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RESEARCH ARTICLE

LOCALLY ADVANCED CERVICAL CANCER : WHO'S AT RISK OF RECURRENCE ?

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Abstract

Background: In Morocco, locally advanced cervical cancer (LACC) remains a significant public health concern, with recurrence rates of 15–50% despite standard treatment involving concurrent chemoradiotherapy (CCRT) and uterovaginal brachytherapy (UVBT). Identifying predictors of recurrence is critical for optimizing therapeutic strategies.

Methods: This retrospective cohort study (2018–2022) analyzed 61 LACC patients treated with CCRT at a tertiary center. Data included demographics, tumor characteristics (FIGO 2018 stage, histology, lymph node status), treatment details (UVBT use, treatment duration), and recurrence outcomes. Statistical analyses (SPSS v25.0) comprised descriptive statistics, Kaplan-Meier survival estimates, and univariate analysis ($p<0.05$).

Results: The mean age was 55.3 years; 86.9% had squamous cell carcinoma, and 40.9% were FIGO IIIC. Recurrence occurred in 31.1% (60% locoregional). Factors significantly associated with recurrence included anemia (Hb <10 g/dL; $p=0.021$), hydronephrosis ($p=0.027$), advanced FIGO stage ($p<0.001$), treatment prolongation >55 days ($p<0.001$), and omission of UVBT ($p<0.001$). Recurrence-free survival was 75.2% at 1 year and 71.9% at 2 years.

Conclusion: Pretreatment anemia, hydronephrosis, advanced stage, prolonged treatment, and lack of UVBT were key predictors of recurrence. These findings advocate for personalized risk-adapted protocols and underscore the need for timely, standardized therapy in resource-limited settings.

Introduction:-

In Morocco, cervical cancer represents a major public health issue, with a crude incidence of 8.7 per 100,000 women [1]. The standard treatment for locally advanced stages consists of concurrent chemoradiotherapy (CCRT) followed by uterovaginal brachytherapy (UVBT) [2]. Despite advances in screening and treatment, recurrence rates

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remain between 15% and 50%, posing a significant challenge in management and adversely affecting patient prognosis [3-8].

The objective of our study is to identify predictive factors for recurrence in locally advanced cervical cancer within our population. A better understanding of these factors could optimize therapeutic strategies and improve patient survival.

Materials and Methods:-

We conducted a retrospective cohort study from 2018 to 2022, including patients diagnosed with locally advanced cervical cancer treated with CCRT in the radiotherapy department of Mohammed VI University Hospital in Tangier. Tumors were classified according to the FIGO 2018 staging system.

Data collected from archived records in the ARIA and ENOVA systems included demographic characteristics, tumor specifics, treatment approaches, and survival outcomes. Statistical analyses were performed using SPSS version 25.0, including descriptive analyses (percentages, means), as well as assessments of recurrence-free survival at one and two years. Univariate analysis was performed to identify correlations between locoregional recurrence and prognostic factors, with a significance threshold of $p < 0.05$.

Results:-

Descriptive Patient Data

We included 61 patients with a mean age of 55.33 years (range: 30–80 years). Pretreatment hemoglobin (Hb) levels were <10 g/dL in 77% of cases, and hydronephrosis (UHN) was observed in 11.5%. All patients received CCRT, with UVBT administered in 73.8%. The most common FIGO stage was IIIC (40.9%). Squamous cell carcinoma (SCC) accounted for 86.9% of cases, compared to 13.1% for adenocarcinoma (ADK). Pelvic lymph node involvement was present in 34.4% of patients and para-aortic in 6.5%. All patients underwent 3D conformal radiotherapy (3D-CRT). After a median follow-up of 36 months, 31.1% of patients experienced locoregional recurrence (**Table 1**). Recurrence-free survival was 75.2% at one year and 71.9% at two years (**Figure 1**).

Table 1:- Patient Characteristics.

Number of patients	61
Age	
<65 years	52 (85.2%)
≥65 years	9 (14.8%)
Comorbidities	
Yes	20 (32.8%)
No	41 (67.2%)
WHO Performance Status	
0	31 (50.8%)
1	27 (44.2%)
2	3 (5%)
FIGO stage	
IB3	4 (6.6%)
IIA	3 (4.9%)
IIB	16 (26.3%)
IIIA	4 (6.6%)
IIIB	6 (9.8 %)
IIIC	25 (40.9%)
IVA	3 (4.9 %)
Pelvic lymph node metastases	
Yes	21 (34.4 %)
No	40 (65.6 %)
Para-aortic lymph node metastases	
Yes	4 (6.5%)
No	57 (93.5%)
Histological type	

Squamous cell carcinoma	53 (86.9%)
Adenocarcinoma	8 (13.1%)
Vascular emboli	
Yes	42 (68.9%)
No	19 (31.4%)
Tumor grade	
Well differentiated	3 (5 %)
Moderately differentiated	41 (67.2 %)
Poorly differentiated	17 (27.8 %)
Hydronephrosis	
Yes	7 (11.5 %)
No	54 (88.5 %)
Treatment duration (days)	
≤55	33 (54.1%)
>55	28 (45.9%)
Concurrent chemotherapy	
Cisplatin	50 (82%)
Carboplatin	11 (18%)
Uterovaginal brachytherapy	
Yes	26 (84 %)
No	5 (16 %)
Locoregional recurrence	
Yes	19 (31.1%)
No	42 (68.9%)

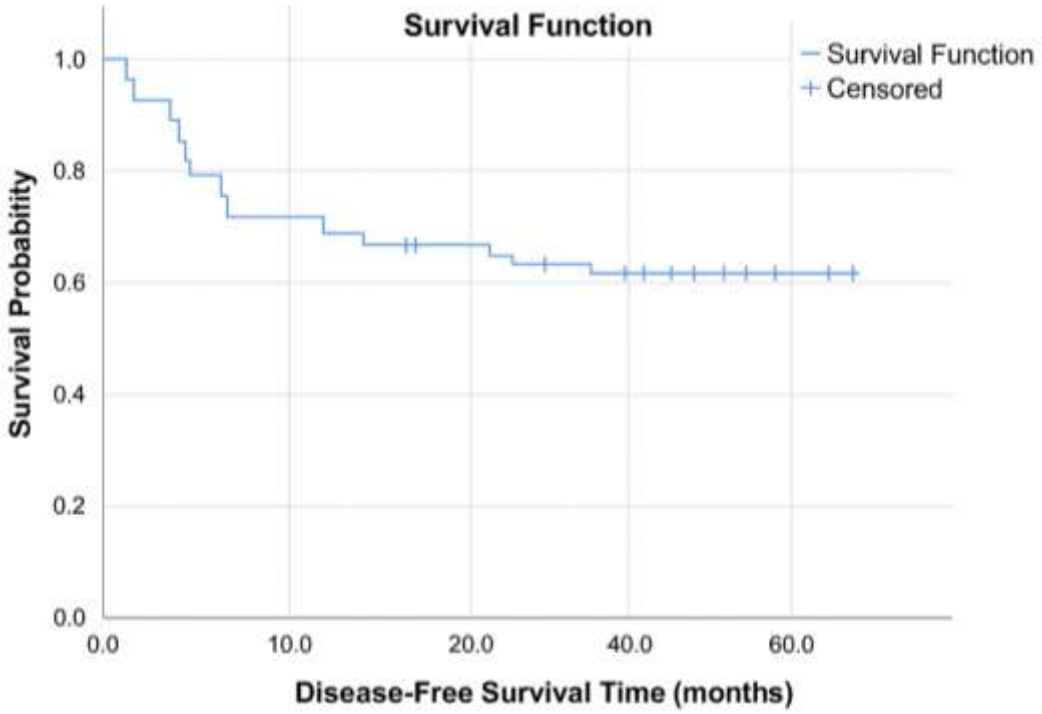

Figure 1:- Disease-Free Survival.

Predictive Factors for Recurrence

Univariate analysis showed no significant association between age, performance status, histologic type, or lymph node involvement and recurrence-free survival. However, low Hb levels ($p = 0.021$), advanced FIGO stage ($p <$

0.001), UHN (p = 0.027), and treatment prolongation beyond 55 days (p < 0.001) were associated with increased recurrence risk. Patients who received UVBT had significantly higher recurrence-free survival than those treated with external beam radiotherapy alone (p < 0.001) (**Table 2**).

Table 2:- Predictive factors of recurrence.

	Recurrence N= 19	**p-value**
Age - < 65 years - ≥ 65 years	 67.3% 77.8%	 0.626
WHO Performance Status - 0-1 - 2	 66.4% 77.3%	 0.324
Hydronephrosis - Yes -No	 72.7% 33.3%	 **0.027**
Hemoglobin level - ≥ 10 g/dl - < 10 g/dl	 42.9% 76.6%	 **0.021**
Histological type - Adenocarcinoma - Squamous cell carcinoma	 98% 66.7%	 0.208
FIGO Stage - ≤ II - > II	 48.1% 71.9%	 **<0.001**
Vascular Emboli - Yes - No	 74.3% 27.4%	 **0.034**
Lymph node metastasis - Yes - No	 75.9% 62.5%	 0.301
Brachytherapy - Yes - No	 85.7% 31.6%	 **<0.001**
Treatment duration - > 55 day - ≤ 55 day	 28.0% 97.2%	 **<0.001**

Discussion:-

For over two decades, CCRT followed by UVBT has been the standard treatment for locally advanced cervical cancer, generally yielding favorable outcomes [9]. However, the risk of relapse persists, and managing recurrent disease remains a major clinical challenge. Identifying high-risk patients who may benefit from additional therapies is crucial [10,11].

In our cohort, pretreatment anemia and UHN were strongly correlated with recurrence, consistent with literature findings [17,18]. Hypoxia from low Hb levels reduces tumor radiosensitivity, while UHN often indicates advanced disease. Advanced FIGO stage was a major prognostic factor, with lower recurrence-free survival in stages III–IV compared to I–II [19]. Lymphovascular space invasion (LVSI) also significantly impacted outcomes, aligning with prior studies [20].

Histologic type did not influence recurrence-free survival in our series, possibly due to the small number of adenocarcinomas. However, literature suggests ADK carries a worse prognosis [21]. The superior outcomes with UVBT highlight its importance in achieving optimal tumor coverage and dose delivery, as supported by large registries [22].

Prolonged treatment duration (>55 days) was inversely correlated with survival, likely due to technical delays and patient compliance issues. Studies indicate that shorter treatment periods improve local control, particularly for bulky tumors [23,24].

Recent therapeutic advances, such as induction chemotherapy (INTERLACE trial [25]) and adjuvant immunotherapy (KEYNOTE-A18 [26]), offer promising avenues for high-risk patients.

Conclusion:-

Our study identifies predictive factors for recurrence in locally advanced cervical cancer, including prolonged treatment duration, absence of UVBT, advanced FIGO stage, LVSI, low Hb, and UHN. These findings underscore the need for personalized risk-adapted strategies. Strengthening healthcare infrastructure in low-resource settings is critical to improving outcomes.

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