Introduction

- Fine needle aspiration biopsy (FNAB) and core needle biopsies (CNB) of lung mass has been widely used in clinical evaluation for potential malignancy. It is important for the treatment of patients not to miss the diagnosis of lung carcinoma and accurately subtype them on limited specimens.
- The reactive atypia of respiratory epithelium may mimic malignancy. In cytology and small biopsy specimens, presence of terminal bar helps to recognize benign respiratory epithelium and differentiate it from malignancy.
- PAX-8 (Paired Box Gene), a transcription factor is a reliable marker used by pathologist in diagnosis of primary tumors of kidney and thyroid.
- We have discovered that PAX-8 highlights the terminal bar of benign respiratory epithelium and investigated its clinical utilization in the lung FNAB and CNB.

Methods

- Seven patients with lung biopsies (6 with lung FNAB and one with lung CNB) who had PAX 8 immunohistochemical stain performed, were identified from the patients’ profiles of electronic medical records from January 1st 2017 to July 31st 2018 at University of Missouri Department of Pathology.
- All seven patients had subsequent surgical resections. Diagnosis of resection specimens were: adenocarcinoma in situ (3/7), minimally invasive adenocarcinoma (1/7), and lepidic predominant invasive adenocarcinoma (3/7).
- Immunohistochemical stain by PAX-8 antibody was performed on the cell blocks of FNABs (6/7) and formalin fixed paraffin imbedded (FFPE) tissue of CNB (1/7).

Results

- PAX-8 highlight the terminal bars of the benign respiratory epithelium in all cases and help to recognize the reactive atypical respiratory epithelium and differentiate it from non-small cell carcinoma of the lung, especially adenocarcinoma.

Conclusions

- This is first time report of PAX8 expression in the terminal bar of respiratory epithelium. PAX-8 helps to differentiate the benign respiratory epithelium from non-small cell carcinoma of the lung in limited samples.
- During daily practice cilia maybe hard to recognize on smear and it will be difficult to differentiate the reactive atypia and adenocarcinoma in-situ. A marker highlight the cilia would be very helpful to support the diagnosis.
- Ciliated Muconodular papillary tumor is a rare tumor of the lung and it is not applicable to use PAX-8 to differentiate reactive atypia and ciliated muconodular papillary tumor.

Reference

- Ciliated Muconodular Papillary Tumors of the Lung. Yen-Wen Lu, MD; Yi-Chen Yeh, MD. (Arch Pathol Lab Med. 2019;143:135–139