6 Challenging Cases for the Cytopathology Professional During Immediate Assessment. Are You Prepared?

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6 Challenging Cases for the Cytopathology Professional During Immediate Assessment. Are You Prepared?

Update your knowledge of image-guided fine needle aspirations from cytotechnology professionals engaged in immediate assessment and specimen triage. Radiologic findings, clinical history and cytologic criteria will be presented from a variety of contemporary image-guided techniques. Challenging cases from a variety of techniques will be discussed, along with ancillary testing. Techniques include endoscopic ultrasound-guided FNA, endobronchial ultrasound-guided FNA, Super Dimension bronchial FNA, Cat-scan image-guided FNA and ultrasound-guided fine needle aspiration.

- Enhance skills utilizing cytologic, radiologic and clinical findings during FNA immediate assessment and specimen triage.
- Recognize the importance of adequate sampling for appropriate specimen triage and present emerging tests and ancillary techniques.
- Identify challenging cases in the cytologic evaluation of FNAs requiring immediate assessment.

FACULTY:

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Entire Pathology Team
Cytopathology
2.0 CME/CMLE Credits

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Challenging Cases for the Cytology Professional During Immediate Assessment: Are you prepared?

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Educational Objectives

• Enhance skills utilizing cytologic, radiologic and clinical findings during FNA immediate assessment and specimen triage.
• Recognize the importance of adequate sampling for appropriate specimen triage and present emerging tests and ancillary techniques.
• Identify challenging cases in the cytologic evaluation of FNAs requiring immediate assessment.

Introduction

• Laboratories across the country are experiencing shifts in cytopathology volume.
  – non-gynecologic cytology volumes are increasing across the country.
  – Pap testing is on the decline.
• Image guided FNAs with immediate assessment and specimen triage are increasing in numbers
  – improved patient care
  – new imaging techniques are on the rise for FNA procedures
• How will the laboratory adjust to the demands of immediate assessment requests by clinicians?
  – Cytopathologists will rely on CTs, residents, and fellows to play an important role in:
    • immediate specimen assessment
    • specimen triage
  – Cytopathology professional will need to re-evaluate criteria from different sites for accurate immediate assessment and proper adjunctive testing

Value of Specimen Adequacy Assessment

• Provides feedback on:
  – need for additional passes
  – facilitates triaging of specimen for ancillary studies (i.e. immuno studies, molecular studies, flow cytometry, microbiology, surgical biopsy)
• Preliminary diagnosis (by cytopathologist)
  – facilitate rapid clinical decisions
    • Reports show high concordance between on-site immediate diagnosis and relative to final cytopathology diagnosis (8%-100%)
• Time/cost savings
  – Avoid repeat procedures (additional cost/expense for institution and patient)
  – Adequate assessment performed by CT frees cytopathologist MD to perform other duties
• Customer satisfaction (clinician and patient)
  – FNA dx within 24 hours of procedure
  – Reduces patient anxiety
  – Avoid repeat visit for inadequate specimens or to procure more material for additional studies and incurred costs
Limitations

- **Time consuming procedures**
  - Avg time for a MD to be present and provide specimen
  - ADQ assessment reported between 35-57 minutes
  - timing of pages
- **Time is money**
  - Immediate on-site interpretations insufficiently compensated by Medicare
  - Cost of providing specimen assessment CT < MD
    - Wotruba et al showed potential savings = $306,652.35
- CT can only provide specimen adequacy not prelim interpretation

Elements for Success

- **Good aspirator (radiologist / clinician / surgeon / pathologist)**
- **Trained cytologist**
  - good smear preparations by cytologist
    - Proper smearing and staining technique
    - Proper fixation of other cytologic material
  - knowledgeable with morphology of a variety of FNA sites
  - competent to provide adequacy assessment
- **Effective communication between operator and cytologist including:**
  - provision of clinical and radiological impression BEFORE procedure
  - relevant clinical history (prior documented malignancy, therapy, other relevant disease)
- **Minimize wasted time**
  - Timing of pages
  - Share schedule of procedures
Issues affecting success…

- Sampling issues due to nature of lesion
  - Small lesions
  - Dense, fibrotic lesions
  - Location of lesion (deep)
  - Marked inflammatory or necrotic lesions
  - Necrotic-centered lesions
  - Vascular lesions
  - Cystic lesions
- Poor technical specimen preparation
  - Uneven smearing
  - Inadequate air-drying for DQ smears
  - Inappropriate fixation

Issues affecting success…(cont’d)

- Training of cytologist
  - may take time for cytologist to feel comfortable with this activity
- Working with Radiologists vs Surgeons
  - provision of specimen ADQ during FNAs is new activity for cytologists who historically work independently with their microscopes
  - must learn how to work and communicate effectively with other health care staff during operative procedures
- Pressure on CT by clinicians/radiologists to share what they think diagnosis is
  - “I know you can’t say but what do you think?”
- It happens …we make a mistake and think a case is ADQ when it is not….usually rare
Critical steps of FNA

1. Collection of pertinent clinical data
2. Needle sampling of abnormality
3. Specimen preparation and staining
4. Microscopic evaluation/interpretation
5. Communication and reporting
Imaging Modalities

- Computerized axial tomography (Cat Scan/CT)
- Ultra-sound
  - Endoscopic U/S guided
  - Endobronchial U/S guided (EBUS)
- Fluoroscopy real-time imaging
- Electromagnetic Navigation Bronchoscopy® (ENB)™
  - superDimension®

Who can provide specimen adequacy assessment?

- Cytopathologist
- Cytology fellow
- Cytotechnologist
  - specimen adequacy ONLY
  - NO preliminary interpretation / diagnosis
CTs and FNA Specimen Adequacy Assessment?

- Burlingame O, Cibas E, Silverman S.
  - 94% accuracy rate by CTs
    - 2956/3154 unequivocally benign or malignant cytology cases for 10 CTs
  - ↑ accuracy rate for liver FNAs (97%) vs kidney (90%)
  - imaging method showed no effect on accuracy

- Wotruba A, Stewart J, Scheberl, Selvaggi SM.
  - 98.8% concordance rate between CT and MD for ADQ assessments (based on 167 thyroid FNAs)
    - 5 CTs and 3 MDs
    - History reviewed prior to FNA and forwarded to MD
    - CT calls MD for prelim dx ONLY on cases with increased chance of malignancy OR difficult cases (i.e. high cellularity, microfollicular arrangements, intranuclear inclusions observed)

- Redman R, Zalaznick H, Mazzaferri EL, Massoli NA.
  - 97% MD specimen accuracy vs 93% CTs for thyroid FNAs

Equipment & Supplies Required

- 22-25 gauge or smaller needle
- Syringe (10 ml)
- Gauze
- Band-aids
- Local anesthetic (lidocaine)
- FNA gun
- Microscope (dual-head nice for teaching!)
- Stains
- Slides (regular/charged slides)
- Pencil, pen, markers
- Cytology fixatives (and other fixatives if procuring material for ancillary studies)
  - Cytolyt
  - 95% Ethanol
  - Formalin (core biopsies, cell blocks)
  - RPMI, saline (Flow Cytometry)
- Containers to transport slides (slide holders, trays, etc.)
- Paper towels
Stains for Immediate Assessment

- **Diff Quik (DQ)**
  - Modified-Romanowsky stain
  - Rapid procedure
  - Requires air-drying
  - Highlights cell architecture, background matrix material, organisms and cytoplasmic contents
  - Reports that using a small fan to dry slides can reduce drying time as much as 70%

- **Ultrafast Papanicolaou stain**

- **Others?**
Stains for Immediate Assessment

- Ultrafast Papanicolaou stain
  - 90 second polychromatic stain
  - transparent preparations and crisp nuclear details
  - Re-hydration of air-dried smears
- Others?

Common Ancillary Studies Performed on Cytology Material

- Immunocytochemistry
- Special stains (GMS, AFB)
- Microbiology
- Flow cytometry
- Electron microscopy
- Image analysis
- Cytogenetics
- Molecular diagnostic tests
  - FISH
  - PCR
FNA Billing

- 10021-2, performance of FNA
- 88172 immediate adequacy evaluation
  - 88177 immediate adequacy evaluation of additional passes
- 88173 interpretation and report
- + 88305 cell block
- + 88342 immunochemical stains
- + 88312 special stains

- Proper documentation required in report and medical record to bill appropriately!
- Consult with your compliance department!

Use of Telecytology for Immediate Assessment
Use of Teleytology for Immediate Assessment

• Reports of 97% - 100% diagnostic concordance between real-time on-site and teleytology interpretations
• Pros:
  – Less time and travel commitment required by pathologist
  – Minimal disruption to those viewing image
  – Enhanced capability to have multiple simultaneous reviewers for consensus opinion, if required

Issues with Teleytology

• Initial validation required
  – individual performance
  – interobserver variability
  – diagnostic pitfalls unique to teleytology vs actual slide viewing
• User-related issues
  – field of view selection by on-site user
  – certain FNA sites may be more difficult to assess
• Hardware / Software / IT Network
  • uncontrollable stage by remote viewer
• Workflow
• Cost
Part II: Challenging Case Presentations
(to be presented during workshop)
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References: