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Short Communication

Cytopathology of Bronchoalveolar Lavage (BAL)

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ABSTRACT

Cytology is often used as a screening method to detect disease and determine if additional tests are needed. The examination of a breast lump is an example of screening. A needle aspirate of the lump submitted for cytology, in conjunction with a clinician's inspection and imaging tests, will reveal whether the breast cells are suspect for cancer or appear bland/ benign. If they appear to be suspicious, a core biopsy with a larger needle can be performed, allowing for a more accurate diagnosis before determining what type of surgery is needed (local removal of the lump or removal of the whole breast).

Keywords: Bronchoalveolar Lavage; Cytopathology; Cytotechnicians

INTRODUCTION

Individual cells are studied in cytology, and individual cells in disease are studied in cytopathology. A patient's sampled fluid/tissue is smeared onto a slide and stained (see techniques). The anatomical pathologist looks at the number of cells on the slide, what kinds of cells they are, how they are put together, and what the cell specifics are under the microscope (shape, size, nucleus etc.). This data is helpful in assessing whether a disease is present and, if so, what the most likely diagnosis [1].

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Light and electron microscopy was used to demonstrate cytological trends of Bronchoalveolar Lavage (BAL) in Pulmonary Alveolar Proteinosis (PAP) and Amiodarone Pulmonary Toxicity (APT) (EM). In both diseases, alveolar macrophages predominate in the differential cell count of BAL. PAP, on the other hand, has few macrophages and alveolar epithelial cells in an abundance of periodic acid-Schiff (PAS)-positive extracellular content. As a result, the BAL fluid has an opaque look. The cytology of APT, on the other hand, is distinguished by foamy alveolar macrophages with multiple lamellar bodies in their cytoplasm and clear BAL fluid [3].

ANALYSING CYTOLOGY SAMPLES

Exfoliative tests, such as cervical smears (Pap smears), faeces, and sputum, are the most common in cytology. To search for any abnormal cells, these are normally screened by qualified cytotechnicians or, in some laboratories, computerised automated systems. Suspicious samples are sent to a pathologist for further microscopic analysis and diagnosis. A pathologist will normally analyse the aspirated substance directly.

In some hospital, bronchoalveolar lavage fluid (BALF) is commonly obtained in patients who need intrusive ventilation to monitor for the presence of SARS-CoV-2. In general, the BALF is used for cytopathological analysis and has become an important tool in the diagnosis of acute and chronic lung diseases, as different cell patterns are indicative of a variety of diseases, particularly interstitial lung diseases. The cytokine response associated with the single-cell landscape of COVID-19 patients has not been compared to other infections, nor has the cytopathological pattern been used as an additional diagnostic tool in COVID-19 patients. As a result, we compared the cellular profiles of COVID-19 patients who underwent bronchoalveolar lavage (BAL) sampling to the best possible matching patient groups in which mono-infections with other pathogens such as the coronaviruses NL63, HKU1, OC43, and 229E, or Influenza virus types A and B, or *Haemophilus influenzae*, or *Pneumocystis jirovecii* has been detected [4-6].

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CONCLUSION

BALF cytological profiles were analysed. An increase in non-vital cells in the BALF could indicate SARS-CoV-2 infection, which is likely more aggressive than the other pathogens studied, particularly when compared to other Corona virus types. In addition, BALs infected with SARS-CoV-2 have higher CD8+ T-cell counts. The "common" corona viruses (HCoV-229E, HCoV-OC43, NL63, HKU1) have normal cell numbers with the exception of a lower number of CD4+ T-cells in BALs.

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