

Interesting case conference

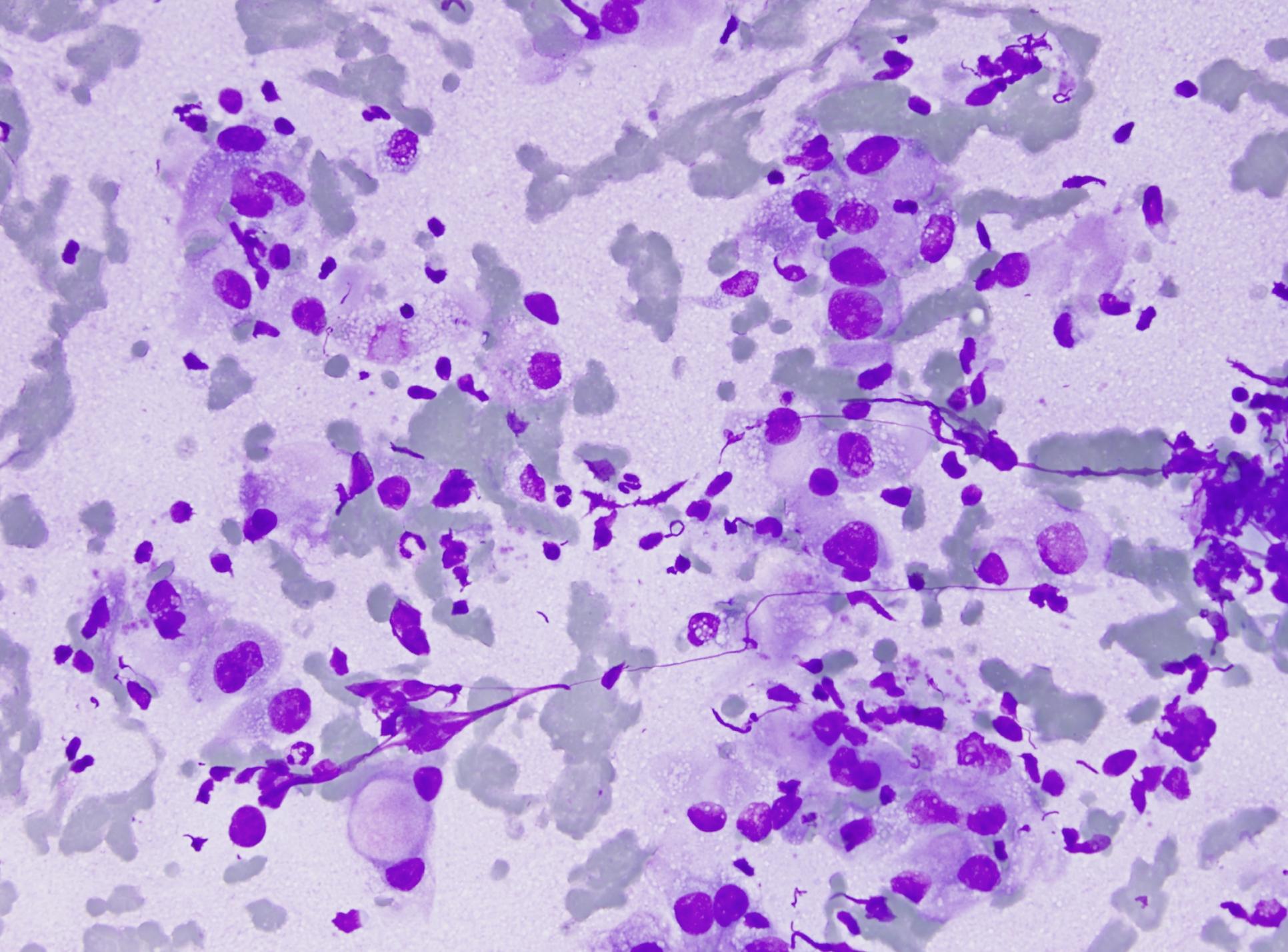
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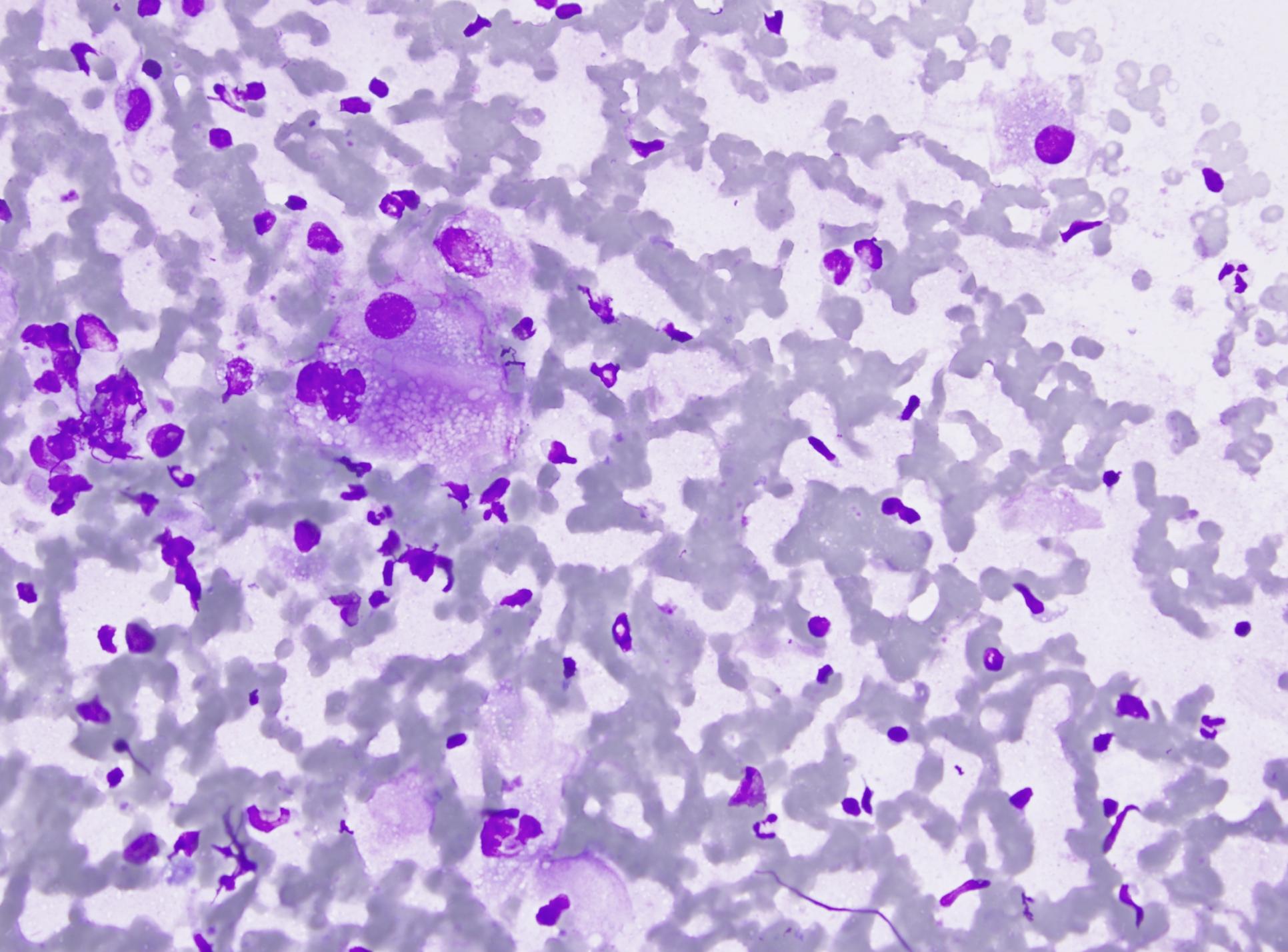
History

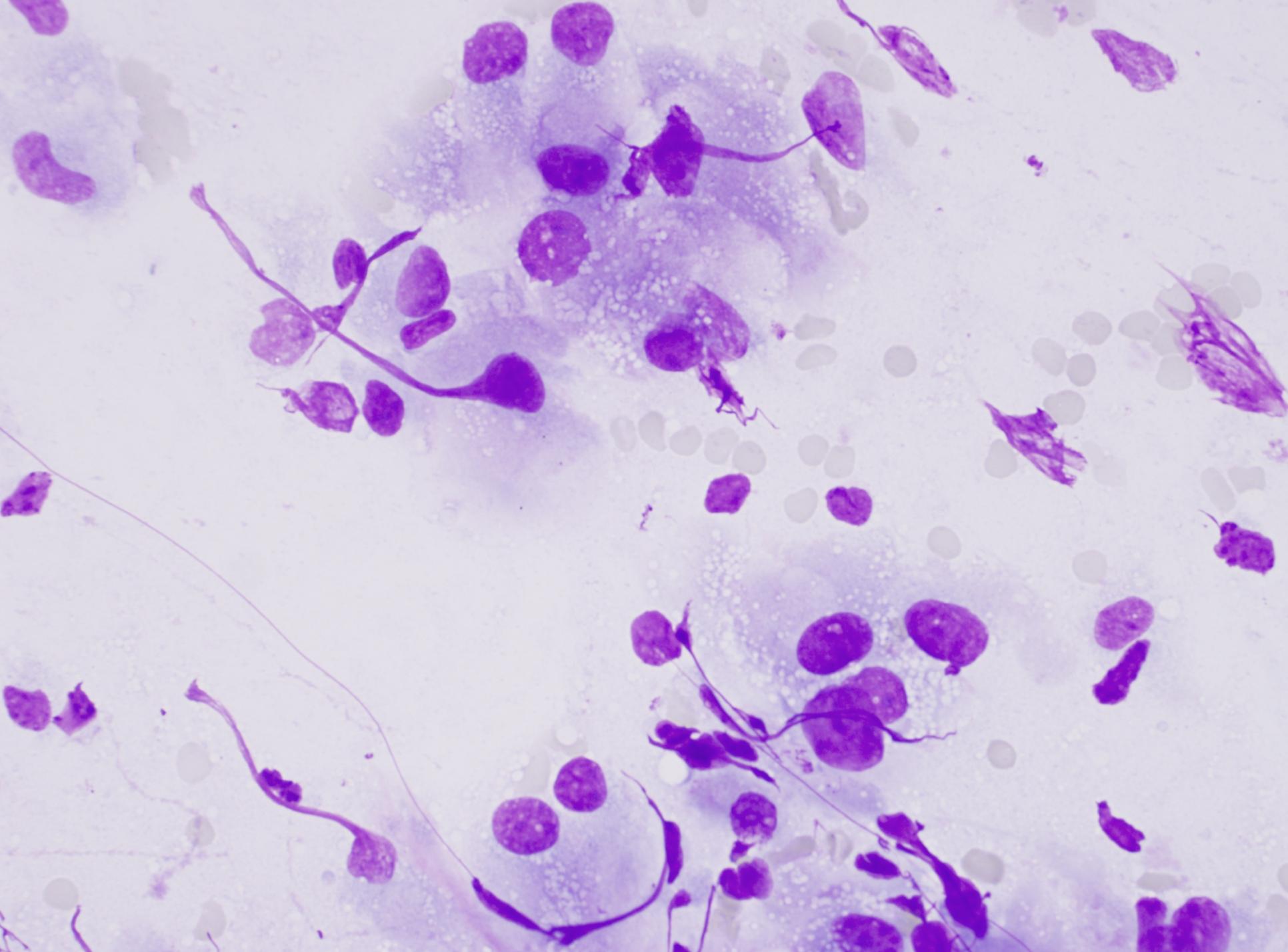
- 56 year old male with a history of renal cell carcinoma, clear cell type with granular cell features. Status post left nephrectomy (2010).
- Metastatic disease to lung, chest wall, regional lymph nodes, and brain. Status post whole brain and chest radiation and chemotherapy.

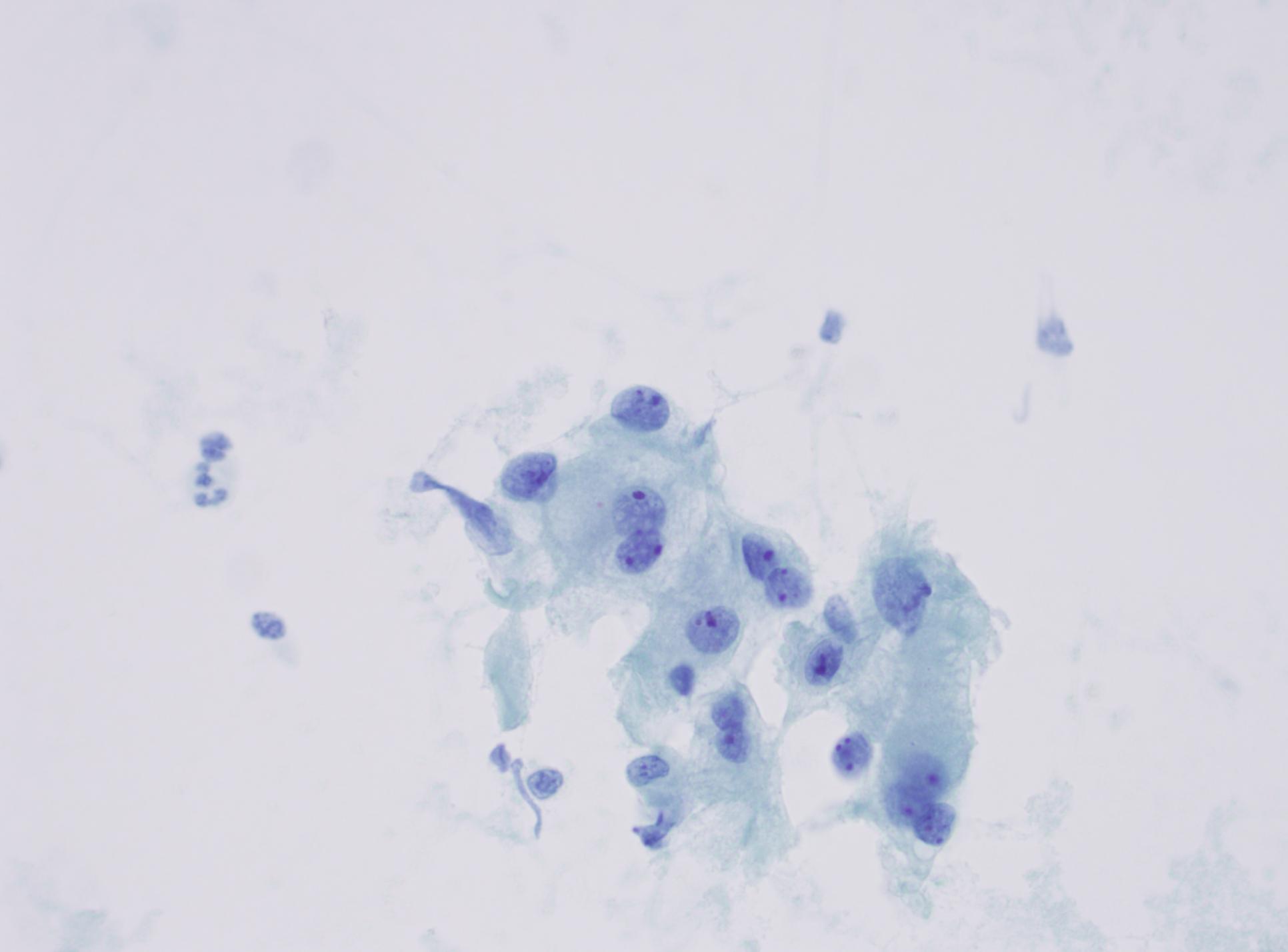
History

- Now presents with a fixed, firm, subcutaneous left upper posterior shoulder nodule measuring approximately 2 cm in size.
- Referred to fine-needle aspiration clinic for tissue diagnosis.









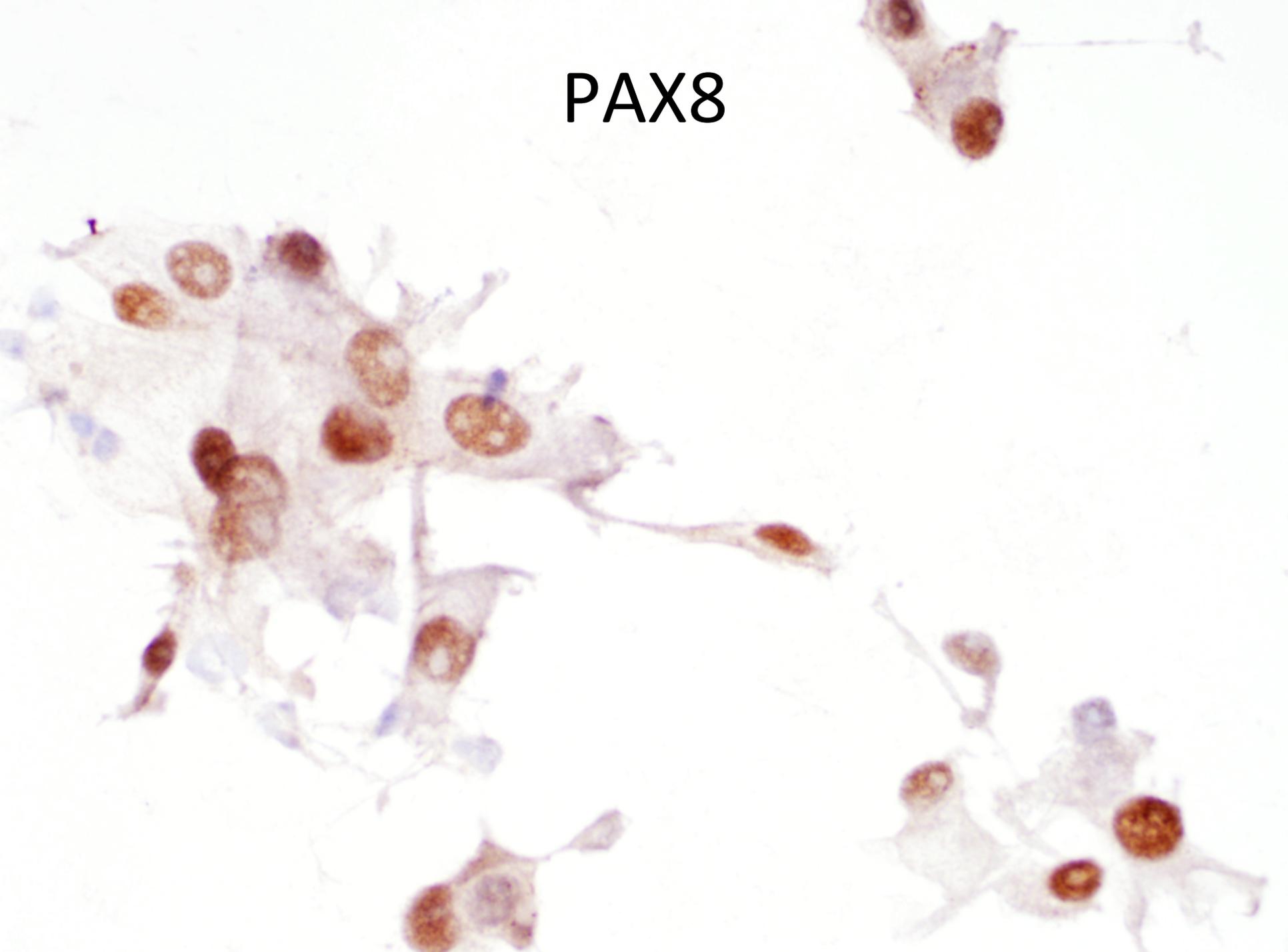
Cytomorphologic Findings

- Cellular aspirate composed of malignant epithelial cells with abundant cytoplasm (vacuolated to granular).
- Eccentrically placed nuclei with vesicular chromatin and prominent nucleoli.
- Cytomorphologically consistent with metastasis from the patient's renal cell carcinoma.

Immunocytochemistry

- The contents of the third needle pass was distributed over four smears:
 - One smear was Diff-Quik stained
 - One smear was spray fixed and Papanicolaou stained.
 - Two smears were air-dried and left unstained:
 - Unstained smear #1 submitted to immunoperoxidase laboratory for PAX8 immunocytochemistry.
 - Unstained smear #2 submitted for negative control immunocytochemistry.

PAX8



Diagnosis

- **POSITIVE FOR MALIGNANT CELLS.**
 - Consistent with metastasis from the patient's renal cell carcinoma.
 - Immunocytochemistry for PAX8 is positive in the tumor cells (diffuse, nuclear staining).

Turnaround Time to Diagnosis

- FNA performed at 11:00 a.m. on a Friday.
- Preliminary diagnosis communicated to referring clinician and unstained smears submitted to IPOX laboratory at 11:30 a.m.
- Slides prepared and screened by 3:00 p.m.
- PAX8 immunostain completed at 4:00 p.m.
- Case signed out with confirmatory immunostain at 5:00 p.m.
- **Turnaround time = 6 hours.**

Ancillary Techniques on Direct-Smear Aspirate Slides

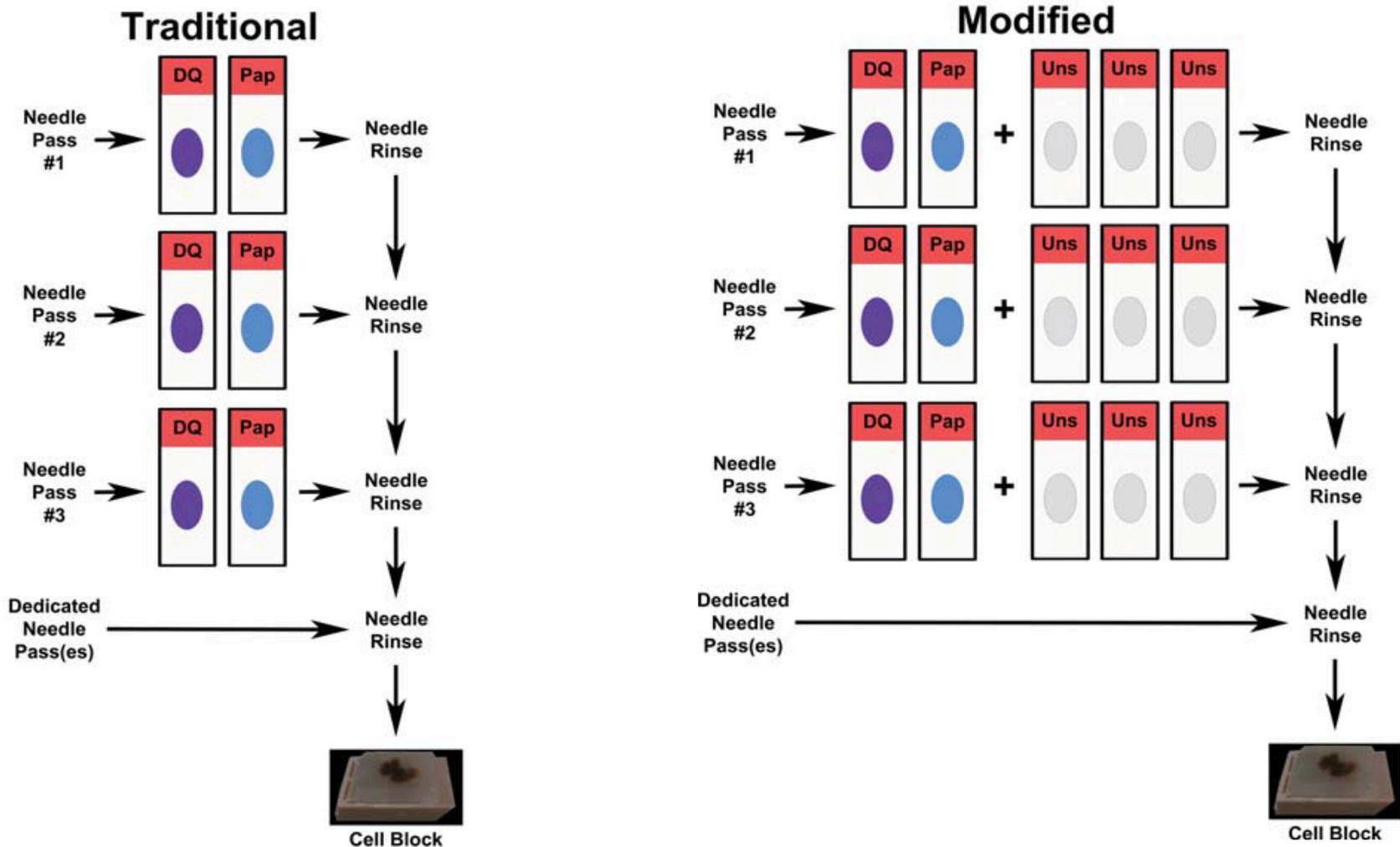
A Significant Evolution for Cytopathology Techniques

Stewart M. Knoepp, MD, PhD¹ and Michael H. Roh, MD, PhD

Numerous cytologic techniques aimed at effectively acquiring patient material for molecular testing have been proposed. Such techniques are becoming ever more important in an age of personalized medicine. In this commentary, the authors explored some more commonly proposed techniques to aid in the molecular testing of cytologic specimens. These techniques include the use of cell blocks, direct cytologic smears, filter paper storage, frozen samples, and enriched cellular techniques such as ThinPrep and cytopspin preparations. Direct-smear slides demonstrate excellent preservation of DNA, are easy to prepare, and are amenable to immediate adequacy at the time of the fine-needle aspiration (FNA) procedure as well as effective subsequent tumor purity estimation. Cell block methods cannot be assessed at the time of FNA and often demonstrate insufficiency, whereas filter paper and frozen techniques do not allow for the direct assessment of the presence and purity of tumor cells in the sample. Direct-smear slides are emerging as the most effective preparation and storage medium of cytologic material to be used for molecular testing. Their cost-effectiveness, ease of use, and reliability have cemented them as the optimal solution for cytopathologists to fulfill the role of providing advanced molecular testing on patient samples. *Cancer (Cancer Cytopathol)* 2012;000:000-000. © 2012 American Cancer Society.

KEY WORDS: direct smear, cell block, molecular, immunocytochemistry, cytology, fine-needle aspiration, polymerase chain reaction, cancer, personalized medicine.

Distributing contents from a needle pass over multiple smears



Additional comments

- Prior slides of patient's renal cell carcinoma not available for review.
- An example of RCC, clear cell type with granular cell features is depicted on the following slide.

