

## Research Article

# Cervical Cancer in Liberia: Identifying Existing Gaps in Infrastructure and Treatment Availability

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## Abstract

In Liberia, cervical cancer is the most common cause of cancer related death among women. The lack of prevention, screening and follow up programs, have made cervical cancer public health urgency. We reviewed charts on 157 women who presented for a treatment in Monrovia between 2008 and 2013. The objective of the review was to determine overall survival from cervical cancer based on current treatment strategies and to identify those factors that impact survival. The majority of women, >70% presented with advanced stage disease and 1/3 of women succumbed to their disease within 3 months if no treatment was given. Treatment with only chemotherapy or chemotherapy given in the neo-adjuvant setting followed by surgery increased overall survival to 6 and 9 months respectively. Patients who presented early in the course of their disease and were eligible for primary treatment with surgery survived the longest highlighting the need for awareness and early diagnosis. Given the identified infrastructural and human capacity deficits treatment options are limited. A comprehensive treatment strategy is necessary to demonstrate improvement in addressing the full spectrum of cervical cancer management in this resource-constrained country.

**Keywords:** Cervical cancer; Cancer care; Liberia; Advanced staging; Chemotherapy

## Abbreviations

OS: Overall survival; IARC: The International Agency for Research on Cancer; FIGO: (The International Federation of Gynecology and Obstetrics; NACT: Neo-Adjuvant Chemotherapy; CINV: Chemotherapy Induced Nausea/Vomiting; SSA: Sub-Saharan Africa

## Introduction

In most developing countries, the absence of organized cervical cancer screening programs has contributed to a high disease burden and increased mortality from cervical cancer [1,2]. The introduction of the Papanicolaou smear as a screening test in the 1940s, led to dramatic improvements in prevention with over 75% reduction in incidence in developed nations and lifetime risk reductions of 25-35% with a single screening using varied non-cytology based methods for detection and treatment [3,4].

In low and middle income countries where implementation of sustainable screening programs is often not feasible, there is a high burden of cervical cancer. The International Agency for Research on Cancer (IARC) has estimated that of the 528,00 new cases of cervical cancer worldwide in 2012 over 85% occurred in LMICs [5]. In Liberia, a country that has seen its health infrastructure and capacity to respond to health emergencies compromised by war and the recent Ebola outbreak, cervical cancer is the leading cause of cancer related deaths and the second most common cancer among women [6]. With no options for comprehensive management of cancer in Liberia, and no in-country gynecology oncologists, women with cervical cancer often stay at home and succumb to their disease without seeking

medical care, or they self refer to the only clinic in Monrovia that offers chemotherapy services.

To better assess the management of cervical cancer in Liberia we reviewed the charts of women presenting to this center for treatment between 2009 and 2013. The primary objective of this review was to determine the overall survival (OS) of patients with cervical cancer during that period. The secondary objectives focused on the infrastructural and treatment gaps that need to be addressed in order to provide cancer care to women with cervical cancer in Liberia.

## Method

A chart review of cervical cancer patients treated at the only clinic in Liberia providing cervical cancer care was undertaken. Of 185 women who presented for treatment of cervical cancer during the time period from March 2008 to July 2013, 157 had data that could be retrieved for analysis. Records were reviewed for basic demographic information, presenting symptoms, method of treatment and clinical status. Barriers to treatment-outcomes are additionally reported.

## Results

All patients had a diagnosis of cervical cancer made by visualization of lesions on speculum examination without pathologic confirmation.

Average age at presentation was 51 years (mode 48 years, range 30-87 years). Almost all patients presented with one or a combination of the following symptoms: weakness and lethargy, pain, nausea, vomiting, diarrhea, abnormal vaginal/heavy vaginal bleeding requiring transfusions, foul-smelling vaginal discharge, and recto-

**Table 1:** Presenting Symptoms/Management.

Weakness, lethargy, somnolence	hydration, transfusion w/ whole blood
Pain	acetaminophen, ketorolac
Nausea/vomiting	oral ondansetron
Bleeding	packing with Monsel's, whole blood
Odorous discharge	metronidazole tablets
Vesicovaginal fistula	foley catheter, supportive care
Rectovaginal fistula	supportive care

**Table 2:** Stage at presentation for n=68 clinically staged patients\*.

Stage 1B1	3 patients	4.40%
Stage 1B2	8 patients	11.80%
Stages IIA-III A	8 patients	11.80%
Stages IIIB-1VA	49 patients	72.00%

\*Staging confirmed by Gynecologic Oncologist

vaginal and/or vesico-vaginal fistulae (Table 1).

**Staging**

The majority of patients presented with disease that had already spread beyond the cervix. Clinical staging (following FIGO guidelines) was assigned in 68 patients before treatment was initiated; staging was in concurrence with examinations performed by one of 2 board-certified gynecologic oncologists (Table 2). For 89 patients however, chemotherapy was initiated before examination by a gynecologic oncologist, (56.5%). These included patients who presented with heavy, uncontrolled vaginal bleeding from cervical lesions, bleeding from vaginal lesions following a hysterectomy done by the referring facilities for the purpose of controlling bleeding. All patients had bulky disease and advanced tumors resulting in a frozen pelvis with or without fistulae.

**Treatment**

Although there was no standardized treatment protocol being followed, chart review revealed that 11 patients with cervical lesions confined to the cervix were treated with primary radical surgery (7%). Lymphadenectomy was not performed on any of the patients. Ninety-nine patients (63%) were treated with primary chemotherapy; 5 of these patients showed >50% reduction in primary cervical lesions and clearing of parametrial disease and subsequently underwent radical hysterectomy following Neo-Adjuvant Chemotherapy (NACT). Patients who failed primary chemotherapy were offered continued low dose cisplatin (20-30mg), oral Cytosan (cyclophosphamide 50mg) for palliative purposes or no further treatment. Almost one third of the total cohort of patients (47 patients) did not receive treatment. Indications for non-treatment included advanced age, co-morbidities, terminal stage at presentation and refusal to receive treatment. Treatment complications among those receiving chemotherapy, included Chemotherapy Induced Nausea/Vomiting (CINV), anemia, sepsis and renal failure in one patient.

**Survival**

Survival varied by mode of treatment (Table 3). OS for patients with disease confined to the cervix, treated with a radical hysterectomy was 35+ months. Patients undergoing NACT survived 9 months and patients who were treated with primary chemotherapy alone survived

**Table 3:** Treatment and Survival n=157 patients.

# Patients	%	Chemotherapy	Surgery	Mean Survival
11	7%	none	RH	35+ months
5	3.20%	cisplatin	RH	9 months
94	59.90%	cisplatin	None	6.5 months
47	29.90%	none	None	0-3months

6.5 months. All patients who were not treated died within 0-3 months of diagnosis. Although treatment conferred a survival advantage, ANOVA testing revealed the only significant survival advantage was for patients treated with primary surgery versus patients who received no treatment (p=0.022); however, analysis is limited by sample size.

**Challenges in knowledge, infrastructure and workforce capacity:** Chart review identified numerous programmatic and infrastructural deficiencies that require strengthening in order to decrease morbidity and mortality from cervical cancer in Liberia.

**Knowledge and awareness deficits:** Patient related challenges: We found that patients attending the clinic were often brought in by family members when they became aware of the symptoms the patients were experiencing. Lack of knowledge about the disease and failure to recognize symptoms were among the main factors accounting for delays in presentation, diagnosis and treatment.

**Health worker related challenges:** Lack of knowledge by health workers about the disease course and treatment options resulted in poor documentation, variability in dosages administered and handling and disposal of chemotherapy drugs.

**Infrastructural deficits:** Lack of radiation therapy resulted in the utilization of chemotherapy and surgery as the primary modes of treatment. Lack of pathology services resulted in visual diagnosis and treatment directed to only those patients with advanced disease, and lack of radiology equipment to assess extent of disease appeared to compromise treatment planning.

Overall treatment options were limited by inability to make accurate diagnoses, absence of radiation therapy facilities, lack of procurement and supply chain services for chemotherapy drugs and untrained health workforce in oncology care. The lack of pathology services in Monrovia was perhaps the largest impediment to providing accurate diagnosis that could drive treatment, assessment of disease burden and resource allocation. Lack of health literacy around cervical cancer was an important factor in delayed presentation and diagnosis of patients.

**Discussion**

This is the first report to address cervical cancer presentation and outcomes in Liberia. The retrospective nature of the review poses limitations, but its importance in documenting the plight of women with a disease that is often overshadowed by competing infectious diseases cannot be lost. We found that the average age at diagnosis was 51 years old, but the most common age at presentation for women with cervical cancer (mode) was 48 years in keeping with other data from Sub Saharan Africa (SSA) [7]. The impact of losing women in the most productive years of their life cannot be measured, as most women in post-conflict countries like Liberia contribute significantly to the economic survival and social cohesion of their families.

Consistent with other data from SSA the majority of women in this review (>70%) presented with advanced stage of disease at the time of diagnosis; we however did not find a correlate between age and stage at presentation [8]. Many factors contribute to late presentation particularly in developing countries where literacy, poorly developed health facilities and limited information are among some of the factors at play [7,9]. The social-cultural barriers that influence women's readiness to seek care are important factors that are not addressed in this review but represent significant barriers that cannot be overlooked [10,11]. Patient delays can further be attributed to rationalizing or underestimating early warning symptoms such as bleeding, pain and discharge as being normal body changes or to being influenced by advice from lay consultants or spiritual healers [12].

Almost one third of patients in this review did not receive chemotherapy because of refusal of treatment by the patient or family, physician refusal to treat because of compromised patient health status or because of difficulty (financial and/or transportation) accessing the facility for repeat treatments. A qualitative study from neighboring Ghana identified negative perceptions and misconceptions about cervical cancer among hospital based nurses who associated cervical cancer with "death and suffering" and viewed patients with cervical cancer as being "dejected" and "emotionally down." These sentiments were similar to those expressed by patients at a cervical cancer screening group that we conducted in Liberia and can be put into context to explain why such a large number of patients either refuse or fail to follow up for ongoing treatments [13].

Radiation therapy is one of the most important therapeutic modalities for treating cervical cancer either as a single modality or in combination with other multimodality treatment regimens. More than half of all cancers diagnosed in Africa are estimated to need some form of radiation therapy. In 15 countries in Africa however, radiation facilities still do not exist [14] and in the majority of countries with capacity, use of cobalt-60 machines that are over 20 years old is common [15]. In Liberia, in addition to lack of radiation therapy facilities there are no personnel trained to provide treatment, including technologists, physicists or radiation oncologists, and no mechanisms exist to ensure patient or worker safety. Surgical expertise is also lacking in Liberia as it is in 70% of the global population [16]. The lack of surgical and radiation therapy options in Liberia have defined chemotherapy as the treatment of choice for cervical cancer.

For patients treated with chemotherapy at this clinic, cisplatin was the drug of choice delivered as a single agent or as neo-adjuvant therapy. Current data supports its use based on efficacy, improvement of symptoms and feasibility of delivery of cisplatin [17,18]. Median OS from the Cochran Review was + 6 months comparable to data from this study [18]. Records reviewed for our present study did not report on guidelines for managing Chemotherapy Induced Nausea and Vomiting (CINV), but for most patients, oral ondansetron was given with or without dexamethasone. A recent randomized study from India comparing palonosetron and ondansetron for acute CINV in children receiving moderate to high emetogenic chemotherapy concluded that palonosetron was non inferior to ondansetron and was more cost effective and that the use of dexamethasone was an important factor in obtaining complete control of emesis [18-20]. This data suggests that cisplatin should remain the backbone of treatment

for cervical cancer in Liberia and gives the opportunity to use the most cost effective antiemetic agents combined with dexamethasone for symptomatic relief with this highly emetogenic agent.

## Conclusion

Overcoming the challenges and barriers to providing cancer care in Liberia requires commitment by the government in collaboration with international and national stakeholders to develop a continuum of cancer care: to invest in basic histopathology and radiology services as well as provide support for a comprehensive cancer registry so that proper diagnosis can be made and burden of cancer quantitated. Improving treatment facilities and training of skilled surgeons, oncologists, pharmacists and nurses are other short-term priorities that must be addressed. In the long term the infrastructure to support radiation therapy and the development of guidelines to ensure patient and health worker safety as well as instituting palliative care services are investments that will have an impact on not only cervical cancer but the full range of cancers and chronic diseases that currently occur in Liberia.

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