IMMUNOCYTOCHEMICAL DETERMINATION OF EpCAM PROTEIN EXPRESSION IN ASCITIC FLUID CELLS IN THE DIAGNOSIS OF OVARIAN CANCER USING THE SER1 TEST-SYSTEM

Abstract.
Taking into account the peculiarities of the clinical picture of ovarian cancer (OC), the first clinical signs of the disease are often associated with the formation of an effusion in the abdominal cavity. Morphological verification of the process is necessary to resolve the issue of the beginning of antitumor treatment of patients with OC. If it is impossible to perform a biopsy of the primary tumor focus and the presence of ascitic fluid, it is possible to use cytological examination. However, without additional techniques, cytological diagnosis is a subjective method that depends on the knowledge and experience of the morphologist. A modern method of complex assessment of effusion fluids to confirm or exclude a malignant tumor process is the method of cytological examination followed by immunocytochemical (ICH) reactions, and the use of test systems for ICH diagnostics focused on one patient will increase the availability of this type of study in the primary polyclinic.

The aim of the work is to evaluate the diagnostic informativeness of using the SER1 test system in the biochip format to determine the expression of EpCAM protein in ascitic fluid cells in the detection of OC.

Materials and methods.
70 samples of ascitic fluid obtained from patients with suspected rheumatoid infection who applied for planned or emergency medical care at the surgical hospital of the City Hospital No. 35, Nizhny Novgorod in 2021 were analyzed. All samples of ascitic fluid were studied cytologically. Using the SER1 test system (RUSCELL LLC, Russia), an ICC study was conducted, the results of which were visualized using a Zeiss Primo Star microscope (Carl Zeiss, Germany). The results of the study were classified according to the International cytological classification of effusion fluids (TIS RSFC).

Results.
According to the results of cytological examination, the following data were obtained: non-diagnostic material (ND) - 11.4%, absence of malignant cells (NFM) - 44.3%, presence of cells with atypia of unclear significance (AUS) - 10%, suspicion of the presence of a malignant process (SFM) - 20%, malignant nature of cells (MAL) - 14.3%. An additional ICH study of the expression of the Er5AM protein using the SER1 test system led to changes in diagnostic results within the following categories: NFM - 58.6%, AUS - 0%, SFM - 2.8%, MAL - 27.2%.

Figure 2. Results of cytological examination before using the SER-1 test system
![Diagram showing results of cytological examination before using the SER-1 test system]

Figure 3. Results of cytological examination using the SER-1 test system
![Diagram showing results of cytological examination using the SER-1 test system]

Figure 4. A) Cytological picture of ascitic fluid during traditional examination (conclusion - SFM); B) Cytological picture after additional application of the SER-1 test system (conclusion - MAL). Magnification x1000, color: A) according to Romanovsky, B) immunocytochemical examination (peroxidase label)

Conclusion.
The use of an integrated approach in the form of cytological and ICC studies of effusion fluids in the case of RS allows to increase the detectability of malignant tumor cells in cytological samples by 1.9 times by reducing the number of conclusions related to the categories of AUS and SFM. The use of the SER1 test system contributes to the introduction of ICH research into the practice of surgical hospitals that are not related to the profile of oncology, as well as contributes to the earlier diagnosis of ovarian cancer.

Example of using the SER-1 test system in cytological diagnostics of the nature of ascitic fluid (Clinical case):
Patient M., 70 years old. The diagnosis at admission is “Suspicious ascites”. Ultrasound examination of the abdominal cavity and pelvis - determines the level of free fluid in the central part of the abdominal cavity, the volume formation of the right ovary. Laparocentesis was performed with the intake of 600 ml of ascitic fluid. The resulting liquid was sent for cytological examination.

Keywords
ovarian cancer, immunocytochemical diagnostics, effusion fluids, SER1

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Contact information:
Irina Kruglova
irisha-kruglova@yandex.ru

1Kruglova I.A., 2Zinoviev S.V. 3Utkin O.V., 4Denisenko A.N 5Gamunov S.V.

1 State budgetary healthcare institution Nizhny Novgorod City Hospital No. 35
2 State budgetary healthcare institution Nizhny Novgorod Regional Clinical Oncological Dispensary
3 Federal Budgetary Institution of Science Nizhny Novgorod Research Institute of Epidemiology and Microbiology named after ak. I.N.Blokhina of Rospotrebnadzor