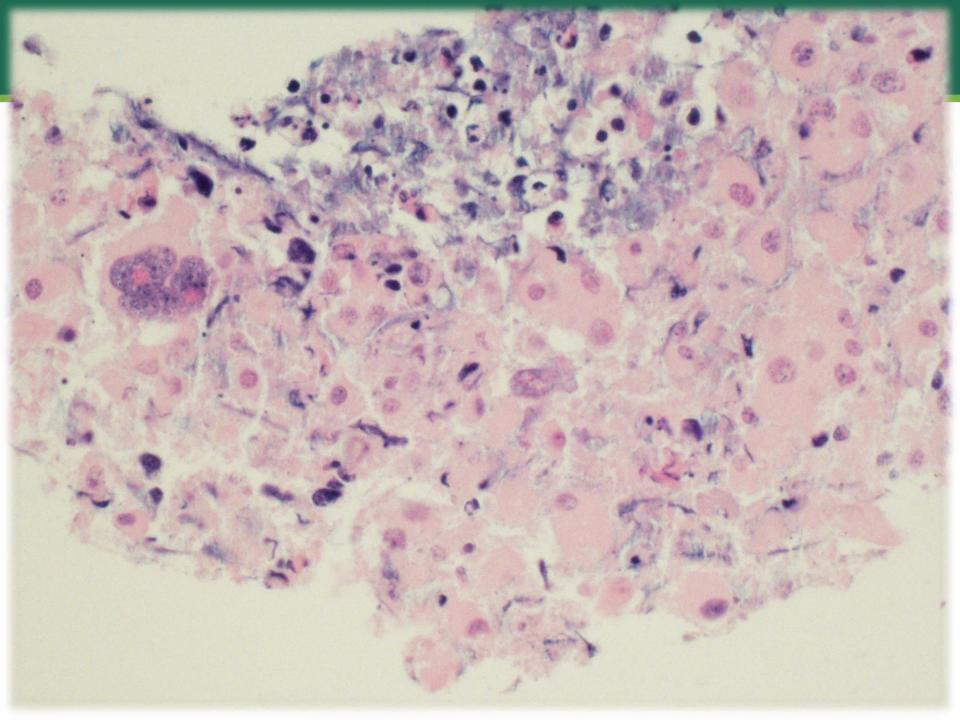


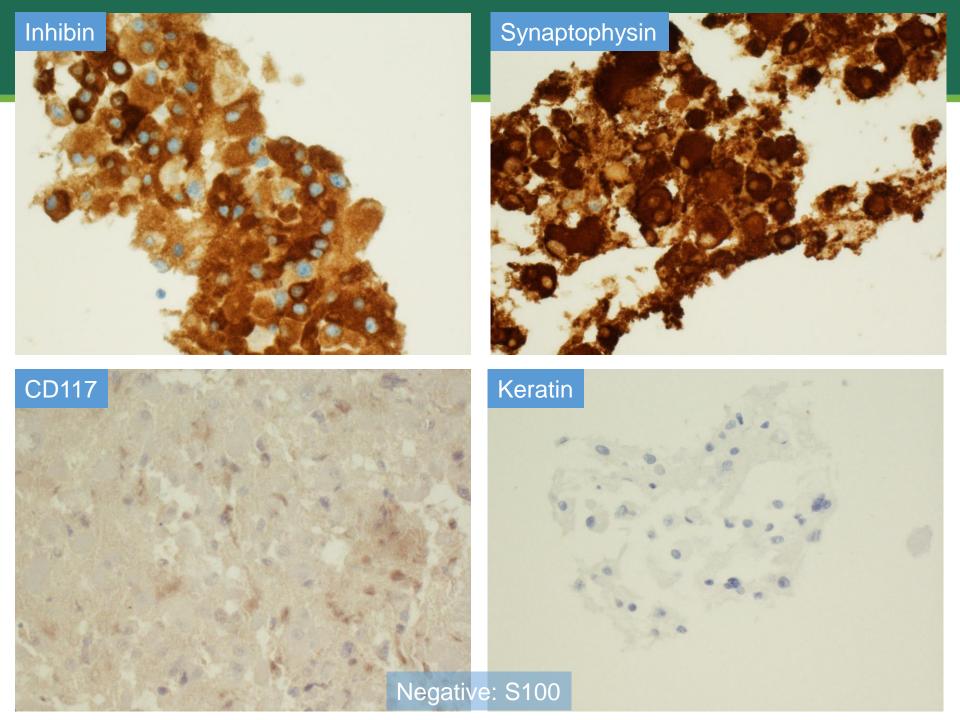


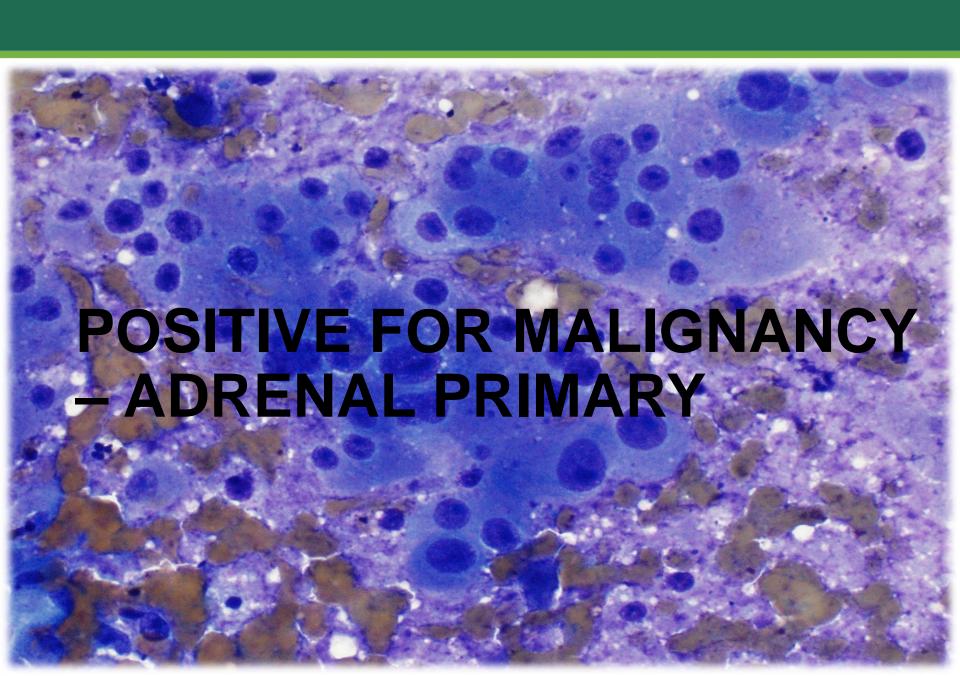




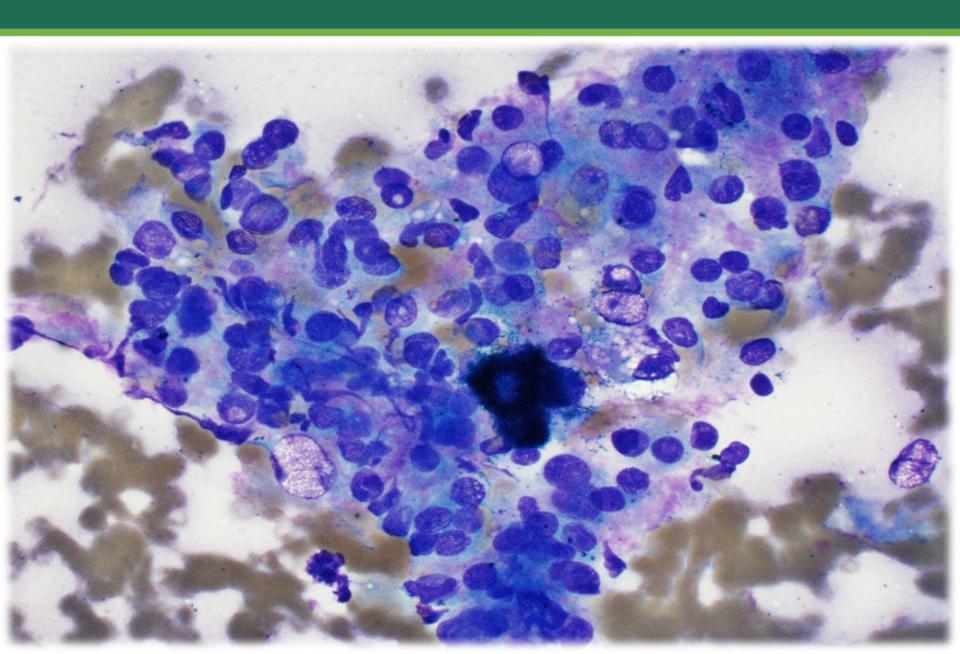


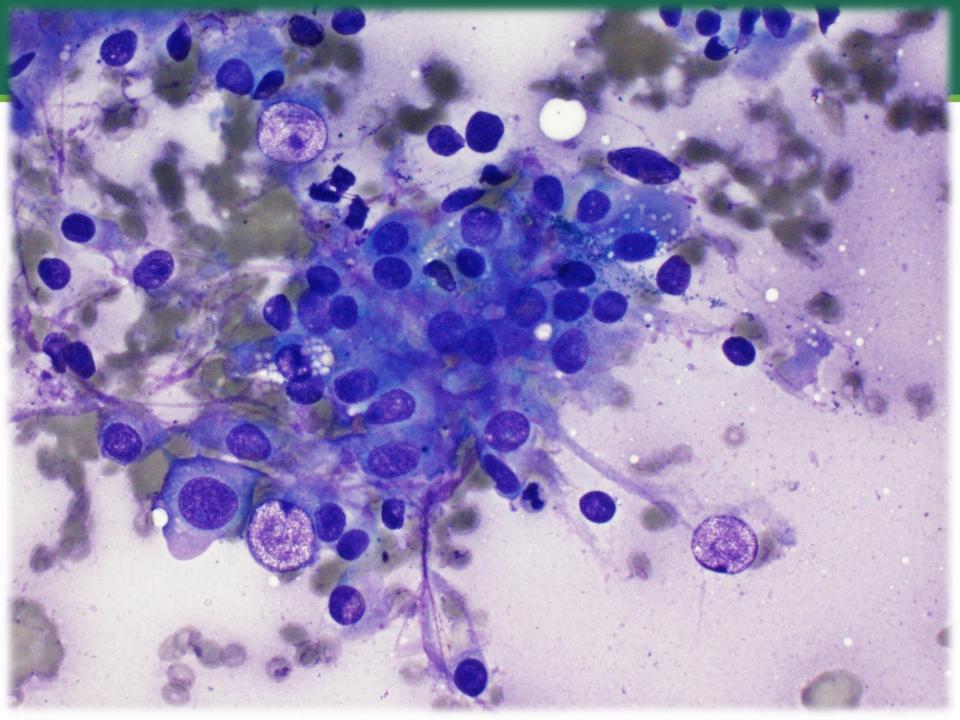


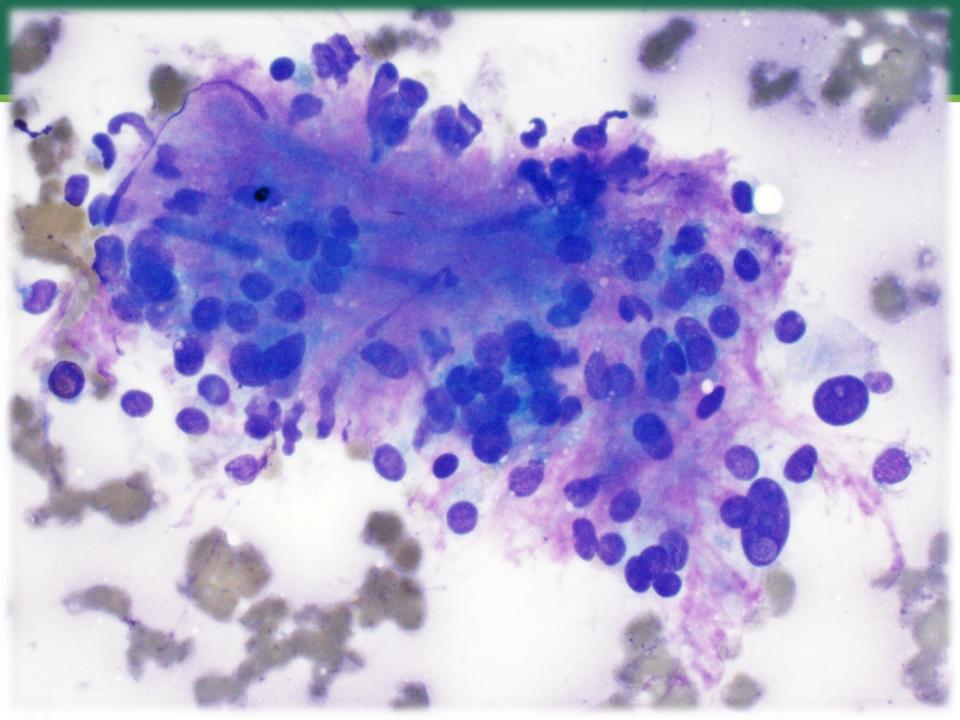


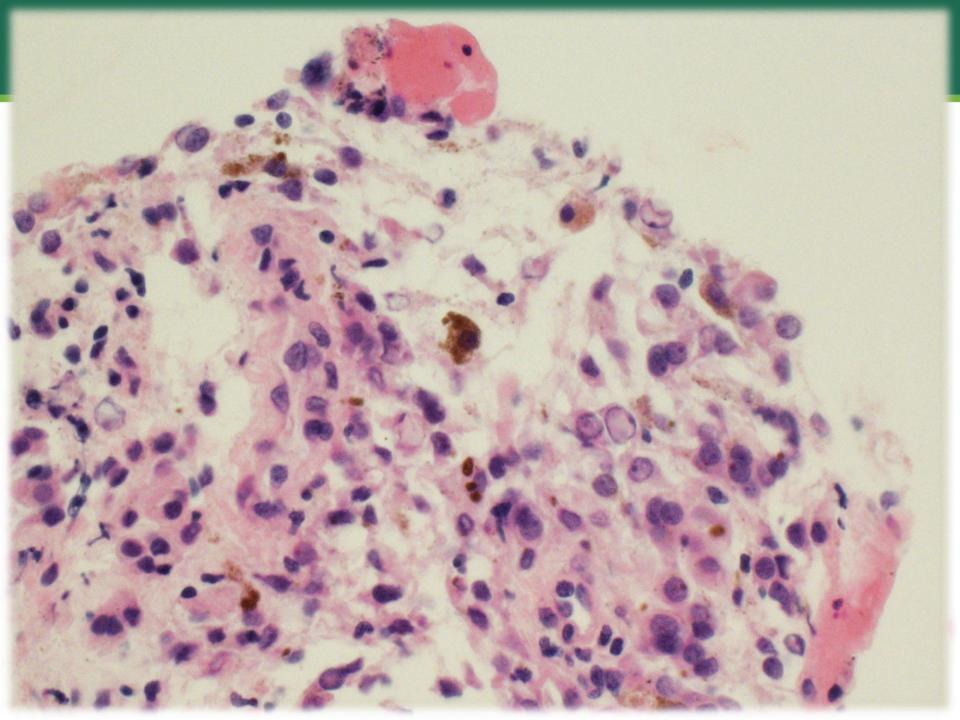


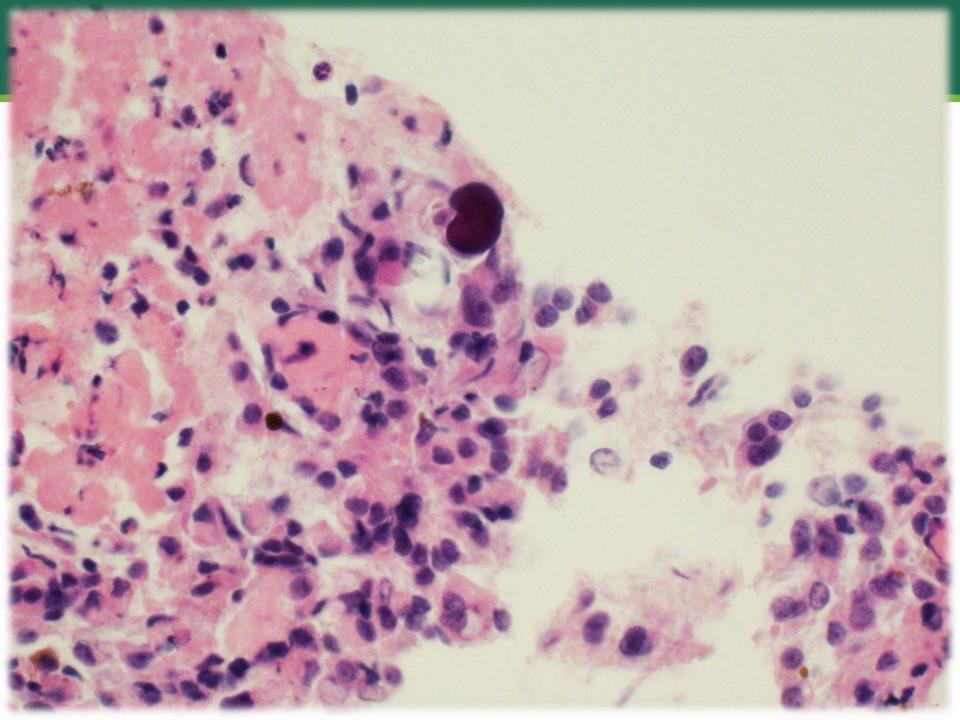
SUBMUCOSAL GASTRIC MASS

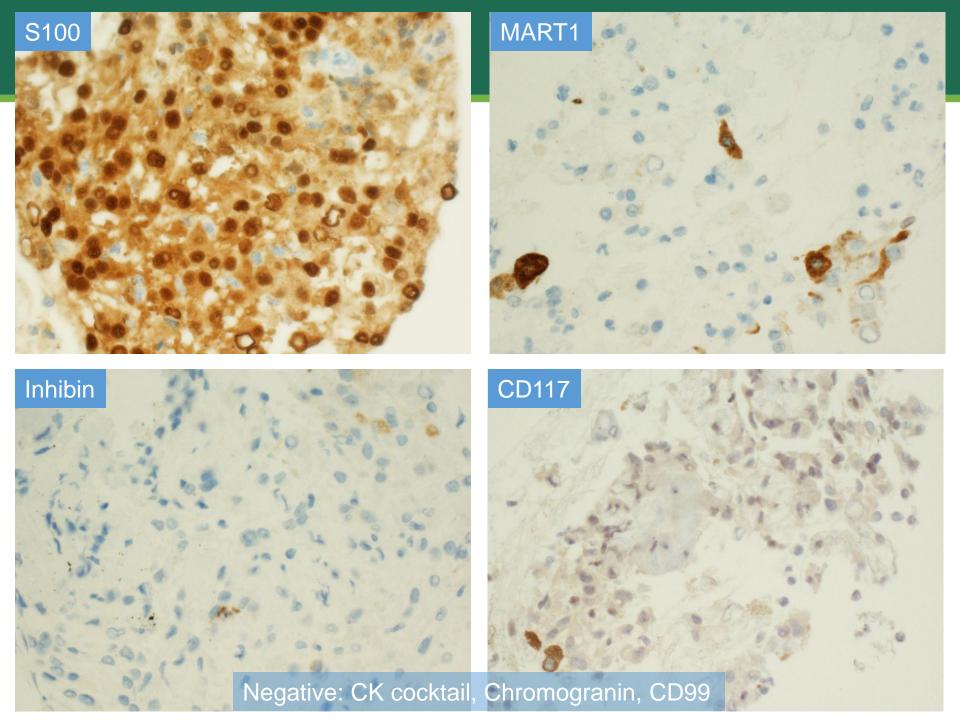


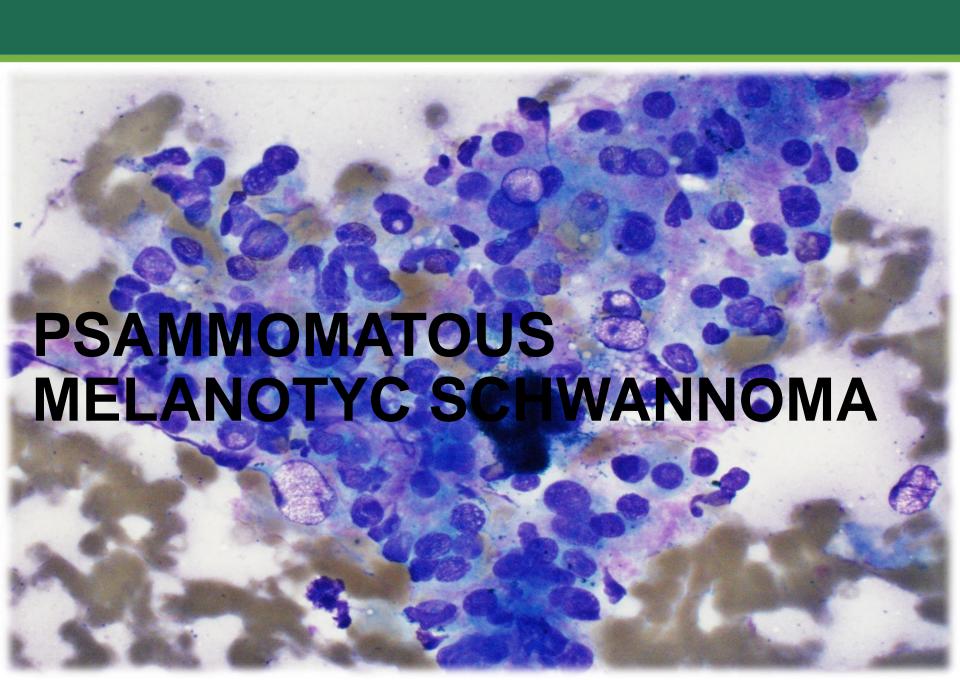


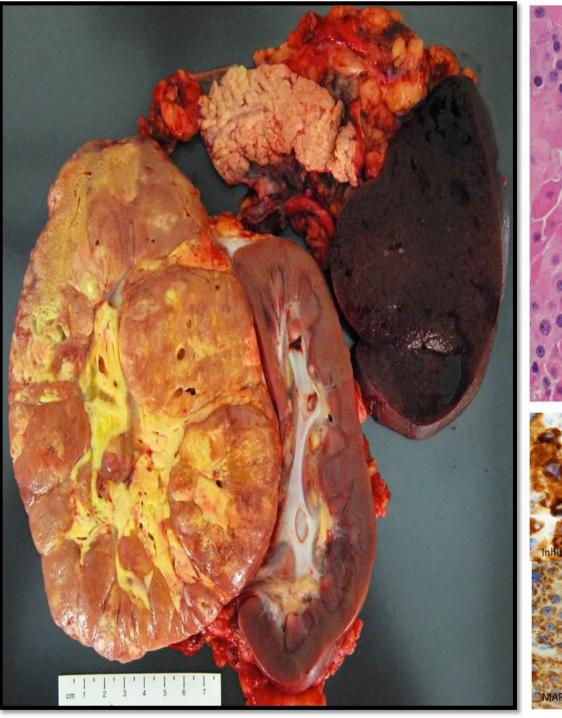


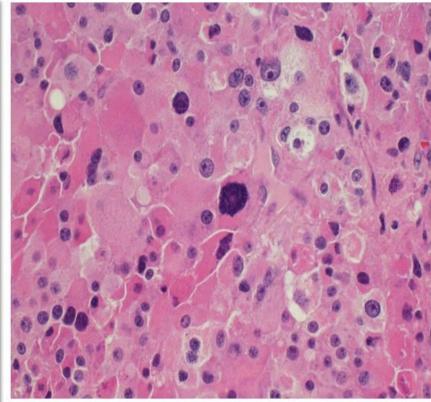


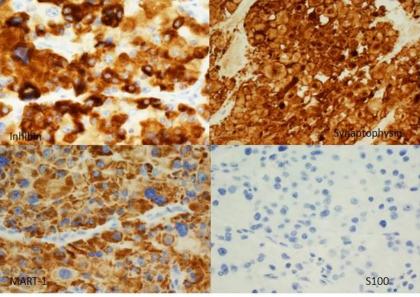




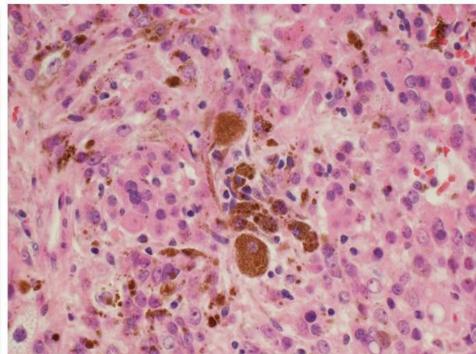


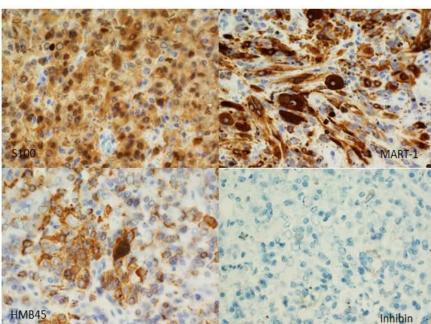


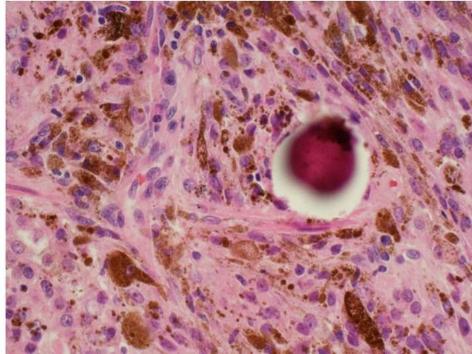




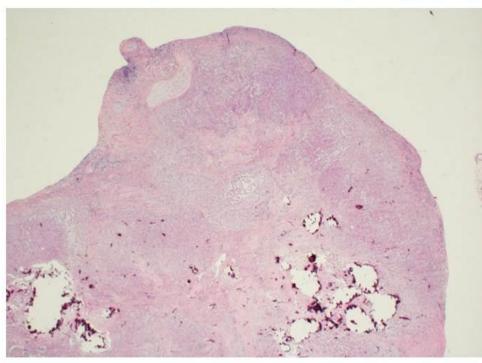


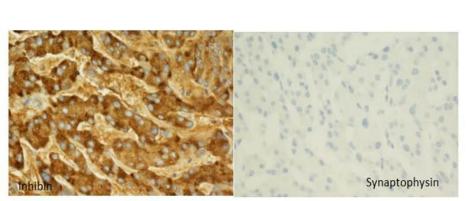


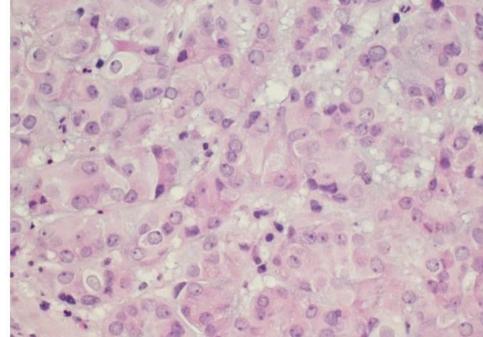




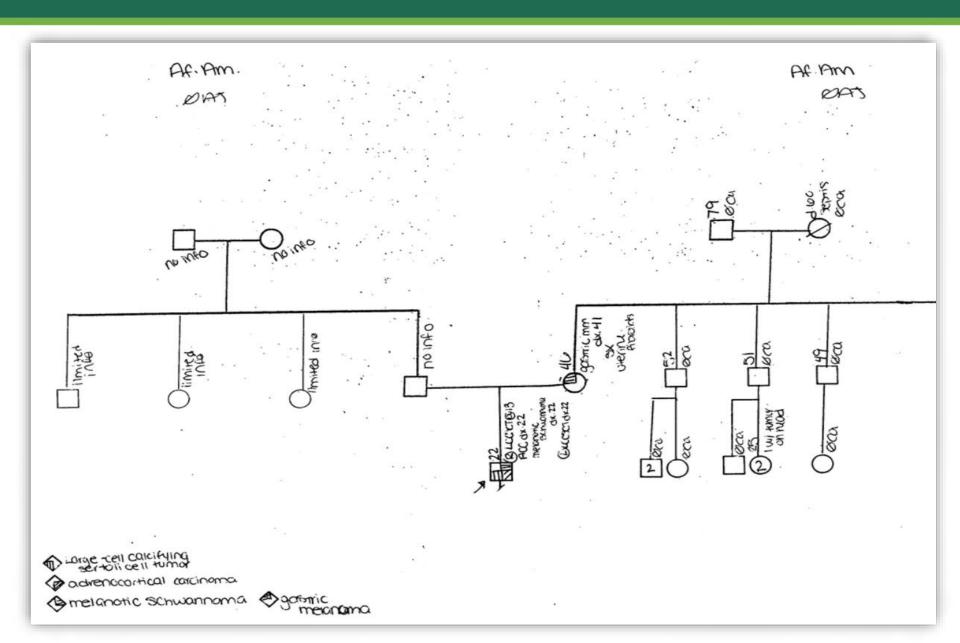








PEDIGREE



CARNEY COMPLEX

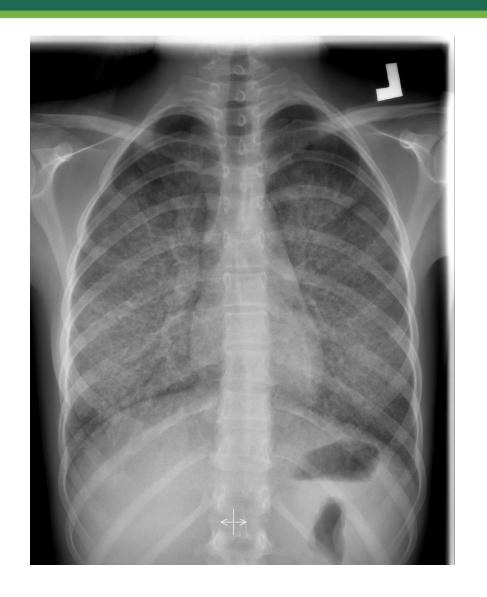
- Multiple neoplasia syndrome.
 - J. Aiden Carney in 1985.
 - Autosomal dominant inheritance or sporadic.
 - CNC1 locus, chromosome 17, PRKAR1A gene
 - CNC2 locus, chromosome 2
- Variable clinical manifestations
 - Pigmented lesions and myxomatous neoplasms.



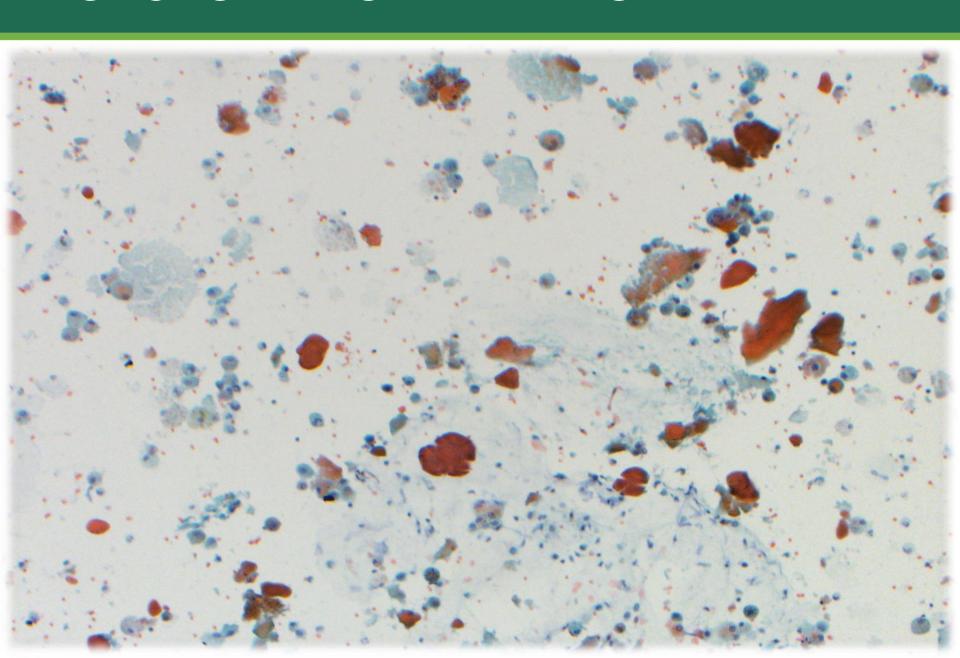
CASE #5

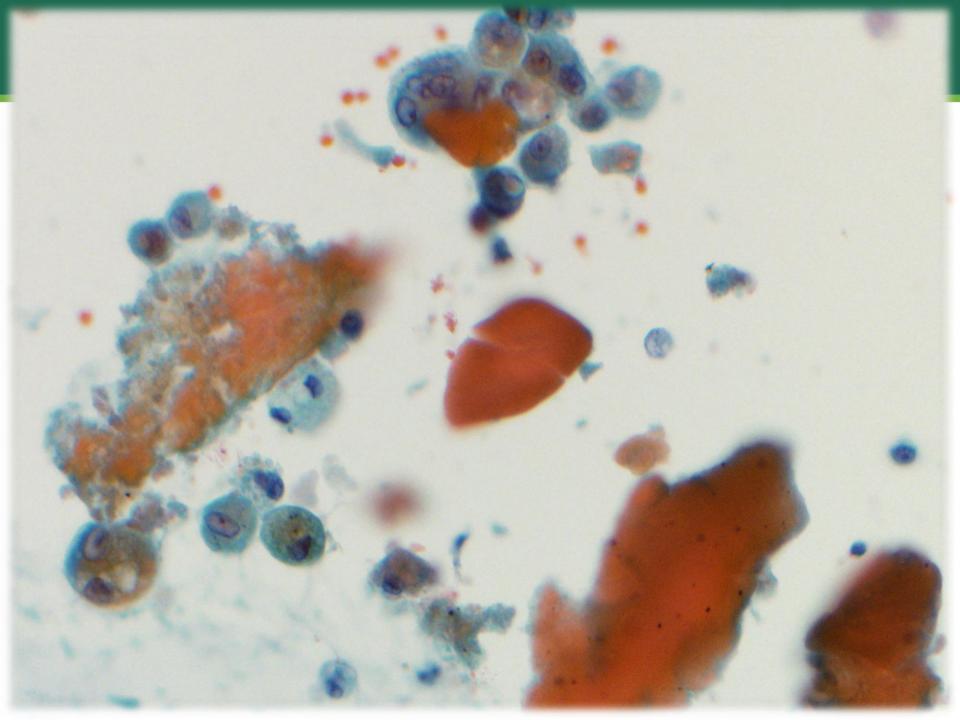
CLINICAL HISTORY AND IMAGING

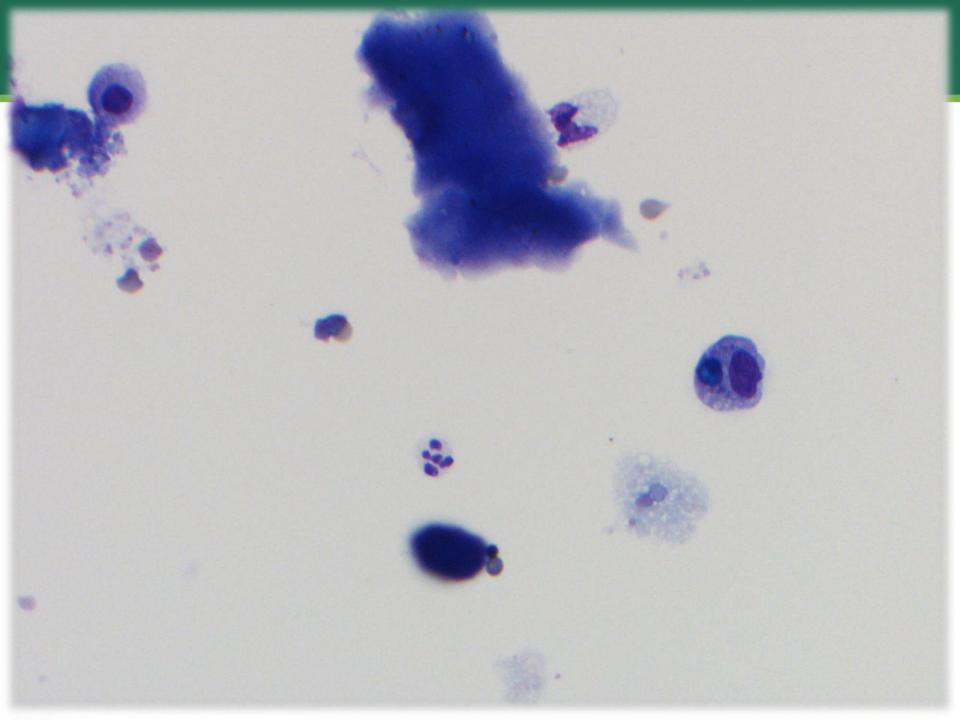
- 15 year old W female.
- Progressively worsening DOE x 9 months
- Associated fatigue, anorexia and about 20 LBS weight loss.

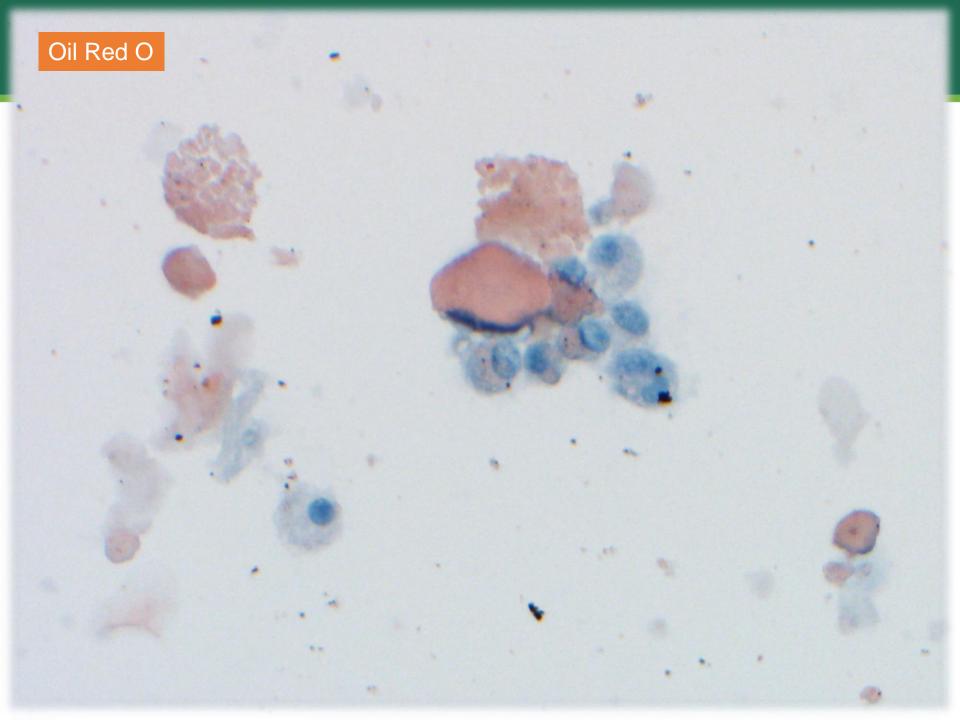


BRONCHOALVEOLAR LAVAGE



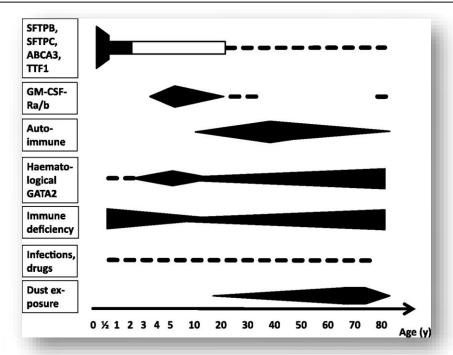






PULMONARY ALVEOLAR PROTEINOSIS

- Accumulation of pulmonary surfactants in the alveolar space.
 - Altered production, removal, or both.
- Genetic, autoimmune, environmental agents, and other diseases.







- Thank you.
- Any questions or comments?