Liver FNA: Uncovering Pitfalls and Problems

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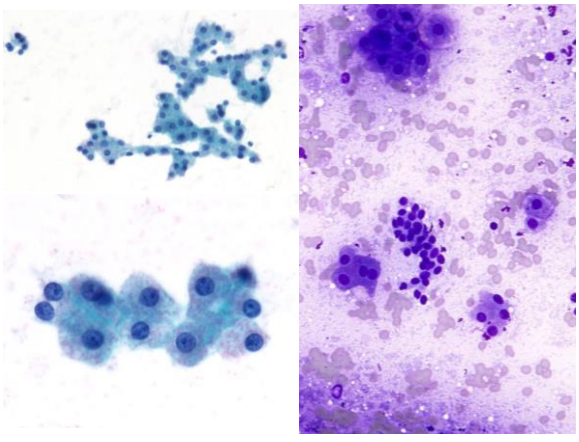
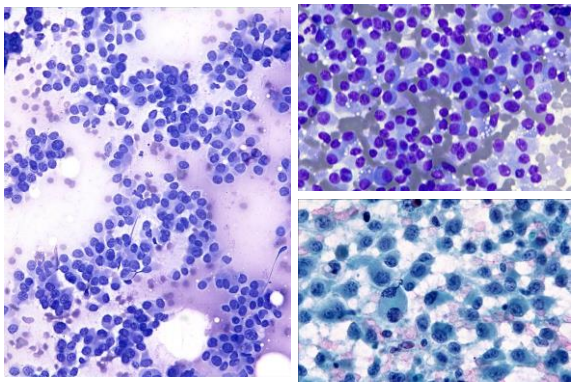
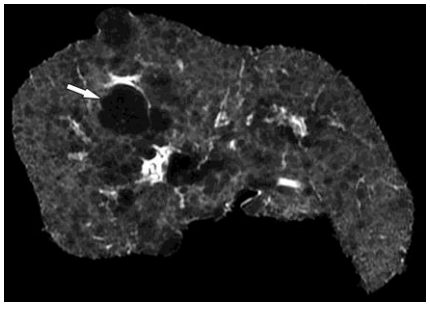
Liver Cytopathology: Main Questions

- Neoplasm?
- Malignant?
- Metastatic?
- (if a met) Site of the Primary Tumor?

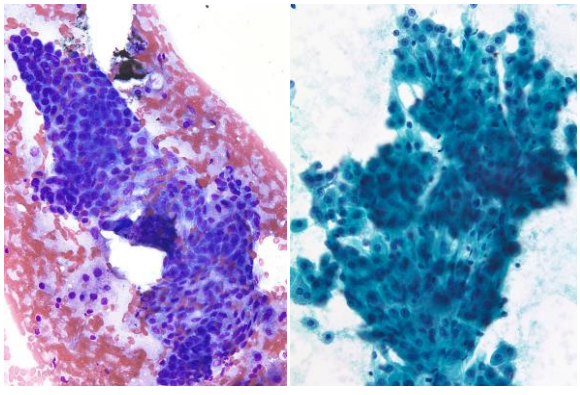


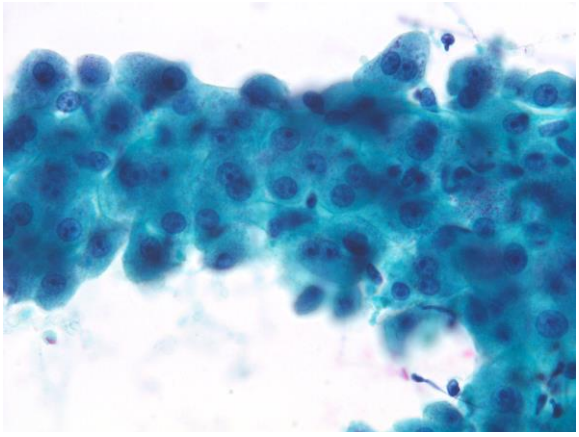


Benign Liver Lesions



Macroregenerative Nodule





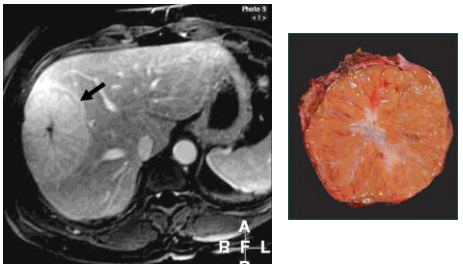
Macroregenerative Nodule

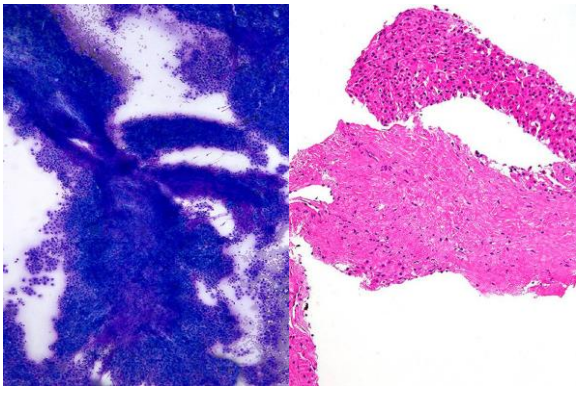
Differential Diagnosis

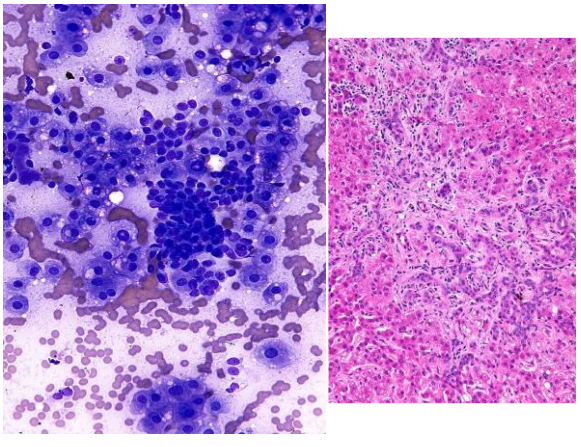
- Normal Liver
- Focal Nodular Hyperplasia
- Hepatic Adenoma
- Well-differentiated HCC

➢ Needs Core Biopsy

Focal Nodular Hyperplasia







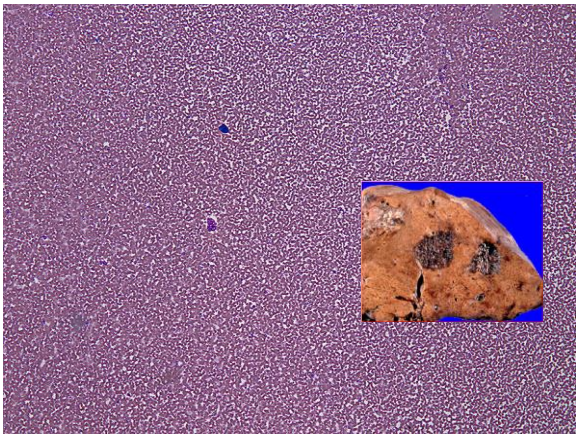
Focal Nodular Hyperplasia

<A diagnosis of exclusion>

Differential Diagnosis

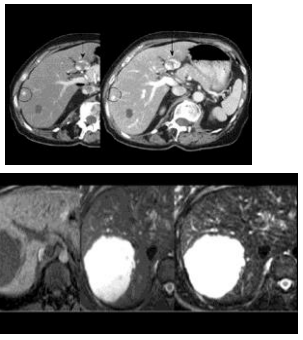
- Normal Liver
- Cirrhosis
- Hepatic Adenoma
- Well-differentiated HCC
- Clinico-Radiologic Correlation Is Imperative
- Accurate Sampling of the Lesion Is Critical

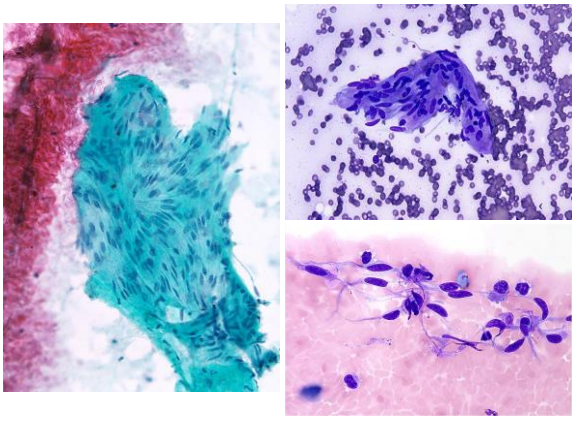
➢ Needs Core Biopsy

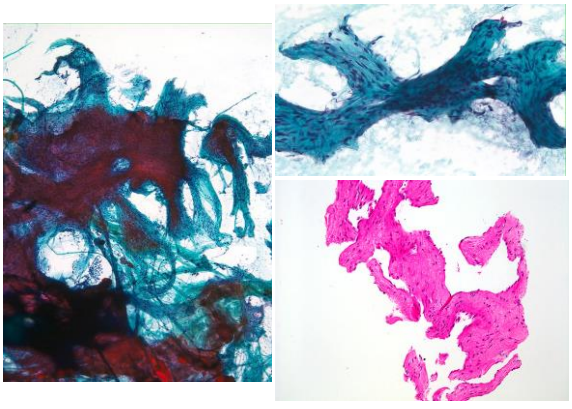


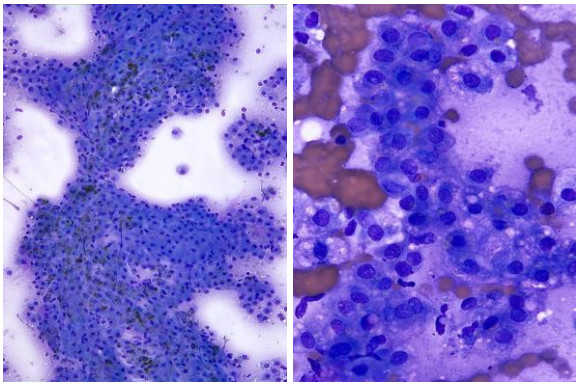
Hemangioma

<Pathognomic Features>









Hepatic Adenoma

Hepatic Adenoma

Cytomorphologic Features

- Could Be Entirely Non-specific
- Abundant Normal-appearing Hepatocytes
- Lack of Biliary Epithelium or Fibrous Tissue Fragments
- Lack of Endothelial/vascular Proliferation

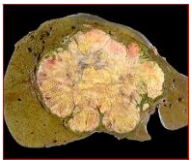
Differential Diagnosis

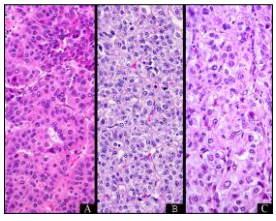
- Normal Liver
- Focal Nodular Hyperplasia
- Well-differentiated HCC

Hepatocellular Carcinoma (HCC)

Cytologic Grading

- Well Differentiated
- Moderately Differentiated
- Poorly Differentiated



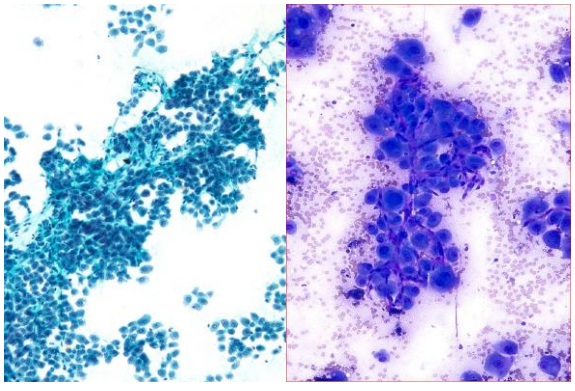


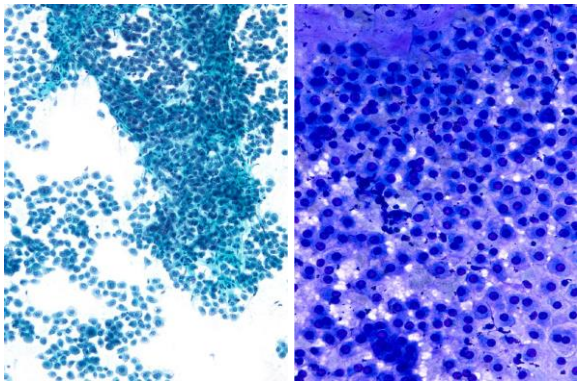
Cytologic Grading of HCC
Why Do We Grade?

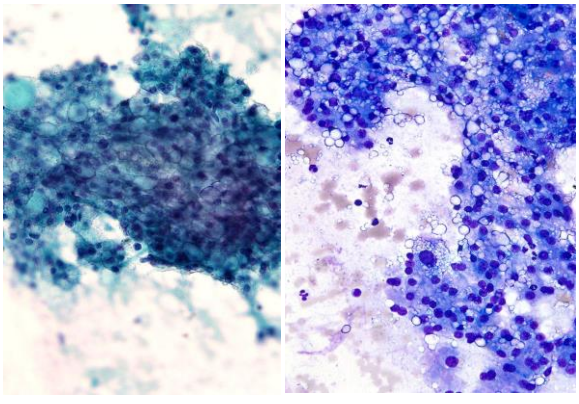
- Differences in Clinical Prognosis and Survival
- Treatment Options
- For Differential Diagnosis

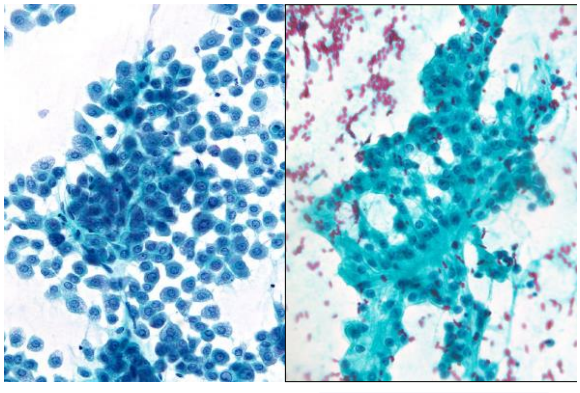
Cytopathologic grading of hepatocellular carcinoma on fine-needle aspiration. P Kulesza, et al. Cancer Cytopath. 2004 Aug 25;102(4):247-58.

Well Differentiated HCC



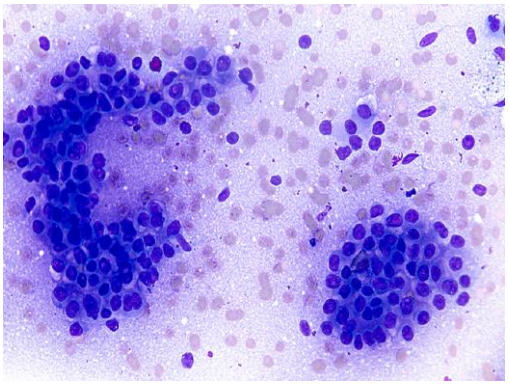


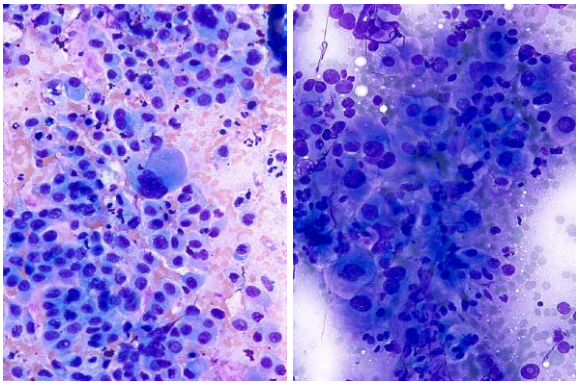


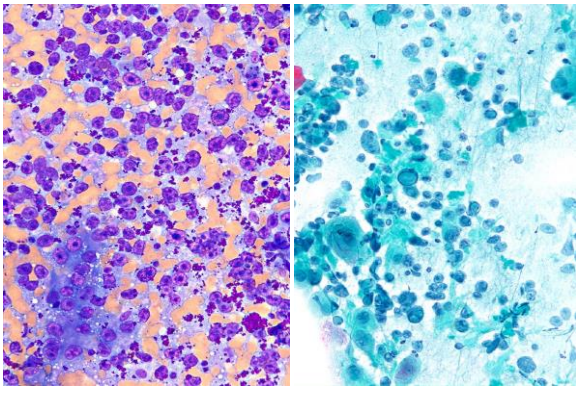


Renal Cell Carcinoma

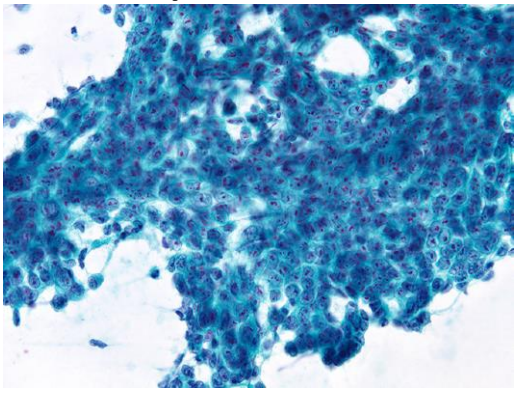
Moderately Differentiated HCC

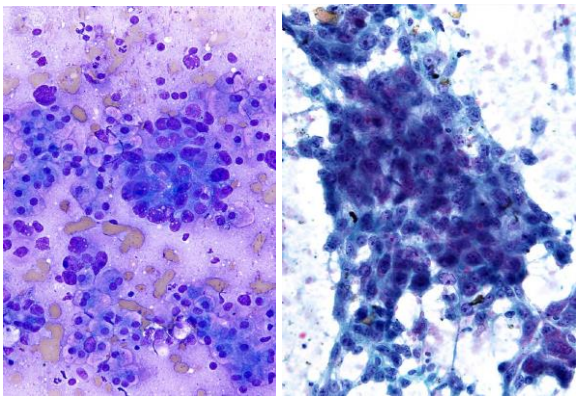


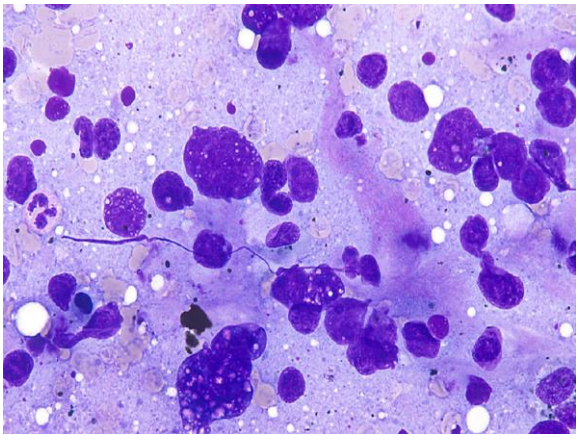


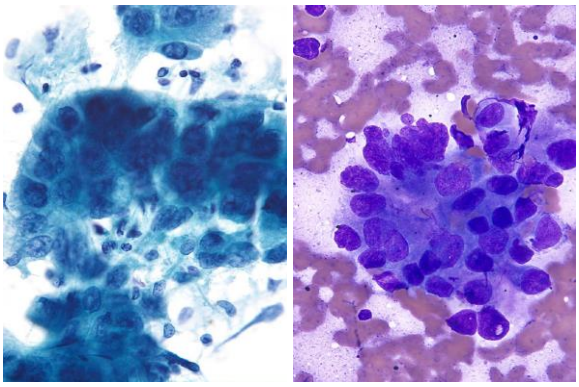


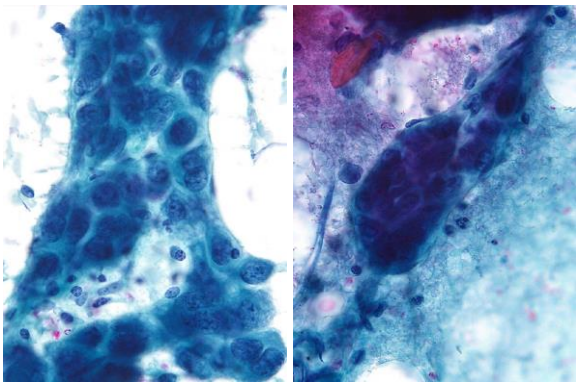
Poorly Differentiated HCC



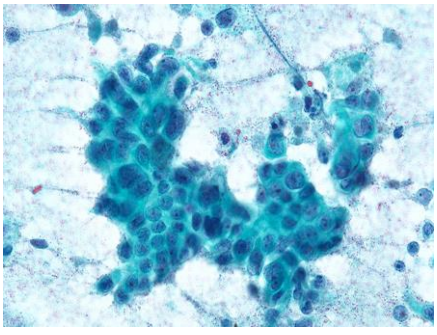








Quiz On HCC Grading



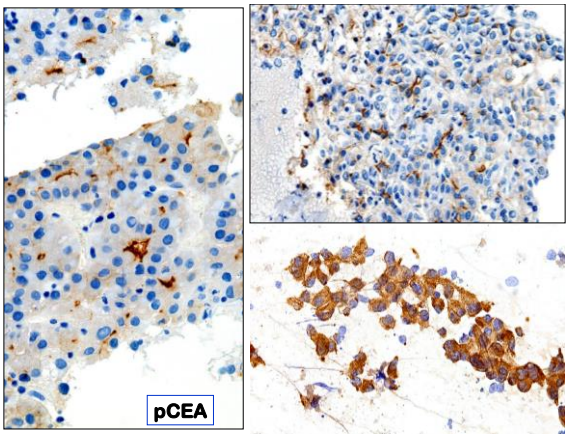
Poorly Differentiated HCC

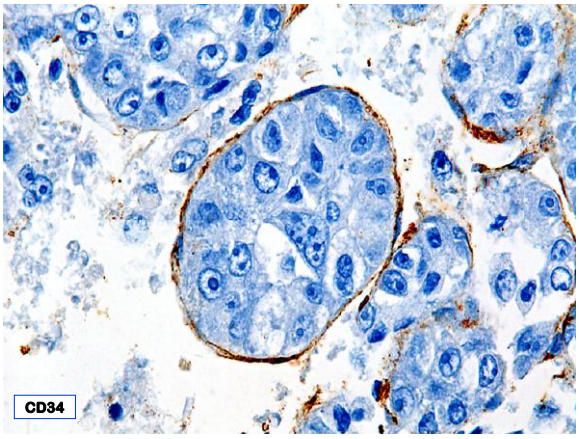
Differential Diagnosis

- Metastatic Cancers
  - Adenocarcinoma
  - Malignant Melanoma
  - Other Cancers
- Cholangiocarcinoma

HCC – Immunoperoxidase Profile

- **Conventional Markers**
  - CAM5.2
  - AE1/AE3
  - pCEA (canalicular) (Sn-82%)
  - CD34/CD31
  - HepPar-1 (Sp-90%, Sn-84%)
- **Newer Markers**
  - **Arginase (Sp-96%, Sn-94%)**
  - Glypican-3 (GPC3) (Sp-100%, Sn-90%)
  - CD13 (canalicular) (Sn-94%) or CD10 (Sn-62%)

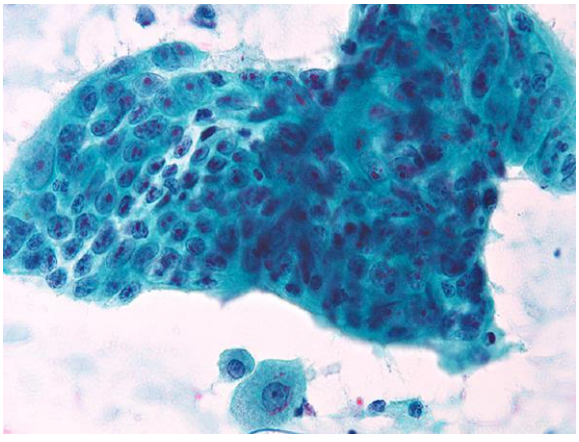


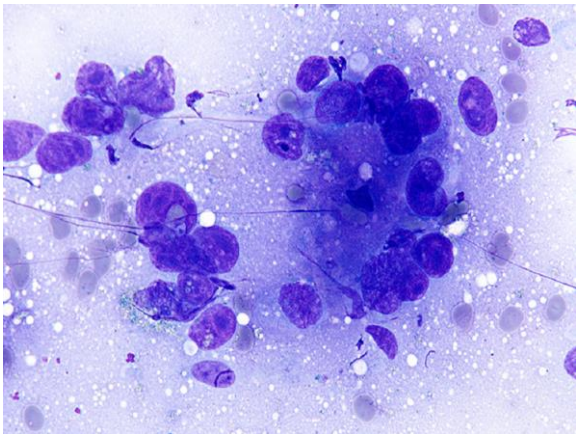


Cholangiocarcinoma

Diagnosed by

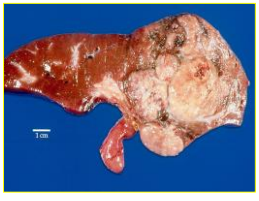
- Biliary Brushing
- Fine Needle Aspiration

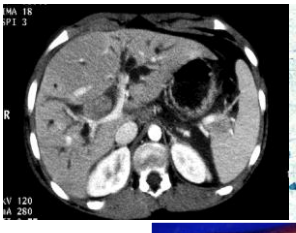


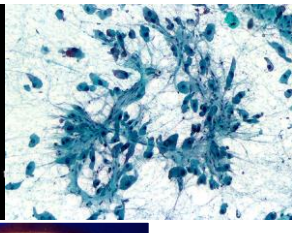


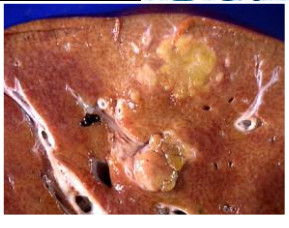
Pediatric Liver Tumors

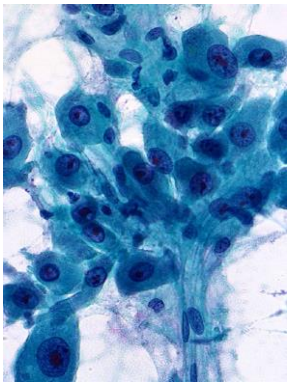
- Fibrolamellar Hepatocellular Carcinoma
- Hepatoblastoma
- Embryonal Sarcoma

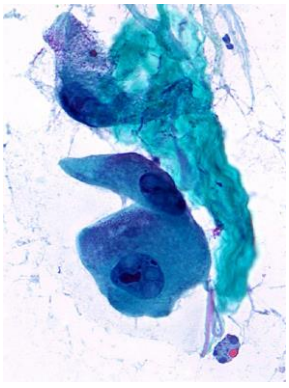


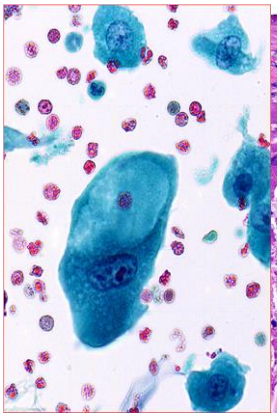


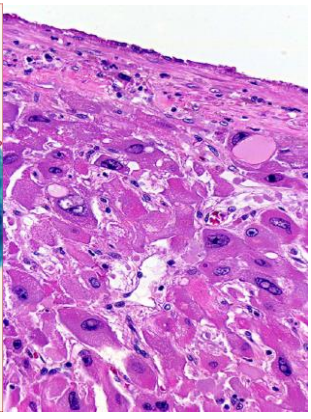


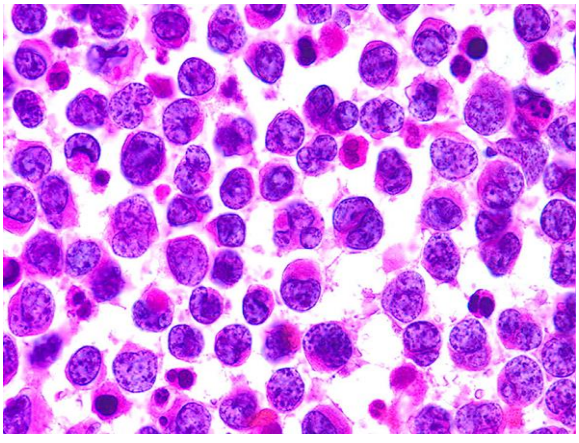






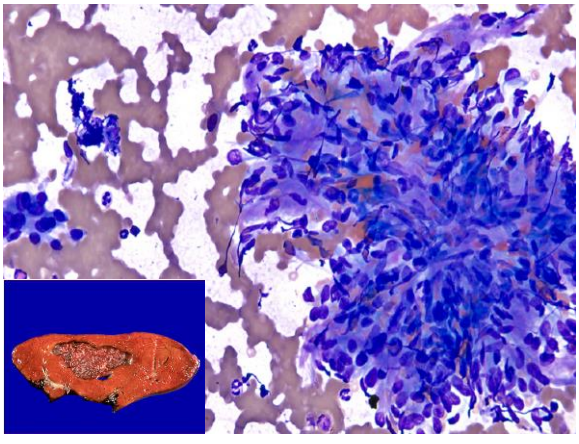


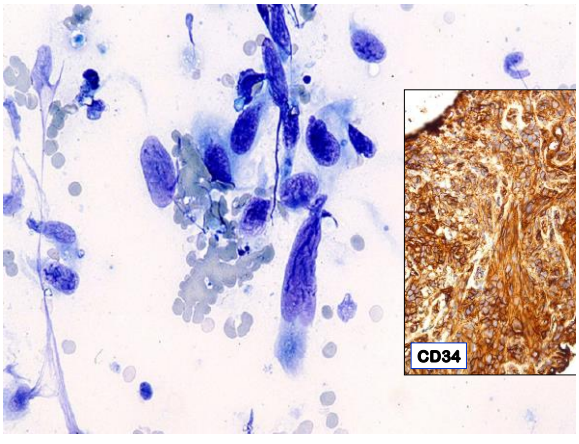




Primary Hepatic Sarcomas

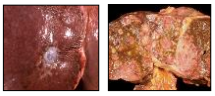
- Angiosarcoma
- Kaposi Sarcoma
- Leiomyosarcoma
- Epithelioid Hemangioendothelioma

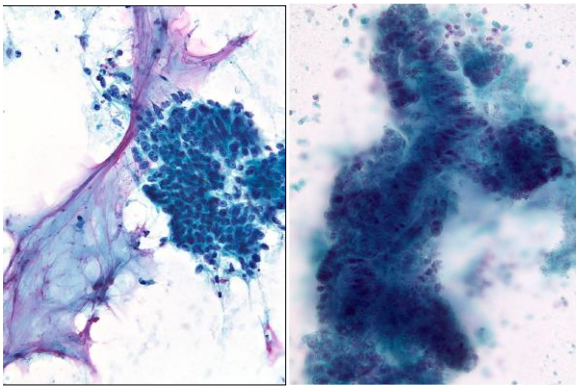


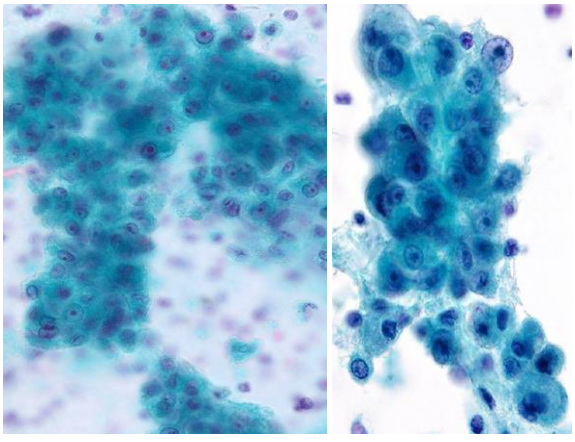


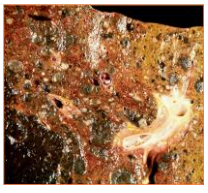
Metastatic Neoplasms

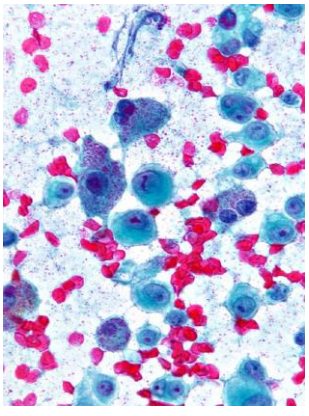
- Most Common Cancer In The Liver
- Most Common Indication For Hepatic FNA
- Most Common - Colon, Pancreas, Breast, Lung, Kidney, Melanoma
- Metastasis Could Be From An Occult Primary
- Cytomorphology Alone May Not Be Able To Diagnose An Unknown Primary (IHC Stains Are Needed)

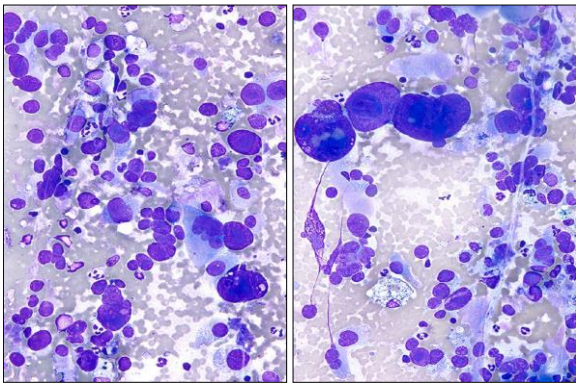




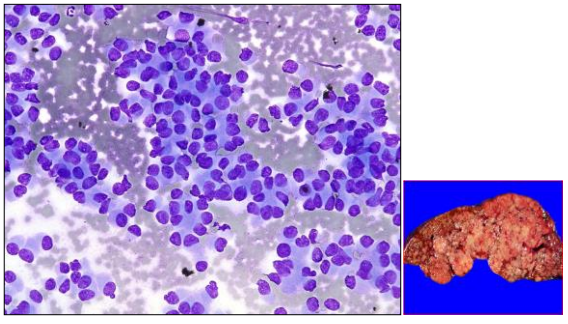


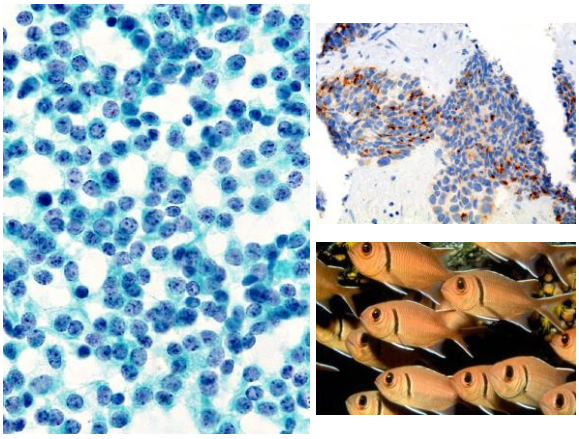


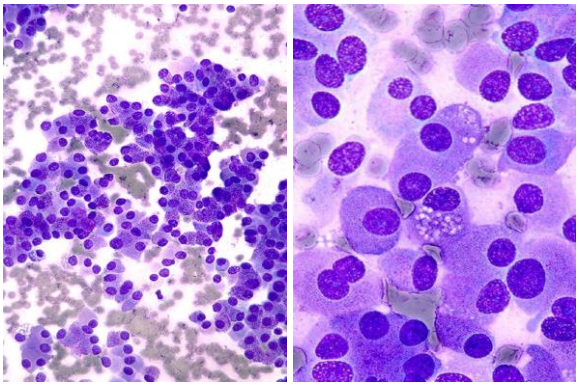




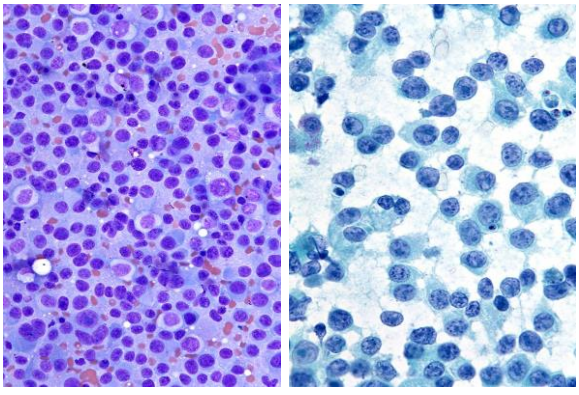
Metastatic Neuroendocrine Neoplasms



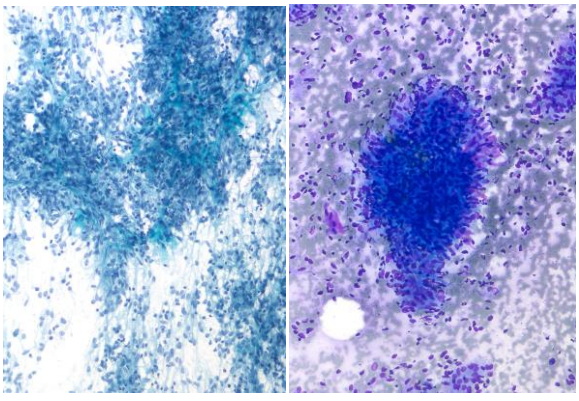


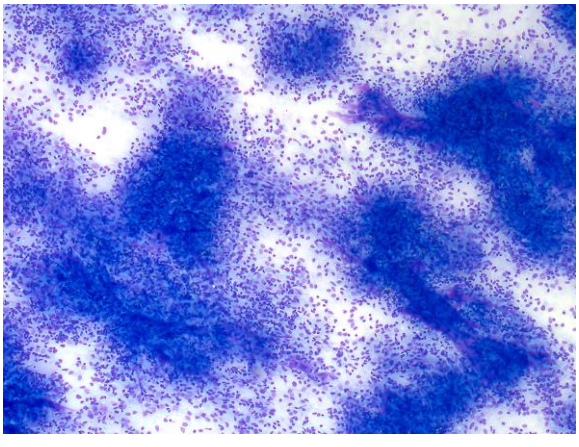


DD - HCC



DD – PD ACA and NHL





Lymphoid Lesions

- Non-Hodgkin Lymphoma
  - Primary
  - Secondary
- Hodgkin Lymphoma
- Clinical Features:
  - Most Common Presentation Is Pain or Liver Mass
  - Hepatic Involvement Has Important Clinical Significance
  - Usually Multiple Lesions
  - Serum AFP Not Elevated