



## LETTER TO THE EDITOR

## *Cryptococcus neoformans* in sputum and lung aspiration cytology smears

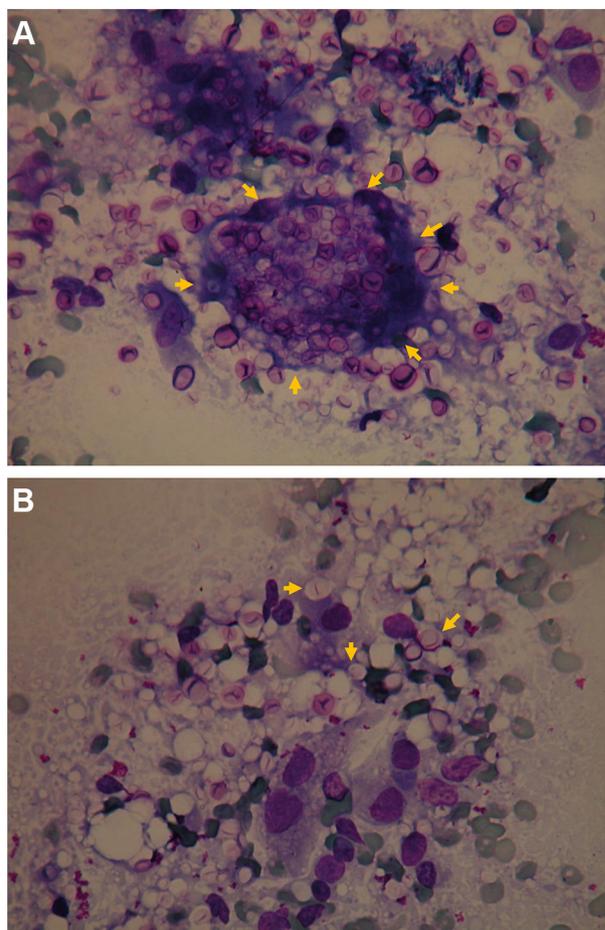


To the Editor,

Cytology, both exfoliative and aspiration cytology, may play a role in the detection of causative microorganisms in immune-competent and -compromized patients. *Cryptococcus neoformans* (*C. neoformans*), an environmental fungus, is an emerging opportunistic pathogen that causes focal or disseminated infection. Risk factors for cryptococcal infection include corticosteroid use, neoplasm, stem cell and solid organ transplantation, liver cirrhosis, chronic kidney disease, diabetes mellitus, rheumatologic disease, and infection with HIV.<sup>1,2</sup> *C. neoformans* often infects lungs and meninges. Diagnostic tools for cryptococcosis include culture, histology, cryptococcal antigen, and cytology.

Herein, we report a 53-year-old male who had ankylosing spondylitis and received Chinese herb drug treatment for years. He presented with cough and yellowish sputum for 2 months, chills, fever, and dyspnea for 1 week. Initially, he was diagnosed as having lung cancer with obstructive pneumonitis. A chest radiograph revealed ill-defined patches in the right lower lung field. Chest computed tomography revealed consolidation over the bilateral lower lobes. Percutaneous lung aspiration was performed and the lung aspirate suspension showed a high titer of cryptococcal antigen (>1:512). Two days after report of the cryptococcal antigen titer, both lung aspiration and sputum cytology showed cryptococcosis. Lung aspirate culture yielded *C. neoformans* on the same day. Amphotericin B was started and he recovered uneventfully.

Fig. 1A and B are images of lung aspiration cytology specimens, which show cryptococci appearing as isolated or small clusters of poorly stained, pink and round bodies measuring 7–18  $\mu\text{m}$  in diameter. These yeasts may be found within multinucleated giant cells or extracellularly (Fig. 1A). Single or multiple budding attached to the mother cell by a narrow neck was occasionally seen and looked like a teardrop. Some cryptococci were surrounded by a clear halo, which was the polysaccharide capsule.<sup>3</sup> The morphology of yeast forms was demonstrated more clearly



**Figure 1.** Lung aspiration cytology images. (A) Cryptococci appeared as isolated or small clusters of poorly stained, pink and round bodies, and may be found in the cytoplasm of a multinucleated giant cell (arrows), or extracellularly; (B) oval or round yeasts shows clear halo (arrows) in an inflammatory background of lymphocytes.

in air-dried cytological smears stained with Riu's method than alcohol-fixed cytological smears.<sup>4,5</sup> Fig. 1B shows refractile oval or round yeasts 7–10  $\mu\text{m}$  in diameter, some showing a clear halo in an inflammatory background of lymphocytes, and differential diagnosis includes erythrocytes, talc powder crystals, and cytoplasmic vacuoles.

The diagnosis of pulmonary cryptococcosis is difficult and often delayed due to its radiographic similarities to neoplasms or pneumonia. In this case, the sputum and lung aspirates were originally submitted for cytological screening of malignant cells. It turned out that cytology, along with lung aspirate antigen test and culture, established the diagnosis of cryptococcosis. The advantage of cytology is its timeliness. However, both clinicians and cytologists need to be alert and familiar with cytological presentations of cryptococci in clinical specimens.

## References

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I-Shiow Jan

Wern-Cherng Cheng

Shyh-Chyi Lo

Ming-Hsiang Weng

Department of Laboratory Medicine,

National Taiwan University Hospital,

National Taiwan University College of Medicine,

Taipei, Taiwan

Li-Na Lee\*

Department of Laboratory Medicine,

National Taiwan University Hospital,

National Taiwan University College of Medicine,

Taipei, Taiwan

Department of Internal Medicine,

National Taiwan University Hospital,

National Taiwan University College of Medicine,

Taipei, Taiwan

\*Corresponding author. Department of Laboratory Medicine, National Taiwan University Hospital, 7 Chung-Shan South Road, Taipei 100, Taiwan.

E-mail address: [linalee@ntu.edu.tw](mailto:linalee@ntu.edu.tw) (L.-N. Lee)

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