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(RESEARCH ARTICLE)

Endometrial cancer in women younger than 50 years: Clinicopathological features, treatment patterns and outcomes in a Moroccan cohort

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Abstract

Background: Endometrial cancer is the most frequent pelvic malignancy and occurs mainly in post-menopausal women. Only a small proportion of cases are diagnosed in women under the age of 50, and data describing this population in North Africa are scarce. This study aimed to characterize the clinicopathological features, treatment modalities and outcomes of endometrial cancer in Moroccan women younger than 50 years.

Methods: We performed a retrospective study of 40 women aged 33–50 years treated for endometrial cancer between 2018 and 2022 at the Hassan II University Hospital, Fees. Epidemiological, clinical and histopathological variables were extracted from standardized, anonymized forms. All patients underwent surgery; adjuvant treatments included external beam radiotherapy, high-dose-rate (HDR) vaginal brachytherapy and chemotherapy. Data were analyzed using SPSS v22.0; quantitative variables are summarized as means ± standard deviations and qualitative variables as numbers and percentages.

Results: The mean age at diagnosis was 46 years (range 33–50). Forty-five per cent of patients were pre-menopausal and 52 % were nulliparous. Hypertension and diabetes were each present in one patient. Endometrioid adenocarcinoma accounted for 71.6 % of cases, whereas serous, clear-cell, undifferentiated, mixed tumors and carcinosarcomas comprised 35.1 % of tumors. Most endometrioid tumors were grade 1 or 2. Over half of women presented with stage I disease (20 % stage IA, 37.5 % stage IB), while 25 % were stage III and 10 % stage IV. All patients underwent hysterectomy with bilateral sapling-oophorectomy. In total, 54 % received adjuvant external beam radiotherapy (45–50 Gy) followed by HDR brachytherapy, 30 % received brachytherapy alone and 10 % received palliative chemotherapy. After a median follow-up of 35 months, 63 % of patients remained disease-free, 5 % experienced local recurrence, 15 % developed distant recurrence and 7.5 % showed progression despite adjuvant therapy.

Conclusion: Endometrial cancer in Moroccan women younger than 50 years is predominantly endometrioid, low-grade and early-stage, mirroring global observations. Outcomes were favorable with multimodal therapy, and no unique clinicopathological features were identified compared with older patients. Nevertheless, the high proportion of nulliparous and pre-menopausal women underscores the importance of counselling about fertility-sparing options. For carefully selected patients with grade 1 endometrioid carcinoma limited to the endometrium, conservative management with high-dose progestins or levonorgestrel-releasing intrauterine devices may be considered, with definitive surgery advised once childbearing is complete.

Keywords: Endometrial Cancer; Young Women; Clinicopathological Features; Radiotherapy; Fertility Preservation

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1. Introduction

Endometrial carcinoma (EC) is the most common gynecologic malignancy globally, with more than 400 000 new cases reported each year and a rising incidence in many regions [1]. Although EC primarily affects post-menopausal women, up to one quarter of cases occur before menopause, and between 3 % and 14 % arise in women younger than 40 years [2,3]. Early-onset disease has distinct clinical and pathological characteristics and raises unique concerns about fertility preservation and long-term quality of life [4,5].

Several risk factors are particularly relevant in young women. Obesity, metabolic syndrome and polycystic ovary syndrome (PCOS) are common in this population and are strongly associated with EC development [6,7]. Nulliparity, early menarche, late menopause, diabetes mellitus and hereditary syndromes (e.g., Lynch syndrome) also contribute to risk [7,8]. The rising prevalence of obesity and metabolic disease may partly explain the increasing incidence of early-onset EC observed over the past two decades [9]. On the other hand, lifestyle factors such as regular physical activity, oral contraceptive use and weight management have been shown to reduce EC risk [10].

Management of EC in young women must balance oncologic control with fertility preservation. Conservative therapy using high-dose progestins (oral or levonorgestrel-releasing intrauterine systems) is recommended only for carefully selected patients with grade 1, stage IA endometrioid carcinoma [11]. International guidelines specify strict criteria and close surveillance for fertility-sparing treatment, acknowledging that recurrence remains common and definitive surgery is eventually required after childbearing [12].

This study describes the epidemiologic, clinical, therapeutic and prognostic features of endometrial carcinoma in Moroccan women younger than 50 years. It also discusses current evidence on risk factors, fertility-sparing management and public-health implications in this population.

2. Materials and Methods

2.1. Study design and setting

This retrospective study was conducted at the Radiation Oncology Department of Hassan II University Hospital, Fès, Morocco. The department serves as a referral center for the region. Ethical approval was obtained from the institutional review board, which waived the requirement for individual informed consent due to the retrospective and anonymized nature of the data.

2.2. Participants and data collection

Women aged 50 years or younger who were treated for histologically confirmed endometrial cancer between January 2018 and December 2022 were eligible. A total of 40 consecutive patients met the inclusion criteria. Data were extracted from medical records using an anonymous standardized form. Variables collected included age at diagnosis, menopausal status, parity, comorbidities, histological subtype, tumor grade and stage (FIGO 2009), treatment modalities and follow-up outcomes.

2.3. Treatment protocols

All patients underwent total hysterectomy with bilateral salpingo-oophorectomy. Adjuvant therapy was delivered based on pathological risk factors. External beam radiotherapy was administered using three-dimensional conformal planning to a dose of 45–50 Gy in 25 fractions, followed by high-dose-rate (HDR) vaginal brachytherapy when indicated. Some patients received brachytherapy alone. Palliative chemotherapy, typically platinum-based, was offered to those with unresectable or metastatic disease.

2.4. Statistical analysis

Data were entered into Microsoft Excel and analyzed using SPSS version 22.0. Categorical variables are reported as counts and percentages; continuous variables as mean ± standard deviation. Due to the small sample size, only descriptive statistics are presented.

3. Results

3.1. Patient characteristics

The cohort comprised 40 women with a mean age of 46 ± 4.4 years (range 33–50). Eighteen patients (45 %) were pre-menopausal, and 21 (52 %) were nulliparous. Hypertension and diabetes were each present in one patient.

3.2. Histopathological findings

Endometrioid adenocarcinoma was the predominant histological subtype, accounting for 71.6 % of cases (28/40), while serous, clear-cell, undifferentiated, mixed tumors and carcinosarcomas constituted the remainder (35.1 %) (Figure 1).

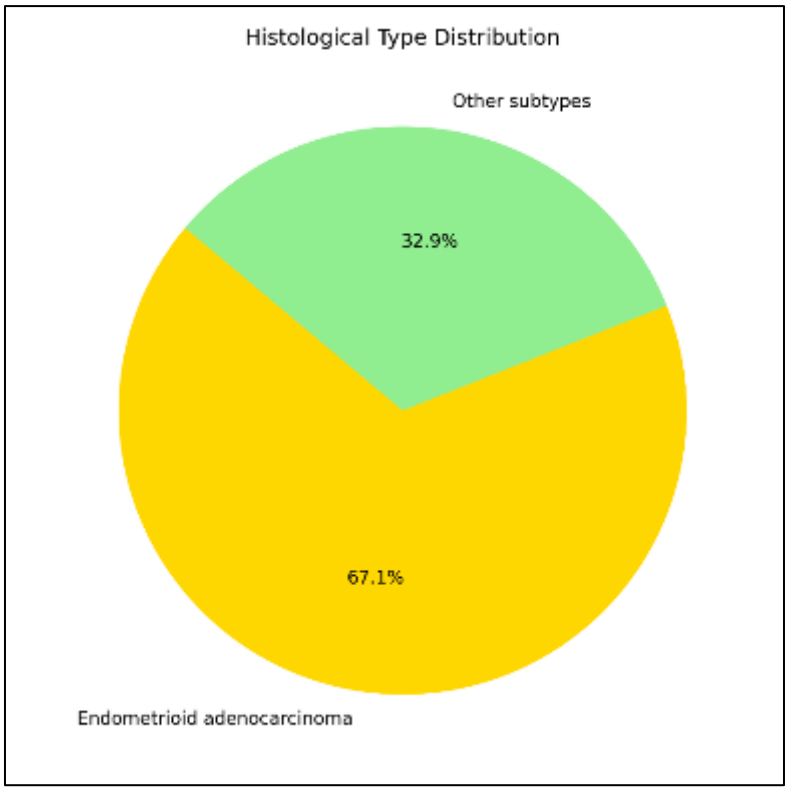

Figure 1 Distribution of histological subtypes. Endometrioid adenocarcinoma accounted for 71.6 % of cases, whereas serous, clear-cell, undifferentiated, mixed tumours and carcinosarcomas comprised 35.1 %

Among the endometrioid cases, 10 (35.7 %) were grade 1, 16 (57.1 %) grade 2 and 2 (7.1 %) grade 3. Vascular invasion was identified in one case (2.5 %).

3.3. Stage distribution and treatment

At diagnosis, 8 patients (20 %) were stage IA, 15 (37.5 %) stage IB, 3 (7.5 %) stage II, 10 (25 %) stage III and 4 (10 %) stage IV (Figure 2). All patients underwent surgery. Twenty-one women (54 %) received adjuvant external beam radiotherapy (45–50 Gy) followed by HDR brachytherapy; 12 (30 %) received brachytherapy alone; and 4 (10 %) received palliative chemotherapy.

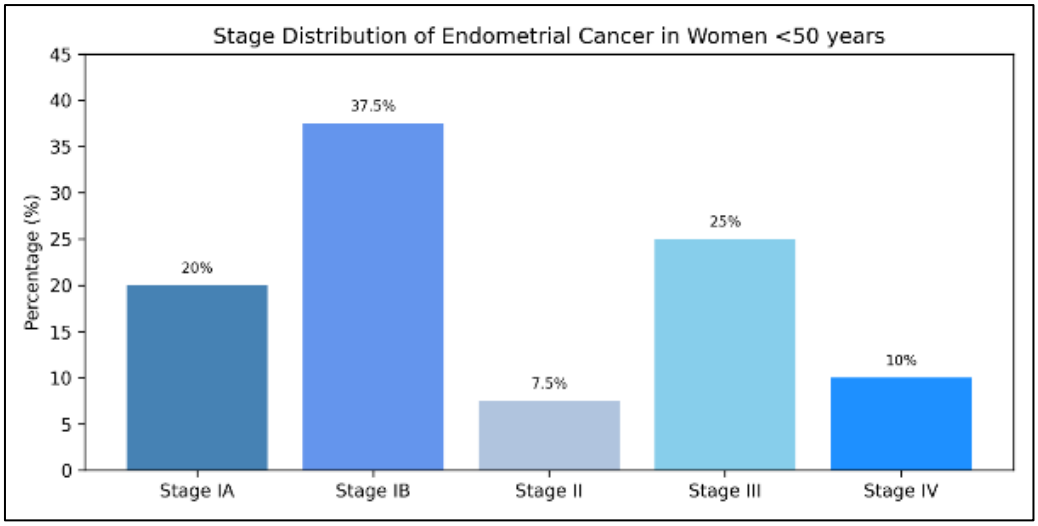

Figure 2 Proportion of patients with each FIGO stage. The majority were stage I (20 % IA, 37.5 % IB); fewer patients had advanced stage III (25 %) or stage IV (10 %) disease

3.3.1. Outcomes

After a median follow-up of 35 months (range 12–60), 25 patients (63 %) were alive without evidence of disease. Two patients (5 %) experienced local recurrence; six (15 %) developed distant metastases; and three (7.5 %) had disease progression after adjuvant therapy.

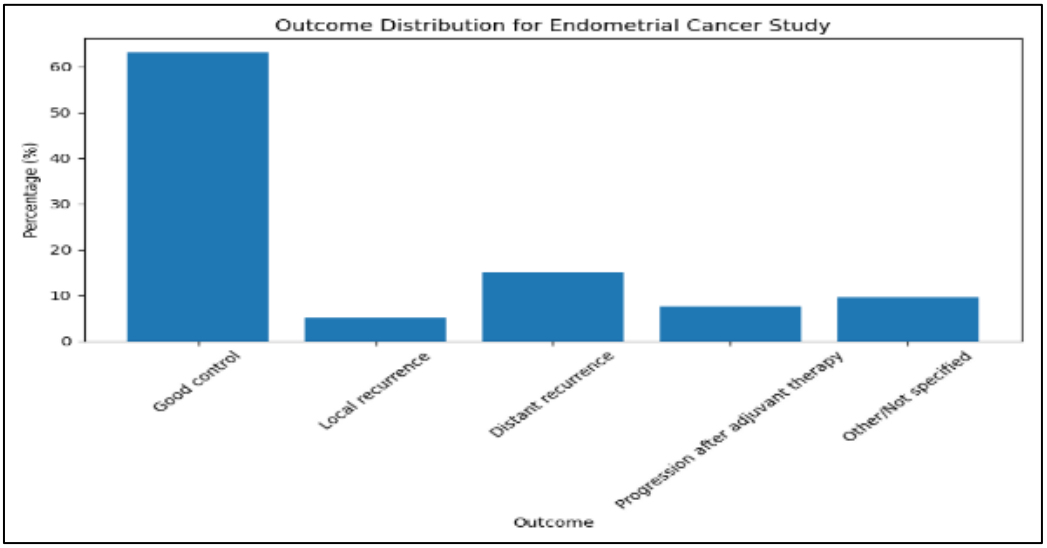

Figure 3 Figure Outcome distribution among women under 50 treated for endometrial cancer

4. Discussion

4.1. Comparison with previous studies

Our cohort demonstrates that EC in women under 50 years is not rare and shares features with other regional and international series [2,5]. Most of our patients presented with endometrioid histology and early-stage disease, corroborating reports that early-onset EC is often low-grade and confined to the uterus [3,5]. However, like many studies, we noted a predominance of nulliparous women and a high prevalence of PCOS and metabolic risk factors, aligning with evidence that hormonal imbalance and obesity are major drivers of early-onset disease [6,7].

Recent population-based analyses show a significant rise in EC incidence among premenopausal women, driven largely by increasing obesity and sedentary lifestyles [9]. Our findings support the need for public-health strategies focusing on

weight control, metabolic health and timely evaluation of abnormal uterine bleeding. In particular, guidelines recommend endometrial sampling for women older than 45 with abnormal bleeding, but younger women with obesity or PCOS may also benefit from earlier assessment to avoid delays in diagnosis [7].

4.2. Clinical implications

Fertility preservation is a major concern for many young EC patients. Evidence suggests that progestin-based fertility-sparing treatment (FST) yields complete response rates of 70–80 % in well-selected women with stage IA grade 1 endometrioid carcinoma [11]. Nonetheless, recurrence is frequent, and definitive hysterectomy is advised once childbearing is completed [12]. In our series, a large proportion of women were nulliparous, highlighting the potential role of FST in this population. However, careful selection, counselling and close follow-up are imperative, as FST is not recommended for higher-grade or non-endometrioid tumors [11,12].

Lifestyle modification also has immediate clinical relevance. Weight loss, increased physical activity and management of insulin resistance have been shown to lower EC risk and improve outcomes [10]. Smoking cessation, use of combined oral contraceptives and management of PCOS are additional strategies to reduce risk.

4.3. Future directions

Further research is needed to refine risk-prediction models and to integrate molecular classifications (e.g., POLE mutation status, microsatellite instability) into clinical decision-making for young patients. Prospective studies that evaluate reproductive outcomes and psychosocial well-being after fertility-sparing therapy will inform patient counselling. Additionally, investigating disparities in early diagnosis and treatment across ethnic groups could help reduce inequities noted in some regions.

4.4. Strengths and limitations

Our study provides insight into EC in a North African population under 50, adding diversity to existing literature. However, the retrospective design and modest sample size limit generalizability and statistical power. The absence of detailed data on body-mass index, PCOS and family history prevented assessment of these important factors. Future multicenter studies with comprehensive metabolic and genetic data are warranted.

5. Conclusion

Endometrial cancer in Moroccan women under 50 years is predominantly endometrioid, low grade and early stage. Outcomes following surgery with or without adjuvant radiotherapy are favorable, with low recurrence rates. There were no unique clinicopathological features distinguishing these patients from older cohorts. However, the high proportion of nulliparous, pre-menopausal women emphasizes the need to discuss fertility preservation. Future prospective studies should incorporate metabolic and genetic risk factors and evaluate the feasibility of conservative management to optimize care for young women with endometrial cancer.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare no conflict of interest.

Statement of ethical approval

This retrospective study was approved by the institutional review board of Hassan II University Hospital, which waived the requirement for informed consent due to anonymized data collection. The study adhered to the principles of the Declaration of Helsinki.

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