The value of Fine Needle Aspiration Cytology in the examination of parathyroid glands. Role of immunocytochemistry and washout fluid analysis.

Elwira Bakuła-Zalewska

Department of Pathology  Maria Skłodowska-Curie Institute - Oncology Center
Warsaw, Poland
ANATOMY

- macroscopy: oval to reniform, tan brown, soft, circumscribed
- length: 3 - 7 mm (bigger -> hiperplasia!)
- weight: 1 - 2 mg in children to ~30 mg in adults (> 60 mg = abnormal!)

2 pairs of glands: superior and inferior

13% of the population has 1-12 glands
Intrathyroidal parathyroid gland

Intrathyroidal parathyroid adenoma

Parathyroid cyst
MINIMALLY INVASIVE PARATHYROIDECTOMY (MIP)
US-GUIDED FNAB
COMMON PATTERN OF FNA SMEARS FROM PARATHYROID GLAND
Loose cluster and sheets of uniform and slightly pleomorphic cells
Small round bare nuclei in the background
Occasional microfollicular pattern can be easily confused with thyroid FNA
colloid-like material and follicular elements that may contain colloid-like substances resembles a thyroid FNA
Clusters / sheets and dissociated cells with granular cytoplasm and uniform, small, round to oval nuclei with stippled „salt and pepper“
Rare oncocytic pattern in the FNA of oncocytic parathyroid adenoma
Pseudopapillary and micropapillary pattern including increased capillary vessels
Background macrophages containing hemosiderin is extremely rare finding in the parathyroid FNA.
DIFFERENTIAL DIAGNOSIS

- Hyperplastic nodule (thyroid)
- Thyroid cyst
- Thyroid oncocytic adenoma
- Follicular variant of papillary carcinoma
- NIFTP
- Poorly differentiated carcinoma
- Medullary thyroid carcinoma

Cells are positive for chromogranin A and PTH, negative for thyroglobulin.
The specimen obtained from FNAB was immediately smeared on the glass slides after aspiration, fixed by 70% ethanol and stained with hematoxylin & eosin (H&E) stain. The remaining aspirate in the syringe and needles were immediately rinsed with 0.5 ml of isotonic 0.9% saline.

The washouts were processed for PTH measurement using electrohemiluminescent (ECLIA) assay.
Wash-out >3291 pg/ml
CONCLUSION:

THE COMBINED APPROACH OF CYTOLOGY AND MEASUREMENT OF PTH LEVELS IN NEEDLE WASHOUT PROVIDES HIGH DIAGNOSTIC ACCURACY IN THE INTERPRETATION OF US-GUIDED FNAB OF PARATHYROID