ASPIRATION BIOPSY (FNA)

Fine needle aspiration (FNA) is a useful technique for evaluating and diagnosing lesions involving many different body sites. Fine needle aspiration should only be performed by clinicians with appropriate training and experience. During working hours the Cytopathology staff is available to assist with in-house aspiration procedures. Assistance can be arranged by calling 922-4431. Advance notice is appreciated.

If you have questions about performing fine needle aspiration, please contact the Cytology Office at 922-4431 or the Pathology Office at 922-4121. Several of the pathologists have experience performing FNA's and would be happy to assist you.

Tips and Reminders:

- If the patient is able to tolerate this procedure without local anesthesia, tissue trauma will be reduced and the cellular sample will be improved.
- Cells are fragile. Avoid excessive pressure when pulling glass slides apart to make smears.
- Cellular distortion from drying artifact can be a significant problem. Smears should be immediately fixed by placing them in 95% ethyl alcohol. If adequate cytologic material is obtained, one or more deliberately air-dried slides should also be submitted for a Wright Giemsa stain; this is especially helpful when evaluating salivary gland and thyroid lesions.
- After preparing smears, the needle and syringe can be flushed with 20-30 ml of electrolyte-buffered solution. This needle rinse can be ejected into a small container or centrifuge tube and submitted along with the glass slides.
- Different passes into the same area and/or aspiration of different areas or lesions should be clearly designated on the glass slides and specimen containers.
- If tissue fragments are aspirated, they should be placed in a specimen container with buffered formalin.
- All containers and slides must have proper patient identification.
- Accurate and complete clinical history will improve the diagnostic yield of FNA specimens.
- If lymphoma or other hematologic malignancy is suspected, a separate pass should be obtained and placed in RPMI cell transport media for possible flow cytometry. RPMI can be obtained by calling 922-4431.

Suggestions for Optimizing FNA of Superficial Body Sites

- Use the smallest needle possible (23-25 gauge)
  - Larger needles cause more bleeding and do not yield more cellular specimens
  - A 1.5 inch 25-gauge needle is ideal
- Adequate sampling generally requires at least three passes (sometimes 4 or 5)
  - For vascular areas (includes most head & neck sites, especially thyroid), once inside the mass, it is best to <u>avoid</u> "fanning" the needle. "Fanning" disrupts too many capillaries; blood quickly dilutes the sample and diagnostic material is lost. Rather, with each pass *stay in the same plane* ("straight" up-and-down motion) - perform next and subsequent passes by entering the mass at a different angle, thereby sampling different areas of the lesion.
  - Multiple passes is critical to adequate cellularity and representative sampling of heterogeneous lesions
- Aspiration without a syringe (capillary action, Zajdela or French technique) produces <u>excellent</u> specimens
  - No need for cumbersome syringe holder, easier to manipulate needle, less traumatic

- Each pass however requires significant "wrist action" – put force behind your up-and-down "sewing machine" motion ("stacatto")- in order to collect an adequate sample.

- If a syringe is used:
  - 10 ml syringe is best - larger syringes do not yield more cellular specimens.
  - Unless you encounter a cyst or abscess, stop aspirating when you see a *drop* of material in the needle hub. The goal is to keep all cellular material in the needle and needle hub- NOT in the barrel of the syringe.
  - Suction MUST be released *before* the needle is removed from the patient. This step is *critical* to specimen adequacy. Otherwise, the cellular material will be deposited along the inside walls of the syringe barrel where it will quickly desiccate and be irretrievable.
- For alcohol fixed slides, it is critical to rapidly (< a few seconds) place the slides in alcohol to avoid air-drying artefact. Drying artefact can make slides difficult if not impossible to interpret.
  - When the cellular material is deposited on the glass slide, the needle tip should be in contact with the glass, held at a 45-90 degree angle. "Spraying" the material from any distance onto the slide will result in loss of material and air drying artefact.
- For thyroid and salivary gland FNAs in particular, evaluation of both alcohol-fixed and air-dried slides is very useful. For each "pull apart" pair of slides, put one slide immediately into alcohol (as outlined above) and allow the other slide to air dry (no alcohol, no formalin)
  - "Pull apart" should be done with very gentle pressure so as not to destroy the cells
- If a patient is suspected of having a metastasis or the differential includes more than one primary site, please make an additional pass for possible immunohistochemical studies.
  - For this pass only, do not make slides- rather, do a needle rinse into a small container of sterile saline.
- If lymphoma is in the differential diagnosis, an additional pass should be performed and placed in RPMI media, if available, for flow cytometry.
- Accurate clinical history, clinical impression and an exact body site (not just "neck") help us to make a more definitive diagnosis.

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