Bronchial cytology showing squamous cell carcinoma with unusual morphology.

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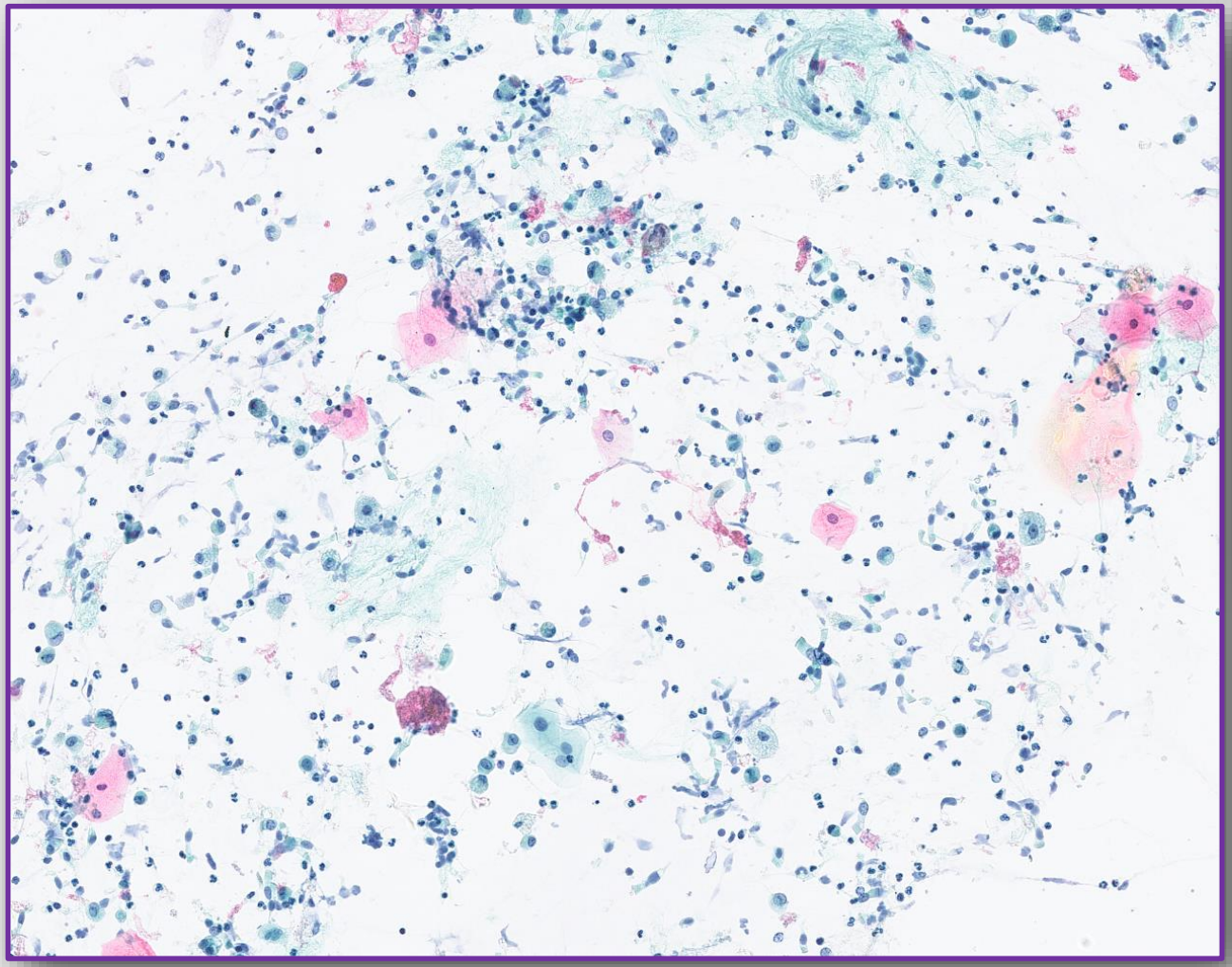
Clinical information

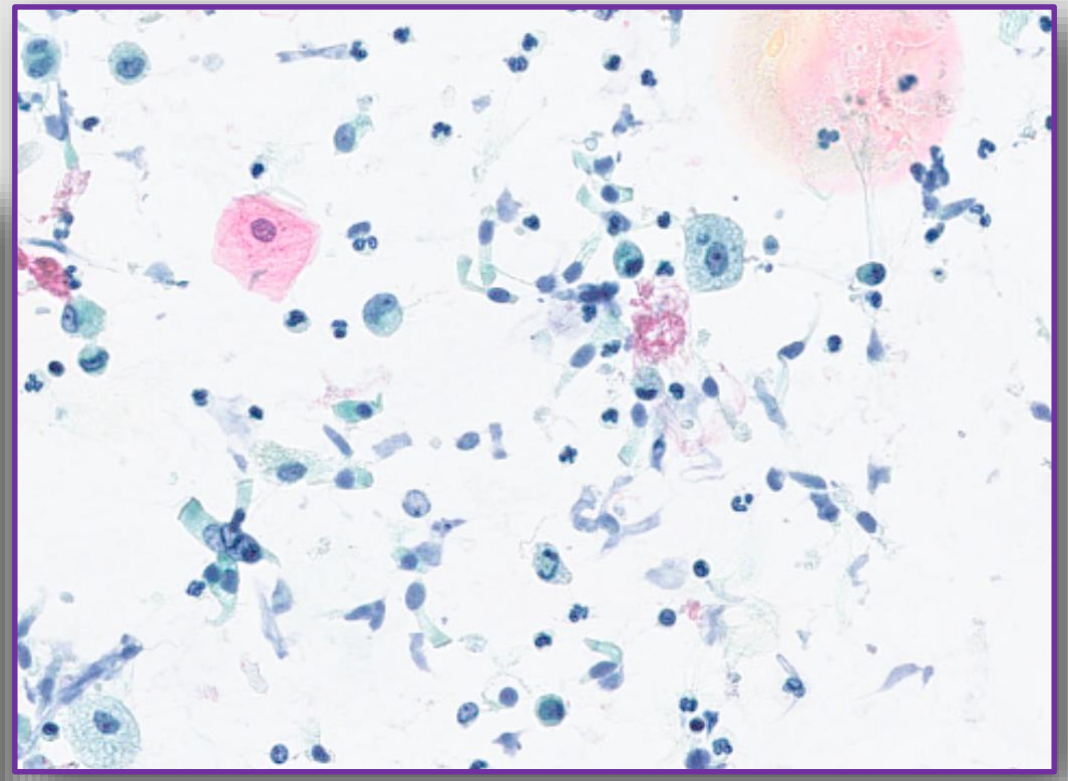
- Male, age 84.
- History of colonic hyperplastic polyps, but no previous malignancy.
- Contracted Covid and has been unwell since.
- Presented with chest pain and shortness of breath.
- 20 year history of smoking.

Clinical information

- CT scan showing irregular soft tissue mass in the left upper lobe highly suspicious of a primary lung malignancy.
- Hypodense lesion in the lingula and right adrenal suspicious for metastatic deposits.
- PET scan also showed a deposit involving the right anterior rib.
- Radiologically staged as T4 N1 M1c
- Bronchoscopy – Washings, brushings and biopsy taken.
- Bronchial brushings reported as non diagnostic.

Bronchial washing



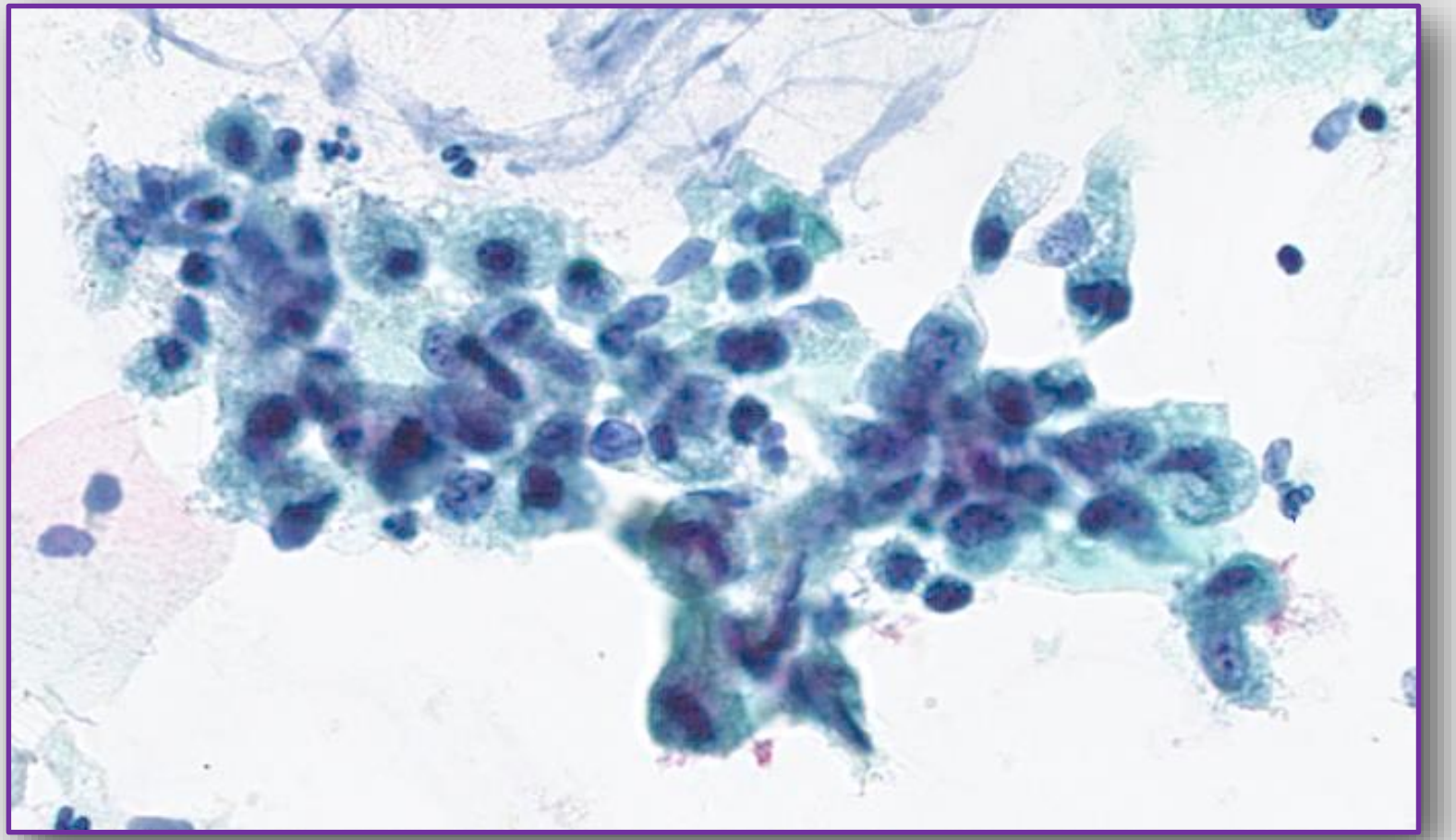


Benign bronchial epithelial cells, squames, alveolar macrophages and inflammatory cells.

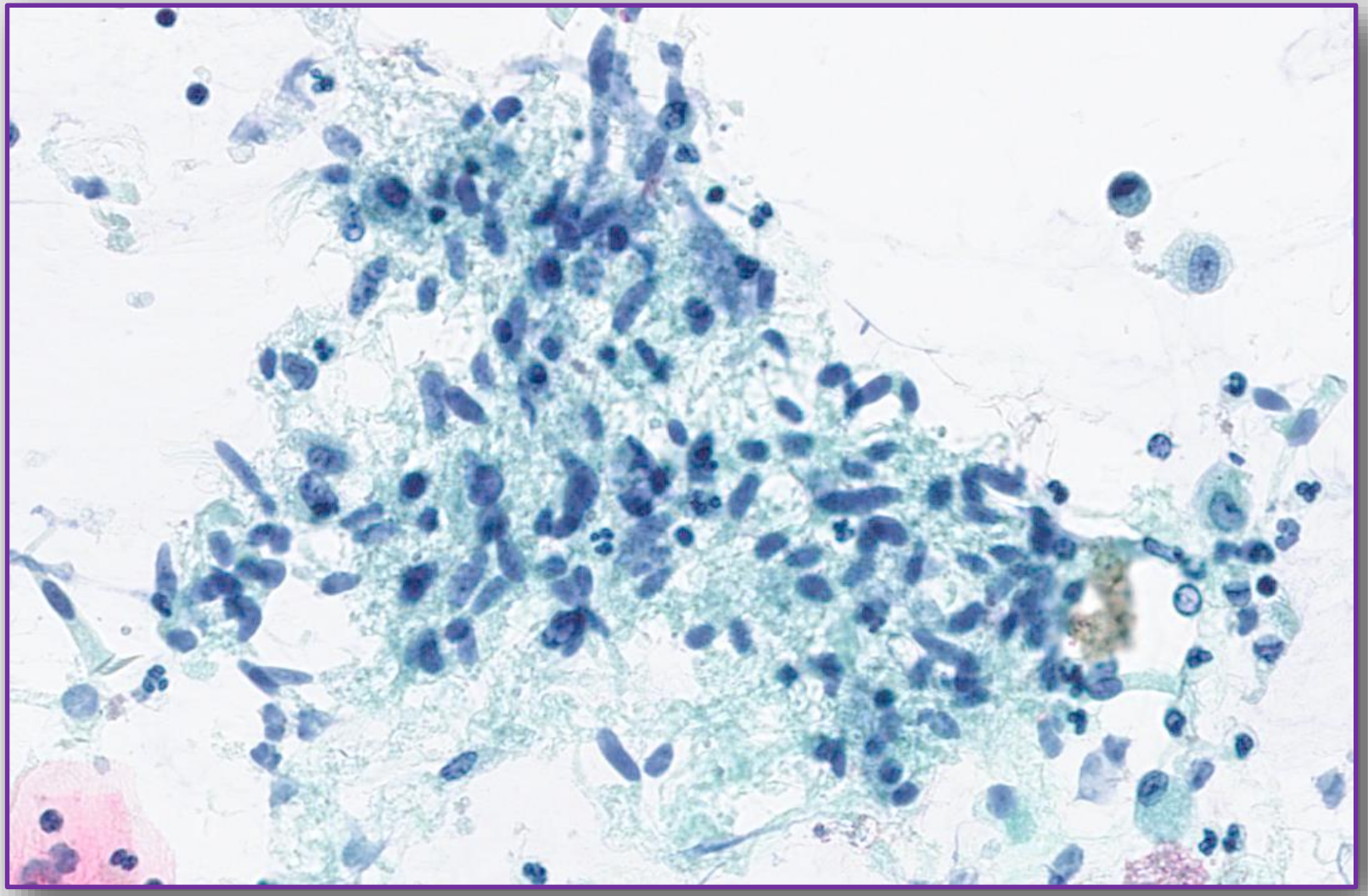
Bronchial washing

Rare groups of cells with mixed morphology.

Some large nuclei with irregular outlines.

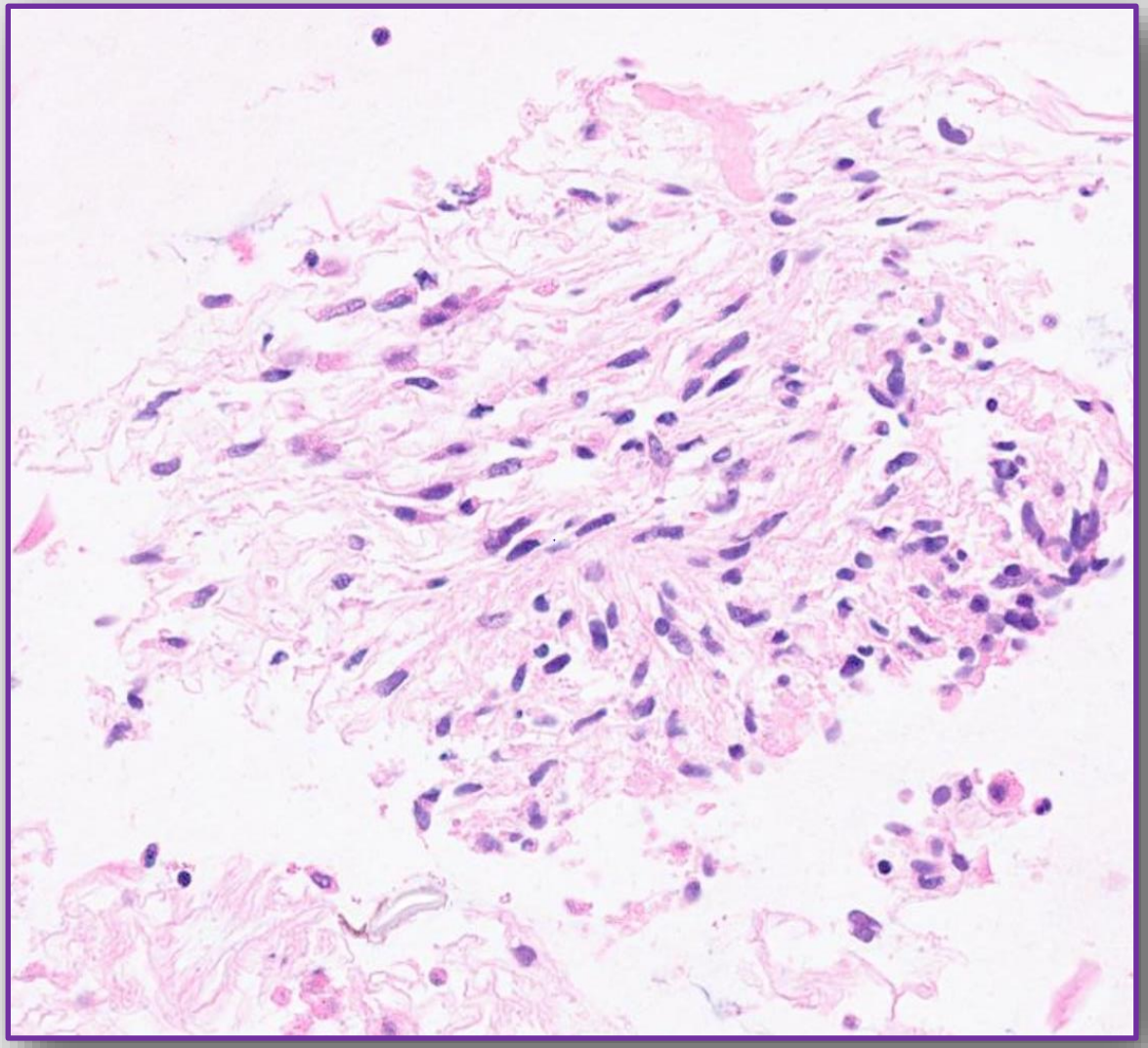


Bronchial washing



A loose aggregate of cells with elongated, oval nuclei and indistinct cytoplasm. Chromatin is poorly preserved.

Bronchial washing cell block

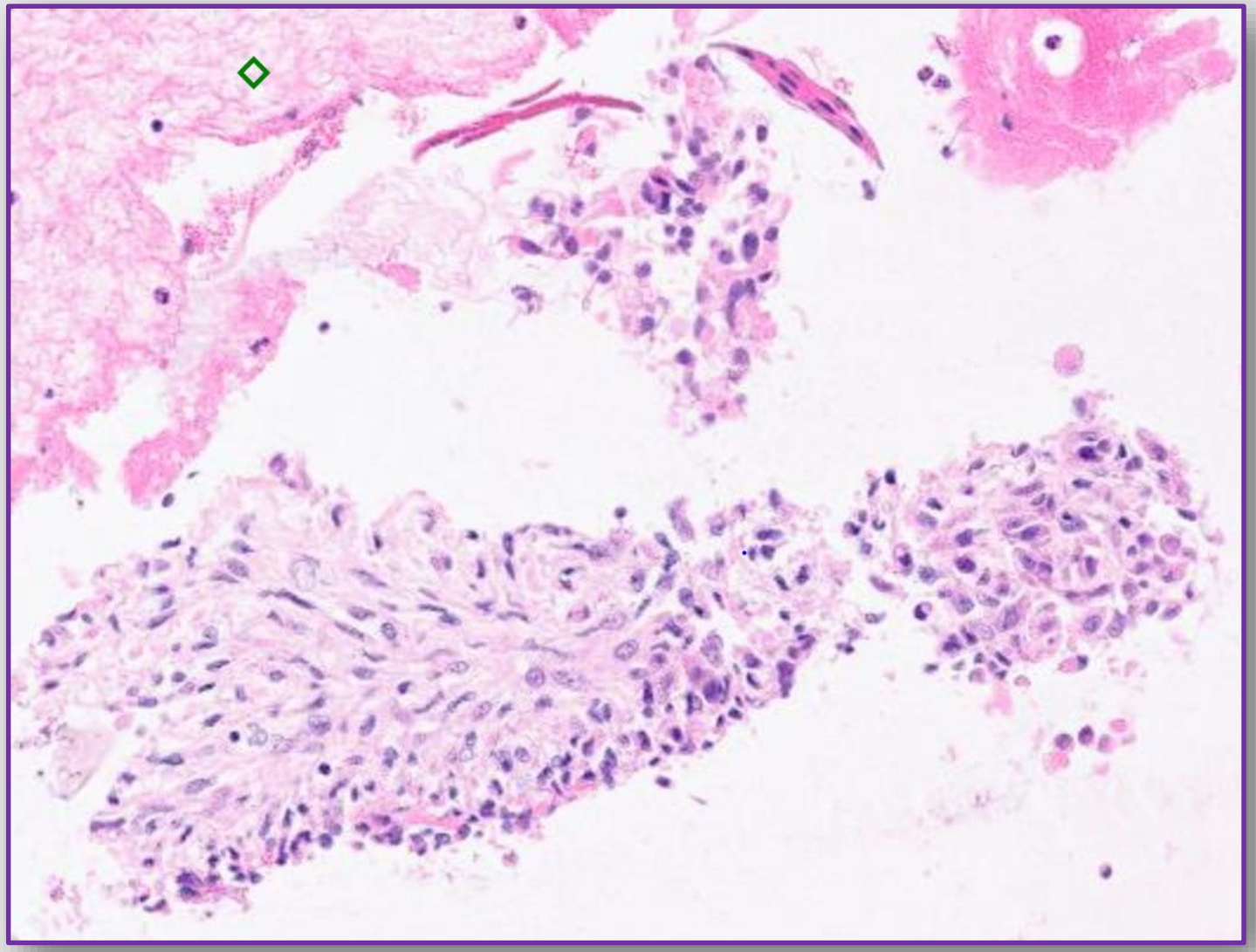


Occasional sheets of cells with elongated nuclei. Bland appearance.

Differential includes stromal cells

Sufficient cellularity for immunohistochemistry

Bronchial washing cell block



The elongated cells show moderate amounts of pale cytoplasm.

Some juxtaposed atypia can be seen with irregular nuclear outlines.

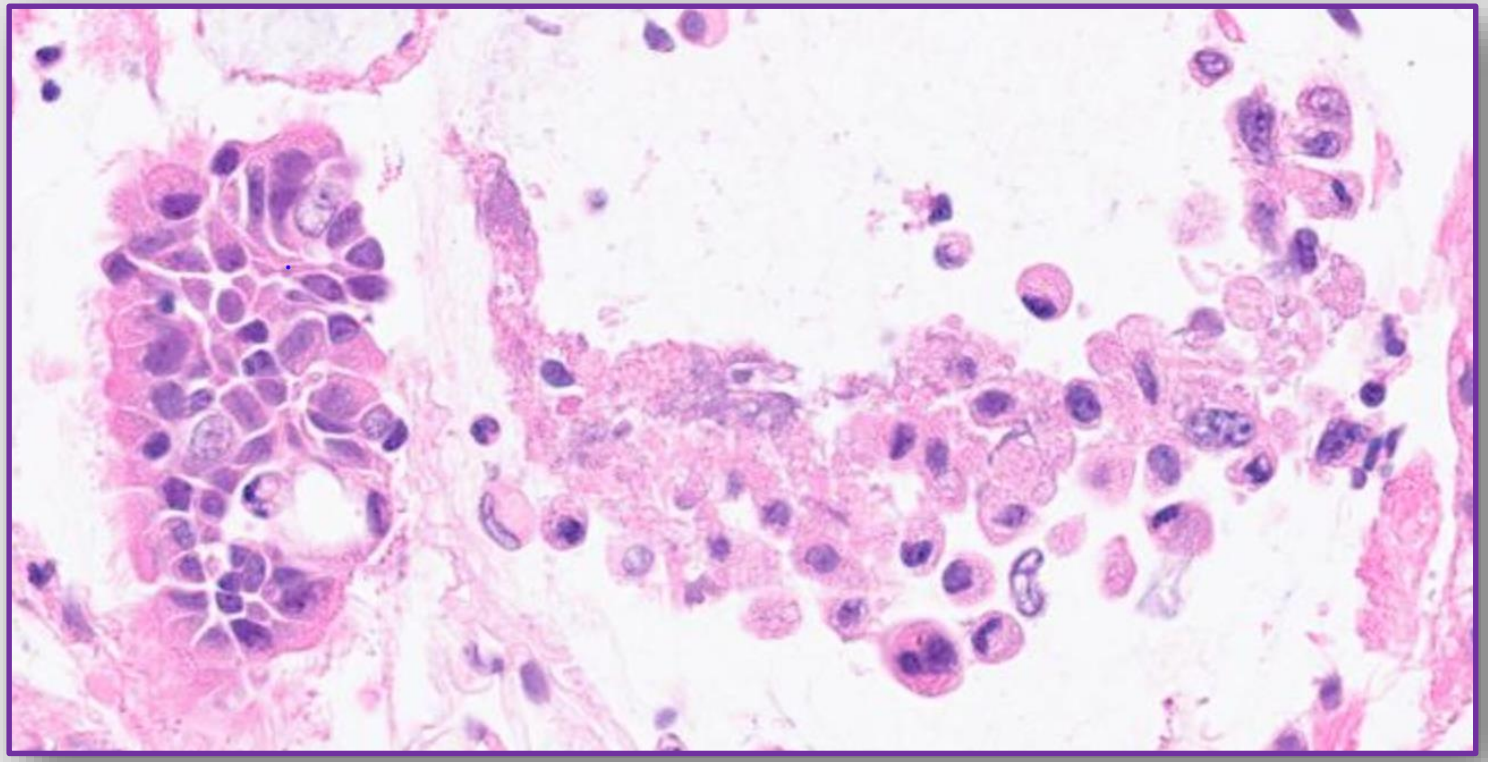
Are these two cell groups the same lesion or separate?

Bronchial washing cell block

Some cellular atypia is seen with hyperchromasia and coarse chromatin.

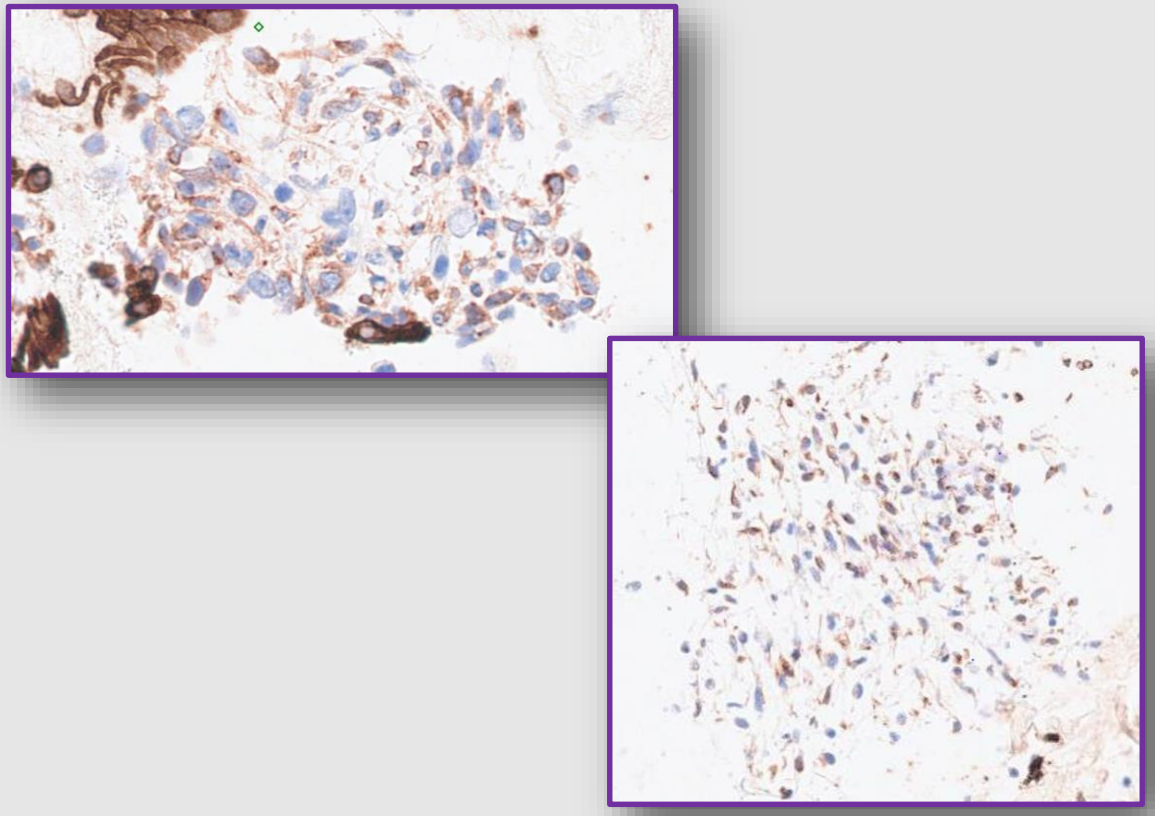
A sheet of benign ciliated bronchial epithelial cells is seen in the left of this pictures for comparison.

Only a few atypical groups are present in the preparations.



Immunocytochemistry and Report

Weak staining of the atypical cells with AE1/AE3. These cells are negative for p40 and TTF1.



Report - Rare superficial keratinized squamous cells are noted. A few atypical ovoid and spindle-shaped cells are present. The atypical cells could represent neoplasia rather than stromal cells. The features are atypical but it is not possible to make a definitive diagnosis of malignancy.

Histology

- Bronchial biopsies contain minimal tissue. A lesion composed of atypical spindle-shaped and ovoid cells with enlarged hyperchromatic nuclei is present. These cells show patchy staining with AE1/AE3 CK7 and p63. Very few AE1/AE3, CK7 and p40 positive squamous cells are seen. There is no significant staining with CD34. The lesion is negative for CK5/6, TTF1, SOX10 and Desmin.
- The features suggest spindle cell squamous cell carcinoma.
- The case was reviewed at a Tertiary Cancer Centre which showed agreement with the report.
- Due to sparsity of tissue a biopsy of the rib lesion was performed which also showed spindle cell squamous cell carcinoma.
- Molecular analysis showed the tumour had a KRAS sequence variation.

Summary

- Squamous cell carcinoma of spindle cell variant.
- Possible differentials are wide and include benign and malignant spindle cell tumours.
- There are a variety of inflammatory and reactive processes that can produce spindle cells including infections and fibrous change. Elongated cells may be seen in granulomatous lesions.
- Benign spindle cell tumours include bland appearing spindle cells as the main cell type, few dispersed cells and intact tissue fragments.
- Solitary fibrous tumours are typically positive for CD34.

Summary

- Primary squamous cell carcinoma of lung has a strong association with smoking and is most often a centrally located mass, although can be peripherally located and invade the ribs.
- Squamous cell carcinoma (SCC) can show a variety of morphological patterns including spindle cell and clear cell changes. Other patterns include papillary and alveolar-filling patterns.
- Non-keratinising SCC can be overlooked especially if paucicellular.
- Some reports suggest spindle cells should form only 10% of the cell population in a spindle cell squamous cell carcinoma, however this is open for debate.

References

1. WHO Classification of Tumours 5th Edition Thoracic Tumours. International Agency for Research on Cancer 2021
2. WHO Reporting System for Lung Cytopathology. International Agency for Research on Cancer 2022