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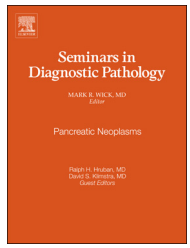

Advances in head and neck fine-needle aspiration and ultrasound technique for the pathologist

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ABSTRACT

The success of fine-needle aspiration (FNA) biopsy in the evaluation of head and neck (H&N) masses has already been established. Herein we outline the most recent advancement for the pathologist who performs traditional palpation-guided FNA (PGFNA) in the H&N while also incorporating ultrasound-guided FNA (UGFNA) into their practice. We provide an overview of the educational and training opportunities in H&N ultrasound and UGFNA with emphasis on the advantages and limitations for the pathologist. Throughout are useful clinical and technical pearls, many of which may also interest those who practice PGFNA, including local anesthesia use and FNA procedures in pediatric patients.

Introduction

Fine-needle aspiration (FNA) biopsy continues to be a safe, rapid, cost-effective, and accurate procedure that has been accepted as the initial biopsy procedure for the evaluation of superficial head and neck (H&N) masses. It is especially useful for diagnosis whenever clinical and radiographic findings are equivocal, to help in initial tumor staging and treatment planning, and to aid in the surveillance of postoperative neck lymph nodes. The American College of Radiology has further stated that ultrasound (US) has increasingly demonstrated its usefulness in adults and children in differentiating solid and cystic neoplasms, in assessing vascular lesions, and in facilitating biopsies.[1] It is therefore within reason that a pathologist who currently practices palpation-guided FNA (PGFNA) may, with proper training, expand their scope of practice to include the use of US for ultrasound-guided fine-needle aspiration (UGFNA). A number of interventional cytopathologists in both private and academic practices have previously made the case for pathologist-directed UGFNA, with the advantages summarized in Table 1.[2–5] The College of American Pathologists (CAP) has also endorsed pathologist-directed UGFNA through the creation of their own Ultrasound-Guided Fine-Needle Aspiration Advanced Practical Pathology Program (UGFNA AP[3]).[6] Furthermore, several other national medical organizations are now offering training and continuing medical education for pathologists in US medicine and UGFNA, which we will later detail.

General concepts

Current UGFNA training courses and previously published pathology practice models have helped define the goal of US use by the pathologist to include evaluation and confirmation of a target lesion for FNA and for real-time image guidance of

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Table 1 – The potential patient care and practice advantages of incorporating ultrasound into the fine-needle aspiration (FNA) procedure.

Patient care advantages
Increase patient satisfaction by applying the latest technology to their care
Enhance the physical examination
Confirm a suitable target lesion is present for FNA
Help identify "pseudotumors" or normal anatomy that do not warrant FNA
Practice advantages
Ability to target non-palpable superficial lesions
Not left out due to advancing technology
Address clinician demand for faster patient turnover through greater accessibility to UGFNA
Expand your technical skill as wells those of other staff such as cytotechnologists who can assisting in the ultrasound-guided FNA procedures
Potential to increase practice marketability, the number of FNAs performed, and increase revenues
You are in control of the UGFNA procedure and not limited to only performing an adequacy assessment while someone else performs the biopsy. This has the following additional benefits:
Proper sample triaging (e.g., PTH or thyroglobulin washout levels and cultures)
Obtaining sufficient material for ancillary studies (e.g., flow cytometry)
Increasing contact and direct communication with the patient and referring physician

the needle during the FNA procedure. Although providing diagnostic medical US is not the end goal for the pathologist who incorporates US into their FNA practice, there is certainly a need to become as skilled as possible with its use to ensure the success of the UGFNA.

The cost and benefits of UGFNA must be considered as it entails considerably more monetary and training investment compared to PGFNA. For example, initial UGFNA training cost is >$3000, and a suitable US machine can range from $25,000 to more than $40,000. As with all laboratory equipment, a routine preventive maintenance program will be needed to ensure the safety and quality of the US machine, and there should be quality improvement procedures in place to monitor the appropriateness, technical accuracy, and accuracy of the interpretations of the UGFNA performed. A process of retention, secure storage, and transfer of US images is also required. Detailed standards of practice for medical US have been published by the American College of Radiology (http://www.acr.org/Quality-Safety/Standards-Guidelines) and the American Institute of Ultrasound in Medicine (http://www.aium.org/resources/guidelines.aspx), and it would be in the best interest of the pathologist to adhere to all the guidelines that are applicable to their practice. If considering hiring an ultrasonographer to enhance your UGFNA service, their average yearly salary may be $60,000 or more depending on experience. Hospital-employed pathologists who are considering incorporating UGFNA into their already existing PGFNA service must also apply for this additional privilege to confirm their competency in UGFNA and to define the scope of their UGFNA practice. We have specifically defined our scope of UGFNA practice to include superficial anatomical sites that are usually above the fascia and can be reached by a needle of 2.5–3 cm in length. Excluded are any targets within a body cavity such as the abdomen or thorax. Excellent in-depth articles on starting an UGFNA practice in an academic or private practice setting have already been published.[7,8]

Although we are not aware of any consistent reimbursement issues concerning pathologist-performed UGFNA, a growing number of insurance companies are requiring US practice accreditation for non-radiologists (e.g., endocrinologists) who perform diagnostic US before reimbursement is approved. We are, however, aware that some interventional pathologists in private practice are seeking this additional US accreditation as a precaution against any such future requirement for reimbursement for UGFNA procedures.

UGFNA training and education

The ideal way to train and educate a pathologist in UGFNA would be throughout their pathology residency or cytopathology fellowship much like traditional PGFNA has been taught for decades. Integrated UGFNA training is being performed in our pathology department, not only for our own pathology residents and cytopathology fellows, but also for endocrinology fellows as well. We realize, however, that we are an exception as there are currently very few pathologists in academic teaching hospitals in the U.S. performing UGFNA. The current state of UGFNA training and education for the pathologist is therefore one of a post-cytopathology fellowship endeavor. It has been our impression, however, and that of many other interventional cytopathologists, that initially acquiring proficiency in PGFNA certainly makes the transition to UGFNA an easier task. Regardless of the type of FNA procedure performed (PGFNA or UGFNA), the pathologist needs to be very skilled in making good-quality aspirate smears as well as being able to triage the specimen for special studies through an immediate preliminary examination. Even the best technically performed UGFNA may prove clinically or diagnostically useless if poor-quality smears are made or special studies were not sent to aid in a definitive diagnosis.

Currently, several national organizations offer US and UGFNA training for a pathologist that, upon completion, will issue either a certificate of recognition/participation or certification. Evaluation of competency occurs only with certification and this will entail passing a comprehensive examination in addition to submitting US and UGFNA cases for formal review and validation to ensure that a standard of practice is achieved.

The most logical place for a pathologist to acquire their initial UGFNA training is through the CAP's UGFNA AP[3] course (http://www.cap.org/apps/cap.portal). This course offers 16 hours of continuing medical education (CME) and a certificate of recognition in UGFNA that is valid for a 5-year period.[6] The course covers topics not only in the H&N (thyroid, lymph nodes, and salivary gland) but also breast and soft tissue. It entails approximately 6 hours of pre-study followed by attending a 2-day workshop with combined lecture presentations, small group activities, and hands-on