CYTOLOGIC EXAMINATION IN THE DIAGNOSIS OF ENDOMETRIAL CANCER

Kuryozova Gulasal Komuljonovna

Bukhara Medical Institute named after Abu Ali Ibn Sina.

Abstract. Combined cytological examination of endometrial material, which includes the combined use of traditional, liquid cytology and immunocytochemical research methods, correlates with the results of histological examination and leads to a decrease in the amount of uninformative material, compared with the use of traditional and liquid cytology separately, which increases the efficiency and accuracy of diagnosis in atypical hyperplasia and endometrioid adenocarcinoma.

Keywords: morphology, hyperplasia, endometrium, endometrioid adenocarcinoma.

Relevance. According to the WHO, 417,367 new cases of endometrial cancer (EC) were registered globally in 2020 (1,3,5,7,9). A steady increase in the incidence of EC has also been observed in Uzbekistan. In 2011, 20,821 new cases of EC diagnosed for the first time were identified, while in 2021, the number increased to 25,482 (2,4,6,8.10,12). Endometrial cancer (EC) accounts for more than 80% of EC cases (3,13). EC ranks first among malignant neoplasms of the female reproductive system in developed countries. Endometrioid adenocarcinoma constitutes the majority of EC cases. A morphological examination of uterine lining scrapings is a mandatory step in the diagnosis of endometrial neoplastic processes, determining treatment strategies and prognosis. Histological examination (HI) is currently considered the gold standard for morphological diagnosis. However, like any diagnostic method, it has a number of drawbacks (14,15). It should be noted that the use of this type of morphological examination is associated with inevitable anesthetic and surgical risks during separate diagnostic curettage (SDC), necessitating the search for new approaches to diagnosing endometrial pathologies aimed at reducing the invasiveness of the procedure, as well as the possibility of wider application of this method in outpatient settings.

Therefore, morphological examination remains highly relevant, aimed at systematically studying the structural disorganization of endometrioid uterine carcinoma at primary diagnosis. In this study, this disorganization refers to a combination of abnormalities in glandular architecture, spatial orientation of tumor glands, the nature of glandular-solid relationships, and epithelial-stromal relationships, reflecting the depth of the loss of normal tissue order in the endometrium. The

development and morphological substantiation of a holistic approach to the assessment of these changes, based on the integration of microscopic, immunohistochemical and, if necessary, ultrastructural features, seems to be a necessary step in refining the pathomorphological interpretation of endometrioid carcinoma of the uterus and increasing the reproducibility of the morphological conclusion in the conditions of routine diagnostic practice.

Objective of the study. Improving cytological diagnostics of atypical endometrial hyperplasia and endometrioid adenocarcinoma.

Materials and methods. The study included 136 patients who were examined and treated from 2022 to 2025 in the gynecology department of an oncology hospital in the Kharezm region. Based on clinical, ultrasound, and other indications, the patients underwent surgical treatment (hysteroscopy with RDV) or hysterectomy) followed by morphological examination of the endometrial material. The histological findings were divided into groups: no morphological pathology of the endometrium, n=31; endometrial hyperplasia or polyp, n=76; atypical endometrial hyperplasia, n=5; and endometrioid adenocarcinoma, n=24. An analysis of the histological findings with non-informative material was conducted. In some cases, it was impossible to assess the cellular composition of the specimens. This occurred for a number of reasons related to defects in the collection of biomaterial, such as the absence of endometrial cells, excessive blood content, or inflammatory elements. We assigned a cytological conclusion of "non-informative material" for both TC and LTC if fewer than five endometrial cell structures were detected. If the first cytological preparation for LTC was inadequate, a second preparation with a higher concentration of cellular material was prepared. If the second preparation was also unsatisfactory, a decision was made that the material was inadequate. Difficulties in assessing non-informative preparations prepared by the TC method were most often related to the abundance of blood elements. When using both cytological methods in combination, only 8 (5.9%) cases were assessed as inadequate. Histological examination of 31 patients revealed no morphological pathology of the endometrium. According to the TC results, two patients in this group had non-informative material; in 18 of 29 cases, the cytological diagnosis matched the histological diagnosis, representing a 62% percentage. According to the results of the life cycle analysis, four patients in this group had non-informative material, and in 20 of 26 cases, the cytological diagnosis coincided with the histological diagnosis (76.9%). In the cytological analysis, cellular elements appeared larger than in the life cycle analysis, caused by the cells "splaying" on the

slide during preparation. Focal cell accumulation was noted, and a crush phenomenon was pronounced. In the life cycle analysis, degenerative changes were less pronounced, and the nuclear structure was better preserved. Seventy-six patients were diagnosed with endometrial hyperplasia without atypia or polyps. Cytological examination of surgical specimens confirmed the cytological diagnosis with the histological diagnosis in 52 of 65 cases with informative TC specimens, representing 83.9%, and in 47 of 62 LCC specimens, representing 75.8%, respectively. TC specimens showed an increased number of glands and changes in their shape. Cell clusters were present, resembling dilated, branching glandular structures with nuclei overlapping in no more than three layers. Scattered lymphocyte infiltration was observed in the stroma, rich in fibroblast-like cells. Unlike TC specimens, background elements were virtually absent in LCC specimens, but enlarged prismatic cells were observed, arranged in sheets and cords. No significant differences were found in the expression of p53, p63, and PTEN markers between patients with adenocarcinoma and atypical endometrial hyperplasia and those with endometrioid hyperplasia without atypia ($p>0.05$). However, the observed changes in these parameters in the study groups may confirm the involvement of genetic factors in the pathogenesis of endometrial hyperplasia and open new avenues for the search for diagnostic markers for this pathology. Based on the obtained results, the CEA marker can be recommended as an additional diagnostic method for atypical hyperplasia and endometrioid adenocarcinoma of the endometrium. No significant differences were found in the expression of p53, p63, and PTEN markers between patients with adenocarcinoma and atypical endometrial hyperplasia and those with endometrioid hyperplasia without atypia ($p>0.05$).

Conclusions. When examining endometrial material in patients with atypical endometrial hyperplasia and adenocarcinoma, the findings of traditional and liquid-based cytology coincided with the histological findings in 100% of cases. Inadequate material was obtained in 11.8% of patients using liquid-based cytology, compared to 8.1% using traditional cytology. When using both cytological methods together, the incidence of inadequate material decreased to 5.9%, demonstrating the advantage of combining traditional and liquid-based cytology.

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