Novel Uses of Ultrasound in the Head and Neck

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INTRODUCTION

Traditional head and neck ultrasound has encompassed a spectrum of anatomy involving thyroid and parathyroid glands, cervical vascular malformations, salivary gland masses and stones, and cervical lymph node enlargement. We identified 8 patients at our institution that underwent ultrasound evaluation under novel circumstances, or in other words, presented a novel teaching point.

CASE SERIES

Patients 1-3: These patients had tumors in the base of tongue. While in the OR an ultrasound machine was used to identify the anatomy of the floor of mouth and tongue base. Tumors were visualized and fine needle aspiration (FNA) was performed in a midline transcervical fashion between the chin and the hyoid bone. Patient #1 had trismus and orotracheal intubation could not be achieved for a direct laryngoscopy. Had we not been able to perform an ultrasound-guided transcervical FNA he would have required an awake tracheostomy prior to tracheal repair.

Patients 4-5: These patients had tumors in the supraglottis. Ultrasound was used in clinic to guide FNA, which obviated the need for a general anesthetic for direct laryngoscopy.

Patient 6: This patient had a recent history of thoracic esophageal adenocarcinoma (not pictured) but a high level II cervical lymph node was hypermetabolic on PET/CT. Ultrasound showed a benign-appearing node with solbiati index of 2.8 and peripheral vascularity. FNA determined it was indeed benign.

Patient 7: This patient had a foreign body sensation in the vallecula after eating a buffalo fish. Flexible laryngoscopy was equivocal as to the presence of a fishbone. The foreign body was seen on both CT as well as ultrasound and it was removed in the OR.

Patient 8: Although Sestamibi scan indicated the parathyroid adenoma was located on the right side, ultrasound showed an enlarged parathyroid gland on the left. The left neck was explored first and an adenoma was removed, which lowered the intra-op PTH by >50%. Sestamibi had a false positive and false negative.

DISCUSSION

Ultrasound of the head and neck is an increasingly popular imaging modality of the head and neck. It is low-cost, does not expose the patient to ionizing radiation, and can provide immediate feedback to the clinician. Otolaryngologists have seen an expanded role of ultrasound in their office over the last few decades. Lopchinsky et al. have published a small series on ultrasound-guided FNA of the supraglottis, but this practice is not widespread. Our experience supports that this technique is feasible.

Meacham et al. have published a cadaver study regarding the possibilities of performing ultrasound-guided FNA of the tongue base. Until this current presentation of patients 1-3, it was not known whether this was feasible in the living patient.

CONCLUSIONS

Ultrasound can be used to assess and guide fine needle aspiration of the tongue base. This may spare the need for an awake tracheotomy in some patients that have large tongue base tumors and cannot be intubated for general anesthesia. Ultrasound can also guide FNA of supraglottic tumors. Ultrasound has also been helpful to assess the malignancy of cervical lymph nodes, visualize some oropharyngeal foreign bodies, and correctly predict the site of parathyroid adenomas.

REFERENCES