Excluding specimens from cytologic review

Lydia Pleotis Howell, MD
Barbara A. Crothers, DO

Q. Are cytology labs required to exclude some specimens from cytologic evaluation due to the addition to the checklist of CYP.01650, “There is a policy that lists specimens that an institution may choose to exclude from routine submission to the cytology department for examination.”

A. Laboratories are not required to exclude specimens from cytologic review. The checklist item is not applicable if a laboratory prefers that all institutional specimens be sent to cytology or if the institution does not process cytology specimens. This item is intended to give a laboratory the flexibility to exclude certain specimens from submission and parallels the policy in the surgical pathology checklist. The list of cytology exclusions will usually be much smaller than that for surgical pathology. Examples of specimens that might appear on a cytology exclusion list include effusions with a prior cytologic diagnosis of malignancy in which drainage is performed for symptomatic relief, and nonbloody yellow breast cyst fluid following fine-needle aspiration. The list of exclusions should be made in consultation with the medical staff to ensure that the needs of patients and their providers are fully considered. The checklist item conveys the message that the majority of specimens removed from patients—including cytology specimens—should be submitted to the laboratory for evaluation. Creating a list of exceptions with the medical staff provides an opportunity to discuss situations in which specimens are inappropriately discarded in operating and procedural rooms so that research studies without consideration of patient care requirements.

Pulmonary infections

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stage of infection, and prolonged antifungal exposure:

- *Candida*: pseudohyphae, rarely true hyphae, and/or narrow neck “teardrop”-shaped budding yeast (2–10 mm).
- *Histoplasma*: narrow neck budding yeast (3–5 mm).
- * Blastomycetes*: broad neck budding yeast with a thick cell wall (5–15 mm).
- Cryptococcus: yeast with thick capsules (5–20 mm).
- *Coccidioides*: thick-walled spherules (10–80 mm) filled with endospores (2–5 mm).
- *Aspergillus*: regular septate hyphae with 45° branching (3–6 mm wide) and fruiting bodies.
- *Mucor*: ribbon-like, nonseptate hyphae with 90° branching (6–50 mm wide).

Cytopathologists are regularly called upon to rule out *Pneumocystis pneumonia* (or pneumocystosis), caused by the yeast-like fungus *Pneumocystis jirovecii* (formerly *P. carinii*). Specimens used to diagnose pulmonary pneumocystis include sputum (where in-duced sputum is more sensitive than expectorated samples), BAL (which is more invasive but has a greater diagnostic yield), and, for intubated patients, tracheal aspirates. While foamy alveolar casts that contain cysts are typically seen, in some specimens only organisms within macrophages may be seen. *P. jirovecii* cysts, best visualized with silver stains such as GMS, are usually present in aggregates which helps to differentiate them from *Histoplasma* or Cryptococcus, which typically do not aggregate. Budding does not occur with *P. jirovecii*, however, adjacent or overlapping cysts may sometimes mimic budding organisms. With histoplamosis one usually finds numerous intracellular yeasts within macrophages, but when cells get disrupted these microorganisms may also be located extracellularly. Invasive *Cryptococcus* is another pathogen that has become increasingly important among HIV-positive and transplant patients. Cryptococcal yeasts are often surrounded by thick capsules (Fig. 2) that stain positively with mucicarmine, alcian blue, and colloidal iron stains. In *Cryptococcus* pneumonia organisms may rarely be intracellular (Fig. 3), and in these cases are often overlooked.

Pulmonary disease caused by parasites occurs when the lungs are involved during their life cycle. Infection is often associated with eosinophilia. A number of parasitic organisms may infect the respiratory tract:

- *Protozoa*: Toxoplasma gondii, Entamoeba histolytica, Cryptosporidium, Microsporidia.
- *Nematodes*: *Dirofilaria immitis*, Filarias sp. (Wuchereria bancrofti, Onchocerca volvulus, etc.), Strongyloides stercoralis.
- * Trematoda* (flukes): Paragonimus sp. (waterersman, africa

Fig. 3. A granuloma in a case of cryptoccocal pneumonia showing numerous intracellular cryptococcal yeast within these macrophages (Diff-Quik stain, high magnification).