Abstract

Intrathyroidal parathyroid adenoma poses a diagnostic challenge when pre-operative localization of the adenoma is desired to guide a minimally invasive parathyroidectomy. Ultrasound-guided fine needle aspiration (UG-FNA) can be used to identify the target tissue. We report a case in which UG-FNA of an intrathyroidal parathyroid adenoma confirmed abnormal parathyroid tissue in a 44 year-old patient who underwent previous bilateral neck exploration which failed to correct her hyperparathyroidism.

Introduction

Ultrasound-guided fine needle aspiration (UG-FNA) of the parathyroid gland is infrequently performed but can be very useful to distinguish parathyroid adenoma from thyroid tissue. We report a case in which FNA of an intrathyroidal parathyroid adenoma confirmed abnormal parathyroid tissue in a patient who had previously undergone unsuccessful bilateral neck exploration to correct her hyperparathyroidism.

Case Presentation

A 44 year-old female presented to primary care clinic with a one-year-history of fatigue, irritability, forgetfulness, and esophageal reflux. She was taking lisinopril for hypertension and atorvastatin for hyperlipidemia. She had no pertinent family medical history. Physical examination was normal. Laboratory results showed serum calcium 11.0 (8.9-10.3 mg/dL), albumin 3.8 (3.5-5.0 mg/dL), PTH intact 167 (ref 10-65 pg/mL), phosphate 2.1 (2.5-4.6 mg/dL), 25-hydroxy-Vitamin D 11 (30-100 ng/mL). Tc-99m sestamibi scan suggested a right inferior parathyroid adenoma (Fig 1A). However, bilateral neck exploration failed to identify the parathyroid adenoma. Postoperative labs showed PTH 184 pg/mL, phosphate 2.2 mg/dL, calcium 11.1 mg/dL. Bedside thyroid ultrasound showed a 9mm hypoechoic lesion with increased vascularity (polar vascular pattern) within the inferior portion of the right thyroid lobe (Fig 1B). Repeat sestamibi scan showed a focus of...
increased accumulation of radiotracer in the inferior pole of the right thyroid lobe. FNA of this lesion showed lymphocytic thyroiditis with cystic degenerative changes \textbf{(Fig 2A)}; and PTH measurement from FNA was 4737 pg/mL. The patient then underwent right thyroid lobectomy without complications. Postoperative labs showed PTH 14.9 pg/mL, calcium 9.4. Pathology showed cellular proliferation of clear cells adjacent to normal thyroid follicles containing colloid \textbf{(Fig 2B)}. These findings are consistent with intrathyroidal parathyroid adenoma.

\textbf{Discussion}

Preoperative localization of parathyroid adenoma using ultrasound and sestamibi scan can help to guide a minimally invasive parathyroidectomy, as opposed to a more invasive bilateral neck exploration. When these methods fail to distinguish abnormal parathyroid tissue from thyroid tissue, FNA can be extremely useful. FNA of a parathyroid adenoma can mimic cytological features of lymphocytic thyroiditis; however, aspirates of parathyroid adenoma will show elevated intact parathyroid hormone measurements \textsuperscript{[1, 2]}. It has been reported that cytology and immunocytochemistry may play an important role in the interpretation of US-guided FNA for preoperative localization of parathyroid tissue \textsuperscript{[3]}. If an intrathyroidal parathyroid gland is suspected.
in a patient with primary hyperparathyroidism, an FNA can distinguish adenoma from a thyroid nodule. In this patient, pathology confirmed a 0.6 cm right inferior intrathyroidal adenoma with otherwise benign thyroid tissue. This case demonstrated the usefulness of FNA of parathyroid lesion in a patient with primary hyperparathyroidism and an intrathyroidal parathyroid adenoma who had failed prior bilateral neck exploration. It may be important to perform a combined approach of cytology and PTH measurement (immunocytochemistry) in diagnosing and localizing parathyroid tissue.

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References