APPLICATION OF PAX1 AND JAM3 GENE METHYLATION DETECTION AS A TRIAGE TOOL FOR CERVICAL CANCER SCREENING IN WOMEN: ANALYSIS OF A SINGLE-CENTER PROSPECTIVE STUDY IN CHINA


Introduction/Background Currently, cervical cytology and HPV DNA testing are the most widely employed methods. However, these screening approaches possess inherent advantages and limitations that contribute to overdiagnosis or oversee of colposcopy, as over 30% of cases with CIN2, CIN3, and invasive cancers remain indistinguishable through cytology alone. The study aimed to evaluate the performance of PAX1-JAM3 gene methylation detection in cervical cancer patients.

Methodology A total of 549 participants were enrolled in the study. Cervical brush sampling was performed on all participants to collect cervical exfoliated cells. These cells were then subjected to analysis using liquid-based cytology, HPV testing, and PAX1-JAM3 gene methylation detection (CISPOLY, China). The results obtained were compared with pathological findings.

Results A total of 549 participants were included in this study, encompassing various histological diagnoses across different age groups, including benign abnormalities (n=31), benign/CIN1 (n=321), CIN2 (n=44), CIN3 (n=36), cervical cancer (n=26), postoperative cases (n=28), and other malignant tumors (n=20). When compared to HPV testing (sensitivity: 94.68%, specificity: 9.95%) and liquid-based cytology (LBC) (sensitivity: 89.62%, specificity: 45.5%), dual-gene methylation detection of PAX1-JAM3 exhibited higher sensitivity (92.45%) and specificity (95.16%) for detecting CIN2 across all age groups. For CIN3, the methylation performance demonstrated a sensitivity of 98.39% and a specificity of 86.78%. In the population aged 50 years or older, dual-gene methylation detection exhibited a sensitivity of 100% and a specificity of 93.98% for detecting CIN2, surpassing the lower sensitivity (89.47%) and specificity (14.61%) of HPV testing and LBC (sensitivity: 91.3%, specificity: 54.17%). The misdiagnosis rates for cancer were 0% for PAX1-JAM3 dual-gene methylation detection, 5% for HPV testing, and 7% for LBC among all patients.

Conclusion Our findings demonstrate that gene methylation detection, when compared to HPV testing and cytology, shows promise in cervical cancer screening, particularly for patients with CIN2 or lower. It has the potential to serve as an independent biomarker for accurate cervical cancer diagnosis and triage among the Chinese population.

A NOMOGRAM COMBINING MRI AND SERUM INFLAMMATORY BIOMARKERS PREDICTS POSTOPERATIVE VAGINAL INVASION IN IB-IIA STAGE CERVICAL CANCER——A SINGLE INSTITUTIONAL RETROSPECTIVE STUDY OF 580 PATIENTS

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Introduction/Background In cervical cancer (CC), pelvic examination has long been considered the standard method for clinical stage classification. However, it may easily misjudge and bias, including the occult vaginal invasion (VI). Insufficient preoperative assessment of VI often leads to vaginal lesions residues or inferior tumor-free distance during the operation. Recent studies showed MRI has the potential to detect occult tumors. At the same time, serum inflammatory biomarkers have been demonstrated to correlate with the tumor migration in various tumors such as lung cancer, esophageal cancer, and gastric cancer. Combining MRI and inflammatory biomarkers is meaningful to predict occult VI in CC patients with surgical procedures.

Methodology Our study was designed one-center and retrospectively. 580 CC patients with FIGO2018 stages IB-IIA2 were enrolled between January 2013 and December 2021. All patients underwent preoperative MRI and radical hysterectomy. The demographic, bimanual examination, MRI, and laboratory data were analyzed based on logistic regression analysis. Then the nomogram was developed to predict the probability occurrence of postoperative VI.

Results All patients were randomly divided into training set (n = 290) and validating set (n = 290). Parameters including MRI-derived vaginal invasion (P < 0.018), clinical vaginal invasion (P < 0.038), systemic inflammatory response index (SIRI) (P < 0.001), and platelet/albumin ratio (PAR) (P < 0.013) were the independent diagnostic factor for