# Metoda staničnih blokova - pogled ispod razine morfologije

**Stemberger, Christophe; Matušan Ilijaš, Koviljka**

**Conference presentation / Izlaganje na skupu**

# CELL BLOCK – VIEW BELOW MORPHOLOGY LEVEL

Christophe Štemberger, Koviljka Matušan Ilijaš

Clinical Hospital Center Rijeka, Rijeka, Croatia; Department of Pathology and Clinical Cytology, Faculty of Medicine, University of Rijeka, Rijeka, Croatia

The cell block method is a procedure of preparing a cytological sample that can be analyzed using pathohistological methods. Historically, the first attempts to create a cell block date back to the 1880s. Throughout history, numerous methods of building a cell block have been developed that we have at our disposal even today. At the Department of Pathology and Clinical Cytology of Clinical Hospital Rijeka, the most used method to build cell blocks is agar method. It has been shown that we have achieved optimal results using this method. It should be noted that the classical cytological material is suitable for all types of morphological, immunocytochemical and molecular analyses; however, most of the present-day immunoassay tests for predictive markers are validated on histological material, which, although much more representative, currently limits the use of cytological material.

The cell block method is rarely used alone for itself, meaning that it is only used to evaluate morphology alone (*Figures 1 and 2*). Still, there are studies that have shown the diagnostic advantage of this method in cytology, such as tumor classification, owing to its ability to have insight into tumor architecture. Since cell blocks behave as small biopsies, they can be used for morphological studies of apoptosis evaluation on standard HE preparations or by using a TUNEL method that provides visualization of specific DNA fractures due to the apoptosis process. Immunohistochemistry can be used to analyze the presence of different proteins due to the dysregulation of the apoptosis process in cells encapsulated in a cell block, and their detection serves simultaneously for diagnostic purposes of distinguishing precancerous conditions and benign and malignant tumors. In general, studies evaluating the presence of various apoptosis markers in cell block material are extremely rare and have been appearing just recently.

The disadvantages of agar-method compared to classical cytological samples are less pronounced cellularity resulting from initially scarce cellular material or loss of material during processing, which reduces the representativeness of the sample itself to the observed process. Although the cell blocks generally

obtain enough cells of well-preserved morphology (*Figure 3*), sometimes the cells are damaged by thermal treatment alone. The main advantage of using cell blocks is the ability to analyze different immunohistochemical parameters in standardized and automated systems using tissue samples along with cell block samples for positive and negative control (*Figure 4*).

In conclusion, although the cell block method has been present over a century, a major shift in its application has occurred over the last 15 years due to the need for standardization of cytology diagnostics, as well as the assessment of prognostic and predictive tumor factors in patients where only cytological material is available.

***Keywords:*** apoptosis; cell block; prognosis; standardization; tumor.

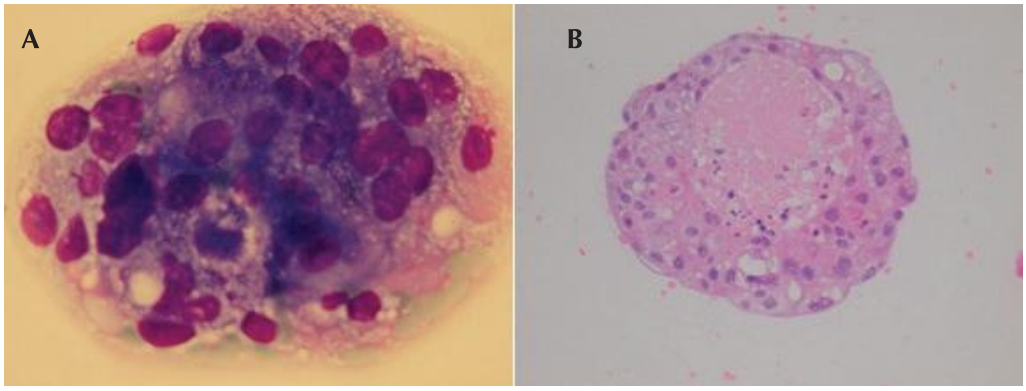


***Figure 1.*** Squamous cell carcinoma in pericardial effusion. A. Pericardial effusion sediment, MGG. B. Cell Block, HE.

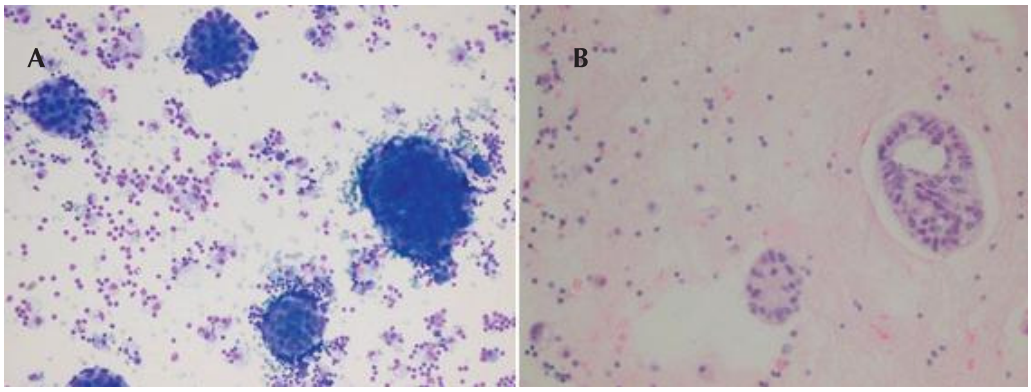


***Figure 2.*** Breast adenocarcinoma in pleural effusion. A. Pleural effusion sediment, MGG. B. Cell Block, HE

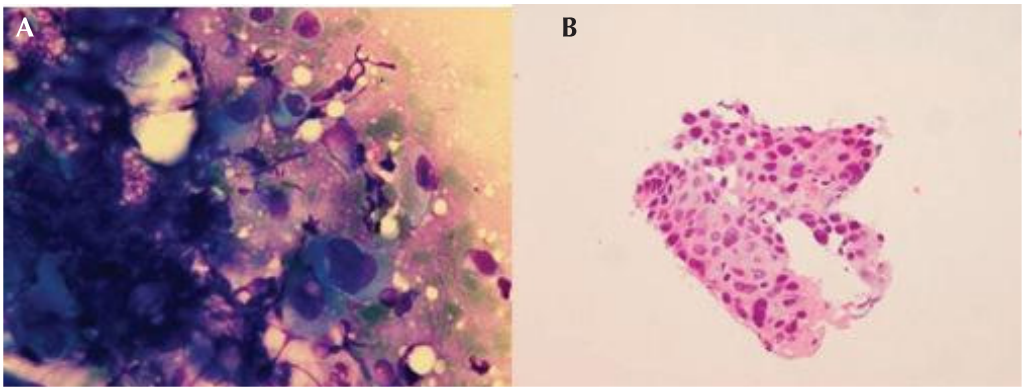


***Figure 3***. Squamous cell lung cancer. A. Bronchial brush smear, MGG. B. Cell Block, HE

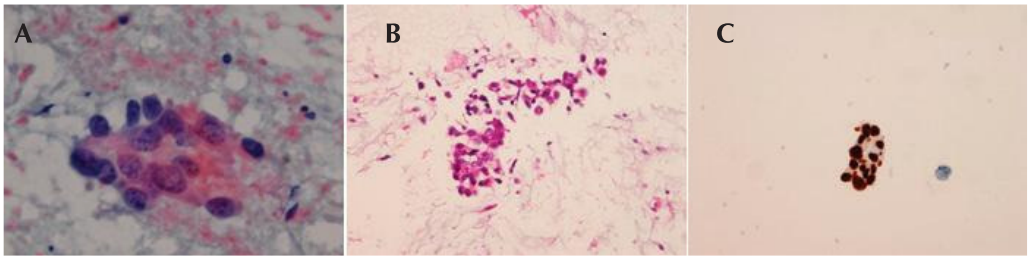


***Figure 4.*** Lung Adenocarcinoma. A. Bronchial brush smear, PAPA. B. Cell Block, HE. C. Cell Block, immunohistochemical analysis by TTF-1 marking.

## References

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