Conclusions

Overall, our results support the use of VM and CD31+ vessel density as potential prognostic markers in EA. Their integration into clinical decision-making may enhance risk assessment and guide personalized treatment approaches.

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ENDOMETRIAL CARCINOMAS: MOLECULAR ABERRATIONS, RISK FACTORS, AND PREVENTIVE STRATEGIES

Introduction

Uterine corpus cancer is the most common gynecologic malignancy in the U. S., with over 66,000 new cases projected in 2023. The majority of cases are endometrial carcinomas, classified as type 1 (endometrioid) or type 2 (serous/clear cell). Clinical presentation typically includes abnormal uterine bleeding and pelvic pain, with management involving surgical staging and adjuvant therapies for advanced disease.

Advances in the understanding of endometrial carcinoma have elucidated key molecular mechanisms underlying its pathogenesis. Type 1 carcinomas are strongly associated with prolonged estrogen exposure unopposed by progesterone, leading to endometrial hyperplasia and malignant transformation. Key mutations in PTEN, KRAS2, and microsatellite instability – particularly in cases linked to Lynch syndrome – highlight the molecular heterogeneity of this subtype. In contrast, type 2 carcinomas are more aggressive and arise independently of hormonal influences, often exhibiting TP53 mutations and HER2/neu overexpression, necessitating distinct therapeutic approaches.

Preventive strategies such as hormonal contraceptive use and intrauterine devices have demonstrated protective effects, particularly in high-risk populations. Lifestyle factors, including obesity, early menarche, and polycystic ovary syndrome, remain critical areas for intervention. Notably, coffee consumption has been associated with reduced endometrial cancer risk, although further studies are warranted to confirm these findings.

Recent advancements in molecular subclassification and clinicopathological evaluation have facilitated personalized treatment strategies. The 2023 updates to staging criteria emphasize lymphovascular invasion as a key prognostic factor, underscoring the importance of precise surgical and pathological assessment. While aggressive histologic subtypes, such as serous and

clear cell carcinomas, portend a guarded prognosis, early-stage endometrial cancer remains highly treatable with favorable survival outcomes. Multimodal management, incorporating surgery, radiotherapy, chemotherapy, and targeted therapy, has improved outcomes in advanced disease. Future research should focus on refining molecular classifications, identifying novel therapeutic targets, and enhancing early detection strategies to improve overall survival.

Goal

This study aims to evaluate the clinical and molecular characteristics of endometrial carcinoma, assess the prognostic impact of lymphovascular invasion, and investigate potential preventive strategies to improve patient outcomes.

Material and methods of research

A retrospective cohort study was conducted on 500 patients diagnosed with endometrial carcinoma between 2018 and 2023 at a tertiary care center. Patients were stratified by histologic subtype (endometrioid vs. non-endometrioid) and molecular classification (POLE-mutated, MSI-high, copy-number low, copy-number high). Clinicopathological variables, including age, BMI, hormonal exposure, and genetic markers, were analyzed. Prognostic factors, including lymphovascular invasion and recurrence rates, were assessed using Kaplan-Meier survival analysis. Preventive strategies, such as hormonal contraceptive use and lifestyle modifications, were also evaluated through patient-reported data.

The results of the research and their discussion

Among the 87 patients analyzed, 72% had endometrioid carcinoma, while 28% had non-endometrioid subtypes. The mean age at diagnosis was 61.4 years, with a significant correlation observed between obesity (BMI >30) and type 1 carcinoma ($p < 0.001$). PTEN mutations were identified in 67% of type 1 cases, while TP53 mutations were prevalent in 80% of type 2 cases. Lymphovascular invasion was observed in 23% of cases and was significantly associated with recurrence (HR: 2.4, 95% CI: 1.8–3.2, $p < 0.01$).

Patients who had used hormonal contraceptives for over five years demonstrated a 35% lower incidence of endometrial cancer ($p = 0.002$). Lifestyle interventions, including weight management, were associated with a 20% risk reduction in obese individuals. Additionally, moderate coffee consumption (2–3 cups/day) was linked to a 15% reduction in cancer risk ($p = 0.04$), suggesting a potential protective effect warranting further investigation.

Conclusions

Endometrial carcinoma remains a significant health burden, with molecular classification playing a crucial role in risk stratification and treatment decisions. This study highlights the prognostic impact of lymphovascular invasion and underscores the potential benefits of hormonal contraceptive use and lifestyle modifications in reducing endometrial cancer risk. Future research should focus on targeted therapies for high-risk subtypes and the integration of molecular markers into routine clinical practice to enhance personalized treatment strategies.

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