



ASPERGILLUS SCREENING DIFFICULTIES IN PULMONARY CYTOLOGY SAMPLES

HARABAJSKA S.¹, Markanović M.², Pešut A.², Vrabec Branica B.¹, Šimić V.¹, Mareković I.^{2,3}, Smojver-Ježek S.^{1,3}

¹ University Hospital Centre Zagreb, Zagreb, Croatia
Department of Pathology and Cytology, Division of Pulmonary Cytology Jordanovac

² University Hospital Centre Zagreb, Zagreb, Croatia
Department of Clinical and Molecular Microbiology

³ School of Medicine, Zagreb, Croatia
University of Zagreb

Objective: Aim: To present *Aspergillus* screening difficulties in pulmonary cytology samples in correlation with microbiological fungal culture results.

Methods: *Aspergillus* is the most common fungal organism followed by *Candida* in pulmonary cytology samples. The six year retrospective analysis included 27 cytology samples and corresponding cytological final reports of *Aspergillus* in Pulmonary Cytology Division. Microscopical findings in May Grünwald Giemsa slides (MGG) were uniform, septate, dichotomous, 45° branching (Y-shaped) hyphae consistent with *Aspergillus*. The cytological final reports were correlated with the microbiological fungal culture results.

Results: Among 27 cytology samples with *Aspergillus* resembling morphology were 14 washing aspirates, six bronchial brushings, four imprint materials, two sputum samples and one transbronchial fine needle aspiration. Inflammation elements, poorly preserved hyphae and necrosis were also present in cytology samples. Cytology samples and microbiological fungal cultures were simultaneously obtained in 16 (16/27) cases. Fungal culture reports were positive for *A. fumigatus*, *Aspergillus* spp, *A. flavus* or *A. niger* in 14 (14/16) and negative in two (2/16) cases. In three (3/14) cases of *Aspergillus* positive fungal cultures and two (2/2) cases of *Aspergillus*



negative fungal cultures *Candida* was also present. In six (6/27) cases with positive cytology samples subsequent fungal cultures were obtained. All six subsequent fungal cultures were negative for *Aspergillus* but one (1/6) of them had a prior history report of *Aspergillus* positive fungal culture and two (2/6) were positive for *Candida albicans*. In five cases cytological positive final reports were correlated with previous microbiological fungal culture results. Among previous fungal cultures, one (1/5) was positive for *Aspergillus*, one (1/5) for *Candida albicans* and three (3/5) were both negative.

Conclusion: Morphological identification of *Aspergillus* in pulmonary cytology samples can be challenging. There is no morphological difference in cytological samples to differentiate between colonization and invasive infection. To determine the significance of cytological final reports of *Aspergillus*, microbiological fungal culture, fungal biomarkers, clinical and radiographic findings should be considered.