**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 8), 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**

- 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 highlights the terminal bars of the benign respiratory epithelium in all cases and helps 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 PAX-8 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.

**Reference**