AB015. Case report: primary adenocarcinoma not otherwise specified of the thymus and cytological features

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Background: Mediastinal aspirates pose a unique diagnostic challenge due to the overlapping histologic characteristics across mediastinal lesions and the morphologic similarities between primary and metastatic mediastinal neoplasms. Presented here is the first reported description of the cytomorphologic features of adenocarcinoma not otherwise specified (NOS) of the thymus in aspirate and pleural effusion specimens.

Case Description: A 76-year-old female was found to have an incidental right prevascular mediastinal nodule on a post corona virus disease 2019 (COVID-19) computed tomography (CT) scan. A follow up magnetic resonance imaging (MRI) showed enlargement of the nodule to 2.5 cm and a positron emission tomography (PET) scan showed increased fluorodeoxyglucose (FDG) uptake (SUV 11). Robotic resection of the nodule confirmed the presence of a 2.5 cm pT1aN0 thymic adenocarcinoma with acinar, papillary, solid and spindled cell (sarcomatoid) components and an associated type B2 thymoma. The carcinoma component showed immunohistochemical reactivity for pancytokeratin and PAX8 (patchy) and was negative for p40, CDX2, TTF-1, CD5, and CD117. Three months post resection, a follow up PET/CT scan revealed chest wall and pleural based nodules with FDG avidity as well as bilateral pleural effusions. Fine needle aspiration (FNA) smears of the chest wall mass revealed pleomorphic epithelial cells in small irregular clusters with disassociated single cells consistent with metastatic thymic adenocarcinoma. The tumor cells had a high nuclear-to-cytoplasmic (N:C) ratio and contained predominantly round hyperchromatic nuclei with membrane irregularities. Cytologic analysis of the pleural fluid showed pleomorphic tumor with a high N:C ratio. A cell block preparation showed acinar, papillary, and solid patterned clusters with immunohistochemical reactivity for pancytokeratin and PAX8, consistent with the patient's diagnosis of thymic adenocarcinoma.

Conclusions: Similar to other variants of thymic carcinoma, the cytomorphologic features of thymic carcinoma reported in this case are not specific to a site of origin. The patchy PAX8 staining and negative CD5 and CD117 highlight the poor sensitivity of site specific immunohistochemical markers in thymic epithelial tumors. The morphologic overlap between thymic and metastatic adenocarcinomas, variable immunohistochemical staining, and intra-tumoral histologic heterogeneity of thymic epithelial neoplasms underscore the importance of pathology-radiology correlation and the careful consideration of the clinical context in the interpretation of cytology specimens.

Keywords: Thymic adenocarcinoma; thymic cytology; cytology; case report

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Footnote

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at https://med.amegroups.com/article/view/10.21037/med-23-ab015/coif). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent for publication of this case report was not obtained from the patient or the relatives after all possible attempts were made.

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