

## EUS-FNA biopsy of parathyroid gland

Dear Editor,

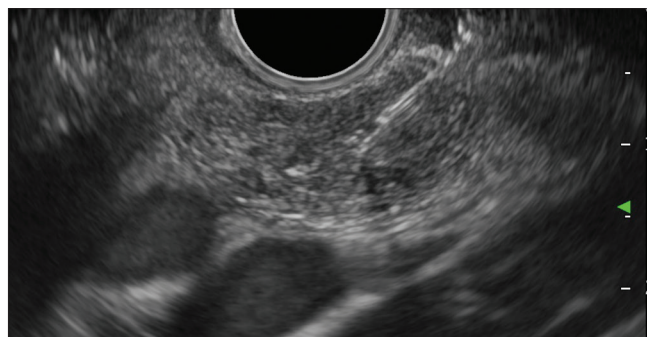
Ultrasound examination of the neck followed by fine needle aspiration (FNA) biopsy is one of the methods for detecting and diagnosing parathyroid gland lesions. Among parathyroid lesions, there are solitary adenomas, multiple gland hyperplasia disease, double adenomas, carcinomas, *etc.*<sup>[1]</sup> However, traditional FNA is not always possible because of difficulties in visualization and access (the location of the lesion behind the thyroid gland, large vessels, cartilage, and bone structures together with such conditions as multinodular goiter, lymph nodes, fibrosis, and other tumors of the neck).<sup>[2,3]</sup>

To date, one case of EUS transesophageal biopsy of parathyroid adenoma performed for histological verification of the nature of the lesion has been described in the literature.<sup>[4]</sup>

In our practice, we had a 47-year-old woman with parathyroid gland lesions on both sides detected by an ultrasound. No convincing data were found for hyperparathyroidism. Due to the decrease in the level of PTH in dynamics ( $34.9 > 14.86$  pg/mL), the patient underwent contrast-enhanced computed tomography (CT) of soft tissues of the neck, which revealed CT signs of parathyroid neoplasms.

The lesions were located on the posterior surface of the thyroid gland, so we decided to do EUS with subsequent FNA from the lumen of the pharynx. The examination was performed with an Olympus GF-UCT180 echoendoscope using an EVIS EUS EU-ME2 PREMIER PLUS ultrasound center.

EUS revealed a moderately hypoechoic well-vascularized oval-shaped mass with a clear edge up to  $10 \text{ cm} \times 20 \text{ mm}$  in size with anechoic inclusions. We found no evidence of the great vessels and adjacent structure's invasion. EUS-guided transpharyngeal FNA was performed with a 22Ga Acquire EUS FNB needle by Boston Scientific [Figure 1]. The aspirated material was



**Figure 1.** Linear endoscopic ultrasound image: FNA-needle in the gland parenchyma

placed on glass slides and in a formalin-filled jar. We detected no complications or adverse events.

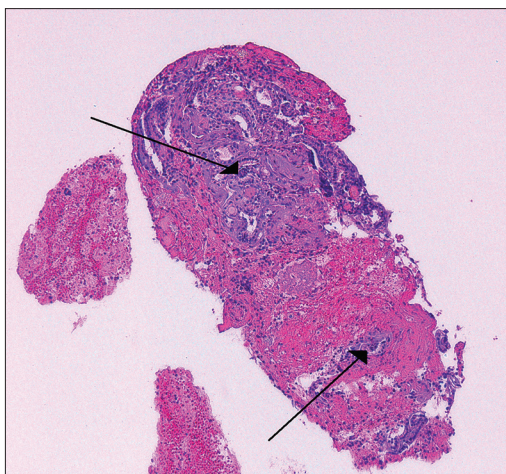
The volume of collected material by FNA was sufficient for both cytological and histological examination. In some fragments, we could observe the histoarchitectonics of the gland.

In a morphological study, the aspirate was represented mainly by the main cells of the parathyroid gland without atypia (in aspirate and smears) [Figure 2]. During immunohistochemistry (IHC), cells did not express calcitonin; cytoplasmic expression of GATA3 and Ki67+ was observed in certain cells. The histoimmunophenotype does not correspond to carcinoma and parathyroid adenoma; hyperplasia of the parathyroid gland is most likely in this case.

Detecting the localization and histological nature of parathyroid gland masses are necessary to determine patient treatment tactics, including surgical treatment. Nonfunctioning incidentalomas are believed to be an early stage of hyperparathyroid tumors.<sup>[5]</sup>

During a puncture from the pharynx, the needle takes the shortest path to the parathyroid glands, minimizing the risk of “contamination” of the aspirate with trace tissues and decreasing the risk of tracer metastases.

EUS-FNA of parathyroid gland is an effective alternative for obtaining histological material. Our case shows



**Figure 2.** Parathyroid cells forming trabeculae (indicated by arrows), layers of fibrous tissue, fibrin, and red blood cells. Staining: hematoxylin/eosin; magnification x100

its technical feasibility and relevance of the collected material, including for IHC and histological studies.

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*Declaration of patient consent*

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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*Conflicts of interest*

There are no conflicts of interest.

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