

Aspirate of prostatic fluid from a 13 year old male American Foxhound that presented with a history of chronic hematuria. Ultrasound of the prostate revealed cystic lesions.

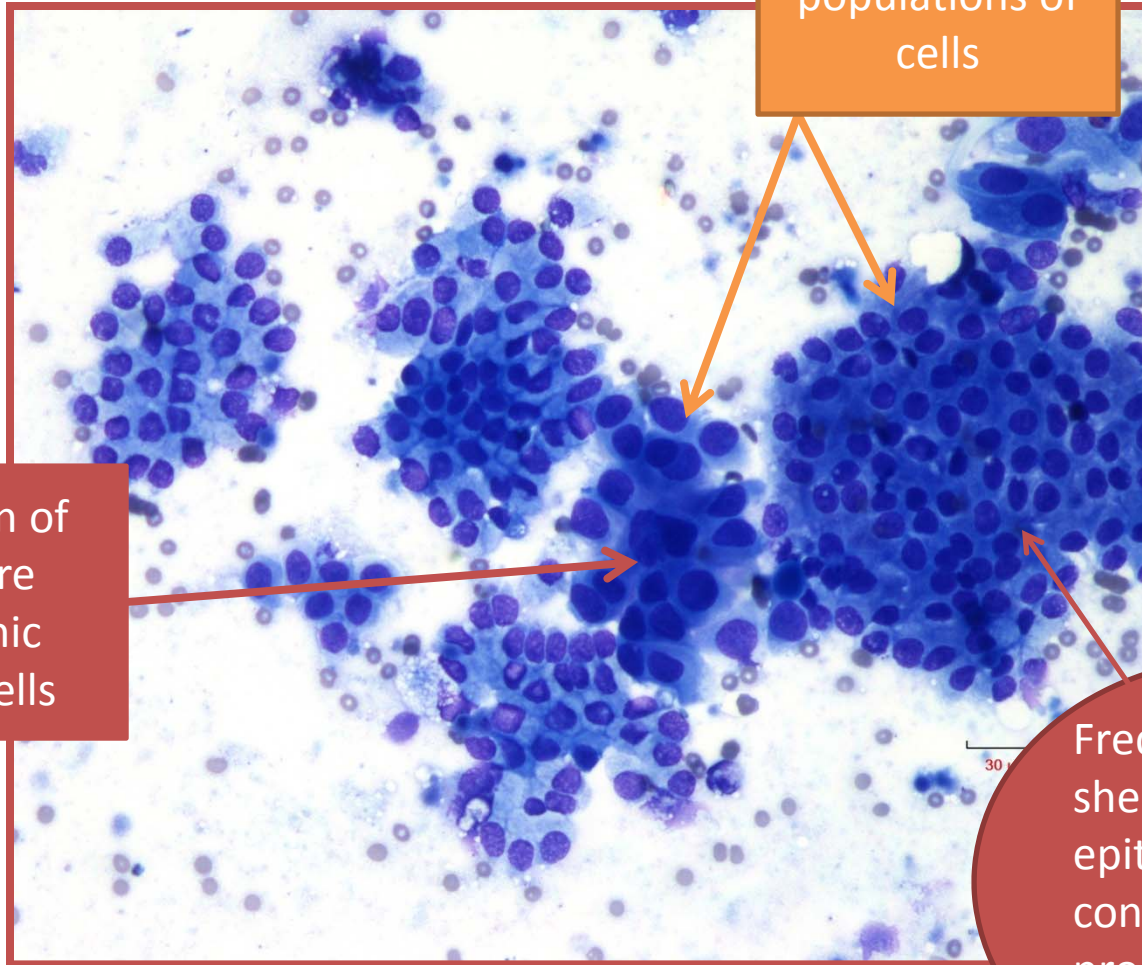
FNA of prostatic fluid

20x

Two different populations of cells

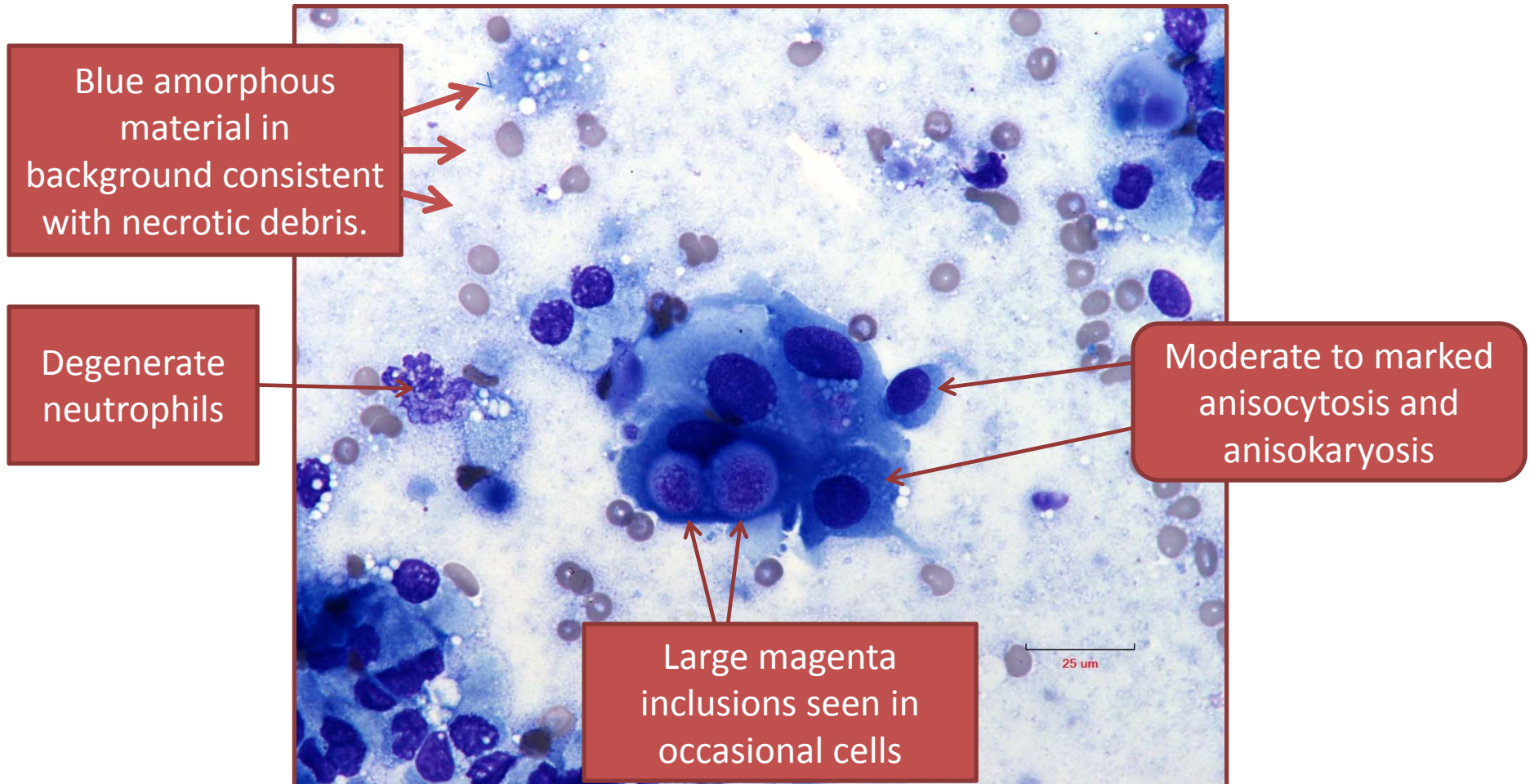
A population of larger, more pleomorphic epithelial cells

Frequent, large sheets of uniform epithelial cells, consistent with prostatic epithelium



FNA of prostatic fluid

40x



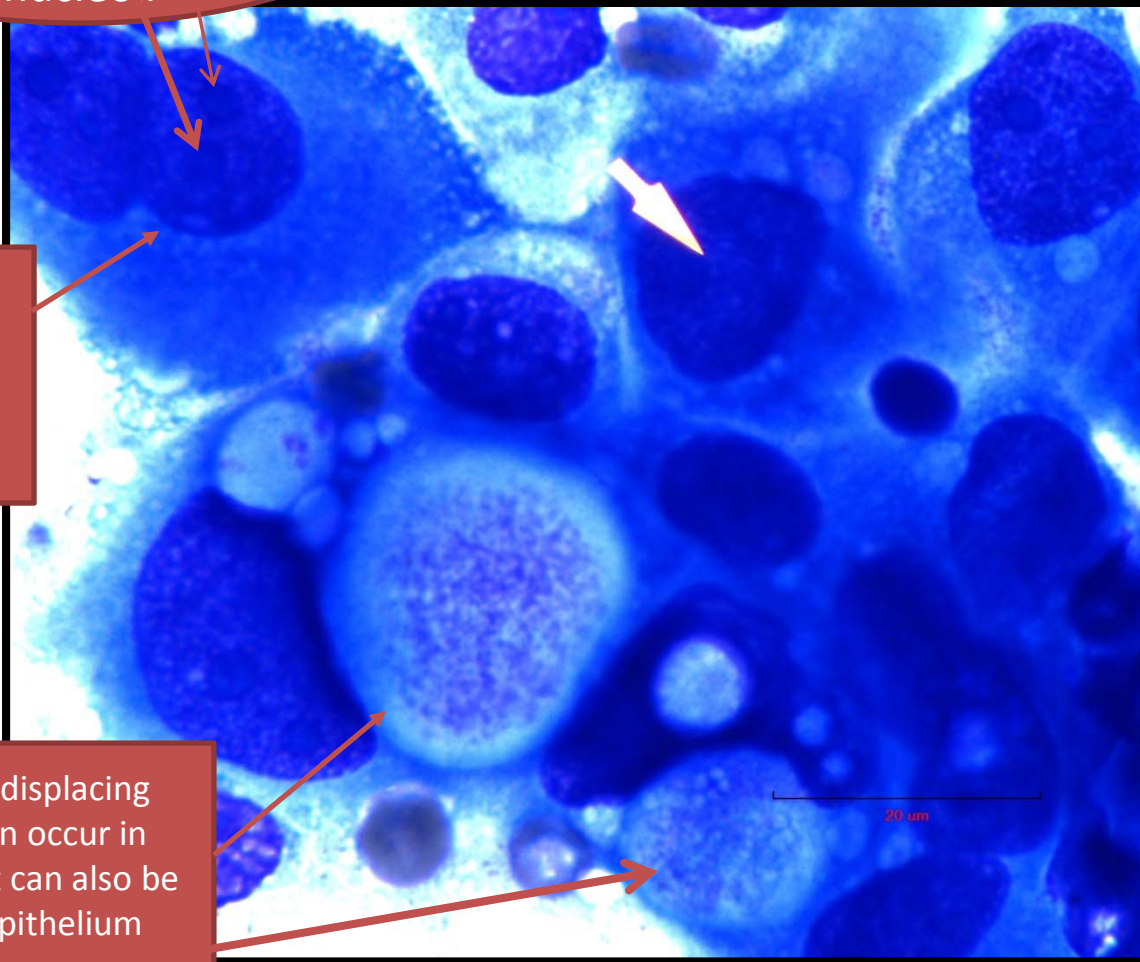
FNA of prostatic fluid

100x

Multiple prominent nucleoli

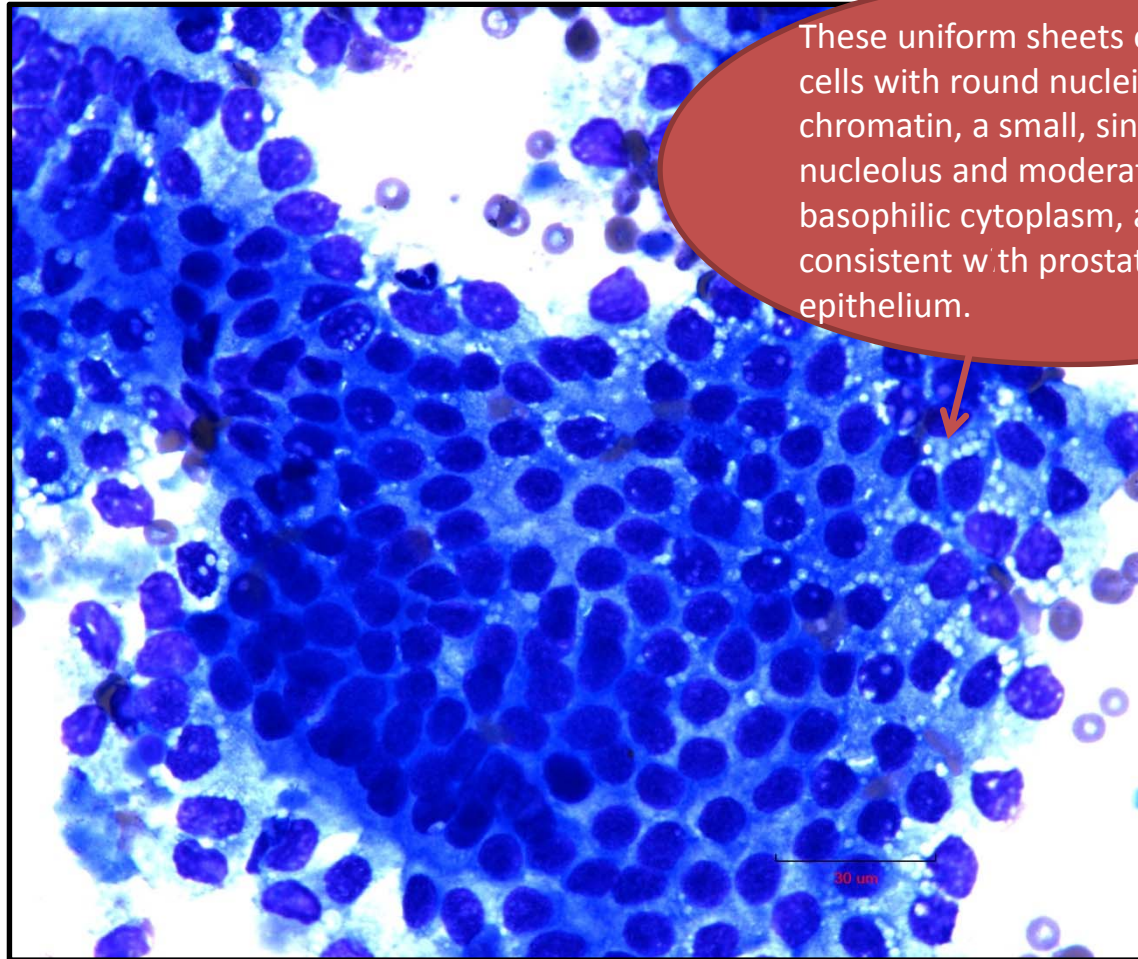
Bi-nucleate and tri nucleate cells seen

Magenta inclusion displacing nucleus-these often occur in transitional cells, but can also be seen in prostatic epithelium



FNA of prostatic fluid

40x



These uniform sheets of epithelial cells with round nuclei, coarse chromatin, a small, single nucleolus and moderate amount of basophilic cytoplasm, are consistent with prostatic epithelium.

Differential Diagnoses?

Interpretation

- Cytologic interpretation:
 - **Probable carcinoma**-carcinomas can arise from uroepithelium (transitional cell), prostatic glandular epithelium, or have squamoid differentiation. Mixed tumors are common as well.
 - The numerous sheets of uniform epithelial cells are consistent with **benign prostatic hyperplasia (BPH)**. **Hyperplasia is commonly associated with prostatic carcinoma.**
 - Necrosis and mild inflammation are also present and could be due to neoplasia and/or BPH. No organisms were noted, however this does not rule out an infectious cause.

Interpretation and Discussion, cont:

- The mild inflammation noted in the sample complicates the cytologic interpretation since inflammation can cause cellular atypia.
- The magenta inclusions in the pleomorphic cell population are commonly associated with transitional epithelial cells, however these inclusions may be seen in prostatic ductal epithelium as well.

Interpretation and Discussion

As mentioned, canine prostatic carcinoma can be urothelial/ductal, acinar or squamoid.¹ Neoplasms of mixed morphology commonly occur as well.¹ It can be difficult to differentiate between these tumor types via cytologic examination on Wright-Giemsa stained preparations, and often histopathologic examination of H&E stained, fixed tissue will not yield an answer. **So what can we use to differentiate tumor type?**

Interpretation and Discussion

- **Immunohistochemistry (IHC)** has successfully been used to differentiate neoplasms that originate from uroepithelial/ductal (transitional cell) tissue from those of acinar (glandular) tissue.
- Using IHC, research has shown that **uroepithelial/ductal prostatic carcinomas (which develop independent of androgen hormones) are far more common** than those arising from acinar tissue (which are androgen dependent).² This is exactly opposite of what occurs in human males, in whom it is well documented that prostate cancer is androgen dependent. This also explains why neutering in canine males does not decrease, and may actually slightly increase the risk of prostatic carcinoma.² The most common tumor type, (uroepithelial/ductal) does not appear to be hormone dependent, therefore removing the source of the hormones (the testes) does not have a protective effect.²
- Uroepithelial/ductal prostatic carcinomas stain positive for **cytokeratin 7 (CK-7)** and negative for **prostate specific antigen (PSA)**.²
- Acinar prostatic carcinomas stain negative for **CK-7** and positive for **PSA**.²

References

1. Jubb, K., et al. Pathology of Domestic Animals. 2007; Volume 3: 610
2. Sorenmo, M. Immunohistochemical characterization of canine prostatic carcinoma and correlation with castration status and castration time. *Veterinary and Comparative Oncology* 2003;1, 1, 48-58