

ORIGINAL RESEARCH

Gynecologic Oncology

Treatment outcomes of corpus uteri cancer at Moi Teaching and Referral Hospital, Kenya: A 10-year retrospective study

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Abstract

Background: Corpus uteri cancer is the sixth most common cancer worldwide, with 417 000 new cases diagnosed annually. It has a wide variation in incidence, with the highest and lowest rates reported in North America and Africa, respectively.

Objective: To describe the clinicopathological and treatment outcomes of corpus uteri cancer at Moi Teaching and Referral Hospital (MTRH) in Eldoret, Kenya.

Methods: A retrospective descriptive review of the database of all corpus uteri cancer patients seen at MTRH between 2011 and 2021 was conducted. Data were entered and analyzed using the Statistical Package for Social Sciences (SPSS), version 24. Descriptive and inferential statistics were performed, and the results were presented in tables and figures. Statistical significance was set at $p < 0.05$.

Results: 95 files were included in this study. The mean age of the participants was 62 years. Most participants, 88 (92.6%) and 61 (64.3%) were postmenopausal and multiparous, respectively.

Endometrial cancer and uterine sarcoma accounted for 72% and 23% of all cases, respectively. Endometrioid and carcinosarcoma were the most common histological types in each group. Recurrence mostly occurred within the first two years after treatment and was mainly locoregional in 75% of cases. Adjuvant treatment included chemotherapy and radiotherapy. There was a higher survival rate among patients undergoing adjuvant chemotherapy than those who underwent multimodal treatment (p -value=0.0001). There was no significant difference in survival between patients with endometrial cancer and those with sarcoma (p -value=0.089).

Conclusion: Corpus uteri cancer is common in postmenopausal and multiparous women presenting at advanced stages. Adjuvant therapy did not confer any additional survival benefit, particularly in patients who received multimodal treatment.

Keywords: adjuvant therapy, corpus uteri cancer, endometrial carcinoma, histology

Introduction

Corpus uteri cancer is the sixth most common cancer worldwide and the fourth most common cancer among women (1,2). The average annual age-adjusted incidence of corpus uteri cancer between 2010 and 2014 was 25.7 in 100 000 women. Approximately 417 000 and 97 000 diagnosed cases and mortality were reported in 2020 (1,3). There is a wide variation in the incidence rates of corpus uteri cancer, with the highest and lowest rates of 21.1 and <5 in 100 000 cases reported in North America and Africa, respectively (3). A global age-specific analysis of corpus uteri cancer found countries in Asia, America, and Oceania to have a larger variation of incidence than those in Europe, with the highest incidence occurring between 55 and 74 years (4). In Africa, an Egyptian study reported an overall crude incidence of corpus uteri cancer of 2.8 in 100 000 women, whereas a Nigerian study found that endometrial cancer accounted for 4–11% of all genital tract malignancies (5,6).

Uterine cancers are classified as endometrial carcinoma and uterine sarcoma. Endometrial carcinoma is the most common, contributing to approximately 95% of all cases, followed by sarcomas and heterogeneous tumors at 4% and 1%, respectively (3). Endometrioid carcinoma is the most common endometrial cancer reported in 75–80% of all cases (7). High rates of locoregional and distance recurrences have been reported for high-risk endometrioid adenocarcinoma and nonendometrioid histological types (8). Uterine sarcomas account for 3–7% of uterine cancers and are classified into carcinosarcomas, leiomyosarcomas, endometrial stromal sarcomas, and undifferentiated sarcomas comprised of 50%, 30%, 15%, and 5%, respectively. Because of nonspecific symptoms, the preoperative diagnosis of uterine sarcomas remains challenging (9). Defining the optimal postoperative adjuvant treatment for endometrial cancer and uterine sarcoma is also challenging. Risk stratification and molecular classification aid in defining adjuvant therapy for endometrial cancer, especially in high-income countries (10). Surgery is the mainstay mode of treatment for both endometrial carcinomas and uterine sarcomas. However, the prognosis of uterine sarcoma remains poor, with a 5-year survival of 50–70% stage I disease and 0–20% for higher stages. Adjuvant treatment with either radiation or chemotherapy does not confer a survival benefit.

Cancer of the corpus uteri appears to be a more critical cause of emerging new cases in Africa. The rise in new cases is attributed to increased noncommunicable diseases, increased use of unopposed estrogen, adoption of the Western lifestyle, physical inactivity, tamoxifen use, and improved diagnostic services (1,2,11,12). The increasing population of perimenopausal and menopausal women with low parity may also be another cause (11). Most patients present with postmenopausal bleeding and foul-smelling vaginal

discharge (13). The standard diagnostic evaluation for endometrial cancer includes pelvic ultrasonography, office endometrial biopsy, and dilatation and curettage with or without hysteroscopy (14). Approximately 70% of endometrial cancer cases are localized, which results in 95% 5-year survival (15). There is a paucity of data on uterine cancer in Kenya. To better understand the treatment outcomes of corpus uteri cancer in Kenya, this study aimed to review patient records to describe the sociodemographic characteristics, histopathological types, stage at presentation, prognostic factors, and survival trends among patients with corpus uteri cancer at the Moi Teaching and Referral Hospital (MTRH) in Eldoret, Kenya.

Methods

Study design

This was a retrospective descriptive study that reviewed the medical records of all uterine corpus cancer patients who presented at MTRH between 2011 and 2021.

Study setting

The study was conducted at the Outpatient Gynecological Oncology unit at the Chandaria Cancer and Chronic Diseases Center in MTRH. MTRH is a public referral and teaching hospital located in Eldoret, Western Kenya. It offers specialized gynecological oncology services that began in 2010 on a small scale and consequently expanded following the introduction of the gynecological oncology fellowship at Moi University in 2015. The introduction of radiotherapy services at the facility in 2021 ensured the provision of comprehensive oncology services.

Source of data

The medical records of patients diagnosed with uterine corpus cancer were identified. Diagnostic, therapeutic management, recurrence, and survival data were assessed. At registration, the patients and kins addresses and telephone contacts are obtained to help in contact tracing. For this study, follow-up calls were coordinated by the clinical research assistant who determined some patients to be deceased and updated their records accordingly.

Data collection and management

Data were collected using a standardized data extraction form. Extracted information included the entry date, age, hospital number coded into a unique identifier, presenting complaints, histological diagnosis, clinical stage at presentation, treatment and outcome, survival, and follow-up.

Data analysis

The extracted data were entered and analyzed using the Statistical Package for Social Sciences (SPSS), version 24 (IBM, Armonk, NY, USA). The sociodemographic characteristics of the patients were analyzed descriptively and presented as mean, standard deviation, frequencies, and percentages. Bivariate analysis was performed using Chi-square statistics to assess the association between independent and dependent variables. Logistic regression was used to check for the predictors of cancer of the corpus uteri. Statistical significance was set at $p < 0.05$.

Ethical consideration

Ethical approval to conduct this study was granted by the Research and Ethical Committee of Moi University and Moi Teaching and Referral Hospital (registration number IREC/2020/162). Informed consent was not required because there was no direct contact with the patients.

Results

Sociodemographic characteristics

For the study period, 100 medical records of patients with cancer of the corpus uteri were retrieved; 5 records did not meet the inclusion criteria and were excluded from the final analysis. The mean age of participants was 62 years (range 38-84). The mean age of patients at menarche was 14.99 years, whereas the mean age at menopause was 46.88 years. Most, 88 (92.6%) and 59 (62.1%) patients were postmenopausal and married, respectively. Approximately half, 53 (56.8%) and 51 (53.7%) had attained above secondary education and practiced farming or were in business, respectively (Table 1).

Table 1: Sociodemographic characteristics of corpus uteri cancer at the Moi Teaching and Referral Hospital

Variable	Frequency (N=95)	Percent (%)
Age (mean, range)	61.79 (38-84)	
Age at Menarche (Mean)	14.98	
Age at Menopause (Mean)	46.88	
Age	4	
<40	8	4.2
40-49	28	8.4
50-59	34	29.5
60-69	21	35.8
>70	4	22.1
Postmenopausal	88	92.6
Marital status		
Married	59	62.1
Single	12	12.6
Widowed/separated	24	25.3
Education		
Primary	34	35.8
Secondary	42	44.2
Tertiary	11	12.6
Missing	7	7.4
Occupation		
Unemployed	44	46.3
Business/Farming	51	53.7

Residence		
Uasin Gishu	26	27.4
Other counties	69	72.6

Clinical and diagnostic characteristics

Most patients 61 (64.3%), 88 (92.6%), and 93 (98%) were multiparous, HIV-negative, and nonsmokers, respectively. Endometrial biopsy, pelvic scan, and computed tomography were performed in 51 (53.7%), 36 (37.9%), and 45 (47.4%) patients, respectively. Endometrial carcinoma and uterine sarcoma accounted for 72 (75.79%) and 23 (24.21%) cases, respectively. Endometrioid and carcinosarcoma were the most common endometrial carcinoma and sarcoma types, with 46 (63.8%) and 10 (43.4%) cases, respectively. Most, 29 (57) endometrial carcinomas and 7 (64%) sarcomas were diagnosed at stages 3 and 4 (Table 2).

Table 2: Clinical and diagnostic characteristics of corpus uteri cancer patients at the Moi Teaching and Referral Hospital

Variable	Frequency (n)	Percent (%)
Parity		
0	2	2.1
1-4	30	31.5
>5	61	64.3
Missing	2	2.1
HIV Status		
Positive	2	2.1
Negative	88	92.6
Missing	5	5.3
Basal metabolic index		
Underweight	4	4.2
Normal	47	49.5
Overweight	26	27.4
Obese	18	18.9
Chronic illnesses		
Diabetes	3	3.2
Hypertension	22	23.2
None	70	73.7
Smoking history		
Yes	2	2
No	93	98
Endometrial biopsy		
Yes	51	53.7
No	44	46.3
Pelvic scan		
Yes	36	37.9
No	59	62.1
Computed tomography		
Yes	45	47.4
No	50	52.6
Endometrial carcinoma		75.79
Endometrioid	46	63.8
Serous	19	26.3
Not indicated	2	2.7
Other	5	7.2
Stage		
Stage 1	9	17.6
Stage 2	13	25.4
Stage 3	19	37.2
Stage 4	10	19.8
Endometrial sarcoma		
Carcinosarcoma	10	43.4
Leiomyosarcoma	8	34.7
Undifferentiated	4	17.4
Other	1	4.5

Stage		
Stage 1	4	36
Stage 2	0	0
Stage 3	4	36
Stage 4	3	28

Bivariate analysis

A bivariate analysis to determine the association between patient clinical characteristics and cancer type found a significant relationship between tumor size and cancer type (p -value 0.001). Parity, basal metabolic index (BMI), chronic illnesses, and smoking had no significant relationship (Table 3).

Table 3: Bivariate analysis between clinical characteristics and corpus uteri cancer at the Moi Teaching and Referral Hospital

Variable	Endometrial cancer (N=72)	Sarcomas (N=23)	P-value
Parity			
1-4	21	8	0.61
>5	51	15	
BMI (N=95)			
Underweight	3	1	
Normal	32	15	0.523
Overweight	22	4	
Obese	12	6	
Chronic illnesses (n=25)			
Diabetes	2	1	0.095
Hypertension	13	9	
Smoking history (N=95)			
Yes	2	0	0.644
No	67	26	
Tumor size (n=52)			
<2cm	2	0	0.001
>2-4cm	9	5	
>4cm	28	8	

BMI: basal metabolic index

Management and outcomes

Sixty-two patients received adjuvant chemotherapy, the most used regimen being carboplatin/paclitaxel, while 33 patients received radiotherapy, which included either external beam or vaginal brachytherapy or a combination of both. Pelvic node dissections were performed in 23 (32%) patients, with 12 (52%) turning positive. Recurrence occurred in 20 patients, with most 17 (85%) patients recurring within the first two years. Recurrence was mostly locoregional in 15 (75%) cases. Among patients with uterine sarcoma, 70% experienced recurrence, whereas 9% had endometrial cancer (Table 4).

Table 4: Management of corpus uteri cancer at the Moi Teaching and Referral Hospital

Variable	Endometrial carcinoma (N=72)	Sarcoma (N=23)
Chemotherapy	N=62	
Carbotaxol	28 (45.1)	12 (19.4)
Gemcitabine/Docetaxel	0 (0)	2 (3.3)
None	7 (11.3)	3 (4.8)
Not indicated	10 (16.1)	0(0)

Radiotherapy	N=33	
EBRT	3 (9.1)	1(3.1)
VBT	12 (36.3)	3 (9.1)
EBRT: VBT	10 (30.3)	4 (12.1)
Surgery		
Tumor size	N=52	
<2cm	2	3.8
>2-4cm	14	27
>4cm	36	69.2
Pelvic node dissection	N=72	
Yes	23	32
No	49	68
Results	N=23	
Positive	12	52
Negative	11	48
LVS1	N=26	
Yes	11	42.3
No	15	57.7
Recurrence status		
Recurrence	N=20	
Within 6 Months	7	35
6-12 months	4	20
1-2 years	6	30
3 years	1	5
4 years	1	5
5 years	1	5
Recurrence type	N=20	
Locoregional	15	75
Pelvic area and distance	5	25

Survival analysis

The survival rate was higher among patients managed with a combination of surgery and chemotherapy than among those managed with a combination of surgery and radiotherapy or surgery, radiology, and chemotherapy. The difference in survival among the three interventions was significant ($p=0.0001$) (Figure 1).

Participants aged below 40 years had a higher survival rate (OR 3.04, CI: 1.49 -10.6), followed by those aged between 40 and 49 years (OR 2.98, CI: 1.92 - 13.6). Married women had a better survival rate than single women (OR 4.00, CI: 3.13 - 6.84). Women with tertiary education had higher rates of survival (OR 3.00, CI: 1.49 - 8.63). Women with a source of income also had better survival outcomes (OR 6.28, CI: 9.67 - 10.6), which was six times better than those who were unemployed (Table 5).

Table 5: Survival rates of corpus uteri cancer patients at Moi Teaching and Referral Hospital

Variable	Frequency (N=95)	Percent (%)	OR (CI)
Age			
<40	4	4.2	3.04 (1.49 - 10.6)
40-49	8	8.4	2.98 (1.92 - 13.6)
50-59	28	29.5	1.52 (0.99 - 3.00)
60-70	55	57.9	Reference
Marital status			
Married	59	62.1	4.00 (3.13 - 6.84)
Single	36	37.9	Reference

Education			
None/Primary	34	35.8	1
Secondary	42	44.2	Reference
Tertiary	18	20	3.00 (1.49 - 8.63)

Occupation			
Unemployed	44	46.3	Reference
Business / Farming	51	53.7	6.28 (9.67 - 10.6)

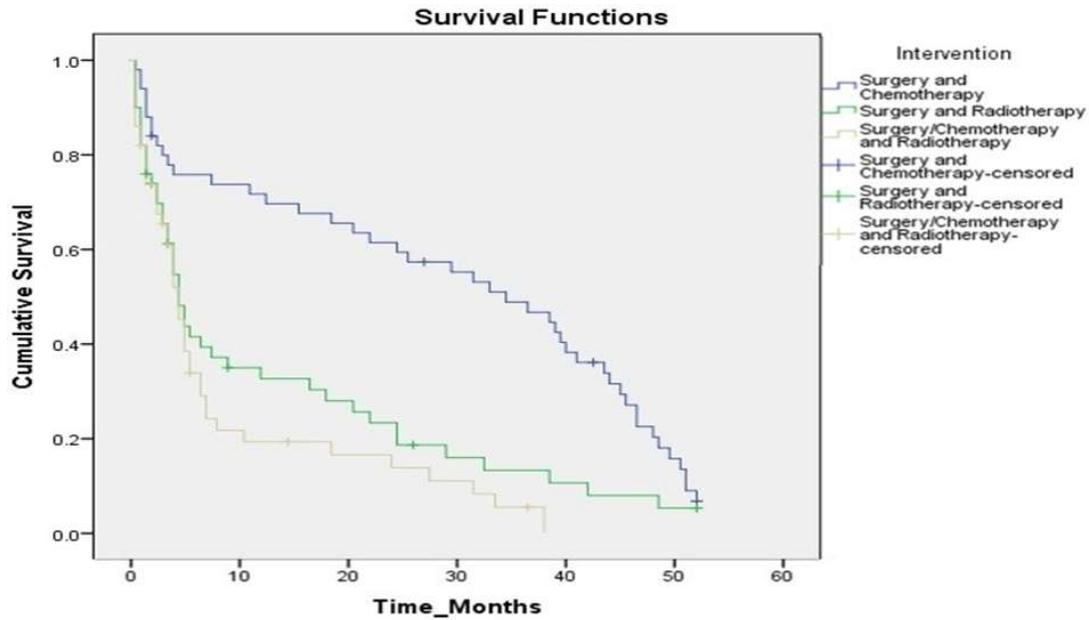


Figure 1: Kaplan-Meier curve of the mode of treatment and survival time of corpus uteri cancer patients at the Moi Teaching and Referral Hospital

Overall, there was no statistical difference in survival time between patients with endometrial cancer and those with sarcoma (p-value 0.089) (Figure 2).

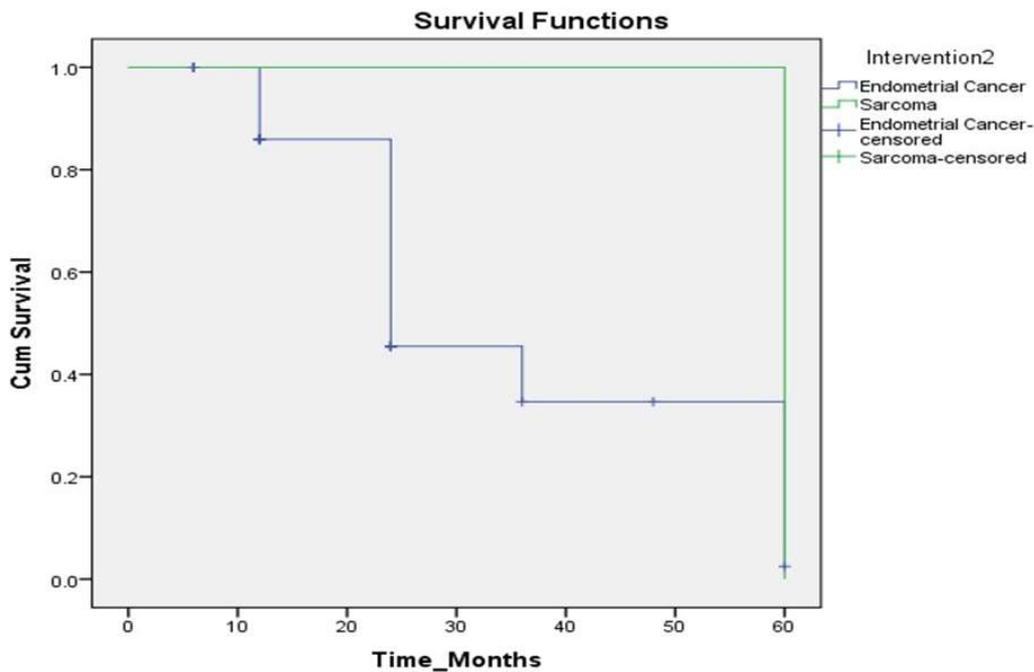


Figure 2: Kaplan-Meier curve of cancer type and survival time of corpus uteri cancer patients at the Moi Teaching and Referral Hospital

Discussion

This study assessed the clinicopathological and treatment outcomes of corpus uteri cancer at MTRH. This was the first review of cancer of the corpus uteri at MTRH. Overall, endometrial cancer was the most prevalent cancer, whereas endometrioid histology occurred in two-thirds of patients. Moreover, most patients were obese and overweight, multiparous with two-thirds having more than five children, had a mean age of 62 years, and were postmenopausal. This is similar to another study, which reported the highest global prevalence of uterine cancer to occur among patients in the age category of 55–74 years (4). This study's findings are also consistent with studies in Nigeria and Egypt, which reported most patients to be multiparous with more than five children (5,6). In contrast, a Ghanaian study reported a mean age of 56 years among patients with endometrial cancer (16). A study conducted in the United States also reported that corpus uteri cancer primarily affects nulliparous, postmenopausal women with an average age of 60 years (5).

This study also found that despite the presence of early warning signs such as postmenopausal bleeding and a pelvic mass, most endometrial cancer and endometrial sarcoma patients presented at advanced stages when the chances of survival were minimal. This could be attributed to poor health-seeking behaviors among Kenyans. In addition, low socioeconomic status, lack of formal education, comorbid conditions, and a lack of formal employment with reliance on farming could have contributed to delays in seeking treatment. Similar findings on the determinants of health care have been reported elsewhere (17). These findings are also consistent with those of a study in the United States that reported aggressive clinical characteristics, lower socioeconomic status, higher prevalence of comorbid conditions, poor patient-provider interactions, and inferior treatment as being associated with higher incidences of uterine cancer among women of black origin (2).

Surgery is the mainstay of treatment for corpus uteri cancer; however, most patients require adjuvant therapy based on risk stratification and disease stage (18). In this study, adjuvant chemotherapy with carboplatin or paclitaxel was the main type of treatment administered. Patients who received a combination of surgery and chemotherapy had better survival chances than those who received other treatments. Being aged below 40 years, having a source of income, being married, and having tertiary education and above were predictors of better survival outcomes among patients with uterine cancer. However, recurrence occurred in one-fifth of the patients in this study, with half of the recurrences occurring within the first two years. Radiotherapy services were introduced at MTRH in 2021; previously, patients who required radiotherapy were

referred to either Kenyatta Hospital or private facilities within Eldoret or Nairobi. Most patients opted out; hence, they received only chemotherapy. Patients who received multimodal treatment had poor survival rates compared with those who received either chemotherapy or radiotherapy alone. The percentage of recurrence in this study was higher than the global average of 13% among patients with endometrial cancer and 60% with uterine sarcoma (19,20). This study found no difference in the survival time between patients with endometrial cancer and those with sarcoma.

The study's main strength is the extended review period of 10 years. Having an electronic database made it easy to retrieve most study variables. The retrospective design was a limitation. Another limitation included poor data entry with missing records on the interventions instituted and outcomes. The lack of radiotherapy services at the MTRH contributed to delays in treatment initiation. Lastly, this being a single institution study bias cannot be ruled out. However, the referral status of MTRH and most patients being from neighboring counties minimized this bias.

Conclusion

Corpus uteri cancer is common in postmenopausal and multiparous women presenting at advanced stages. Adjuvant therapy did not confer any additional survival benefit, particularly in patients who received multimodal treatment.

Recommendations

Awareness campaigns to encourage women to report early for medical assessment when they have symptoms are needed. There is also a need to sensitize clinicians to the need for endometrial biopsy for all patients presenting with postmenopausal bleeding before booking them for surgery. Regular feedback to clinicians to enhance the documentation of their clinical notes is required to minimize missing data on treatment modalities.

Availability of data

All data are included in this manuscript.

Acknowledgments

Not applicable.

Declarations

Conflict of interests

The authors declare no conflicts of interest.

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