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RESEARCH ARTICLE

SCREENING OF CERVICAL PRECANCEROUS LESIONS AND TREATMENT WITH CRYOTHERAPY AT THE REGIONAL TEACHING HOSPITAL OF OUAHIGOUYA/BURKINA FASO: AN ALTERNATIVE METHOD FOR DEVELOPING COUNTRIES

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ABSTRACT

Introduction: Cervical cancer is the second most common cancer among women worldwide, representing about 10% of all female cancers. In sub-Saharan African countries, more than 80% of cervical cancers were undetected or incurable at the time of diagnosis. In Burkina Faso, a national cervical cancer prevention and control program is not established. The purpose of this study is to evaluate the screening and treatment profile of precancerous lesions of the uterine cervix in order to improve the quality of management of cervical lesions at the Regional Teaching Hospital of Ouahigouya. **Population and method:** We conducted a descriptive cross-sectional study with a retrospective chart review of data collected from January 1, 2014 to December 31, 2017. 1137 charts were reviewed. **Results:** From January 1, 2014 to December 31, 2017, 1137 women were screened using VIA (visual inspection using acetic acid). The mean age of patients was 35.8 years, the mean parity was 3.2 births and the prevalence of HIV positive women was 1.4%. 88.6% of participants were seen for their first VIA screening test and 8.4% were consulting for routine VIA. On cervical examination by direct visual inspection (DVI), 2.5% of patients had suspected lesions. On VIA, we recorded 2.8% of precancerous cervical lesions. Immediate cryotherapy was performed in 45.2% of screen-positive cases on a single-visit « screen-and-treat » basis. **Conclusion:** The screening of cervical precancerous lesions using VIA and their treatment using cryotherapy constitutes an alternative management in the reduction of morbidity and mortality associated with cervical cancers in developing countries.

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INTRODUCTION

Cervical cancer is a neoplasm due to an abnormal, uncontrolled and anarchic excessive cellular proliferation of the cervix of the uterus. It is the second most common cancer in women worldwide and estimated incidence of 570000 new cases and cause of 311365 deaths in 2018 (Bray *et al.*, 2018). The incidence of cervical cancer is higher in developing countries where it is the first female cancer (WHO, 2017). It is well established that human papilloma virus (HPV) is the main pathogenic agent of the cervical cancer. However, HPV has sexual and non-sexual co factors affecting the progression of the HPV infection to cervical cancer. Early detection and management of cervical cancer to prevent its progression to an incurable stage is possible as the natural history of cervical carcinogenesis is well researched.

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Cervical cytology – both conventional and liquid-based- is the most common screening method used in developed countries. However, this method cannot be performed routinely in resource-limited countries as Burkina Faso. Visual inspection using acetic acid (VIA) and visual inspection using Lugol's iodine (VILI) are simple and affordable alternative strategies for cervical screening in developing countries according to WHO (Bernard, 2005; Stjernsward *et al.*, 1987). In sub-Saharan African countries, more than 80% of cervical cancers are undetected or are incurable at the time of diagnosis (Stjernsward *et al.*, 1987). In Burkina Faso, there is not a national cervical cancer prevention and control program. At the Ouahigouya Regional Teaching Hospital, there is cervical pre-cancer screening and treatment unit using respectively VIA and cryotherapy since 2012 according the single-visit « screen-and-treat » strategy. The purpose of this study is to evaluate the screening of precancerous lesions and their management in order to improve the quality cervical cancer management at the Ouahigouya Teaching Hospital.

PATIENTS AND METHODS

We conducted an analytical cross-sectional study with examination of records of patients screened from January 1, 2014 to December 31, 2017. Were included in the study:

- Women aged 25 to 55 who did not undergo a total hysterectomy
- Women in their reproductive age, having accepted the screening process.

Were excluded from this study:

- Women less than 25 years or more than 55 years old
- Women who did not accept the screening process
- Virgin or menopausal women

Data collected included information about: age, the ethnic group, the obstetric history (gravity, parity), HIV status, the results of visual inspection after application of acetic acid and management.

Data collected were processed using the 2013 Microsoft Access software. Microsoft Excel and Word were used to create data tables. The Chi-square test was used for statistical analysis with a significance level of 0.05 and a 95% confidence interval.

RESULTS

Frequency of precancerous lesions: After VIA done for 1108 patients, 31 positives cases were detected, representing 2.8 % of screened patients.

Sociodemographic variables: The mean age of screened women was 35.8 years, ranging from 25 to 54 years. 89.8% of screened women were from the mossi ethnic group and 90.2% of were resident in Ouahigouya city. The mean parity was 3.2 ranging from 0 to 14 and 1.4% were HIV positive.

Table I. Sociodemographic distribution of screened women

Sociodemographic factors	Number	Percentage
Age(years)		
25-29	290	25.5
30-34	247	21.7
35-39	243	21.4
40-44	171	15
45-49	126	11.1
50-55	60	5.3
Parity		
Nulliparous	90	07.9
Primiparous	144	12.6
Pauciparous	503	44.2
Multiparous	400	35.3

HIV status of patients: 64 %(729) of patients were HIV negative, 1% (16) were HIV negative and the HIV status of 392 (35%) were unknown.

Distribution by type of screening: Among the screened patients, 88.7% were at their first VIA screening test.

Table II. Distribution by screening

Type of consultation	Number	Percentage
First VIA	1008	88.7
Routine VIA	95	8.3
Referred patients	34	3
Total	1137	100

Results of the screening

Unaided visual inspection: On examination before application of acetic acid, the junction zone was visible for 90.2% of patients; the cervix had suspected cancerous lesions for 2.6% and suspected infection for 7.2% of cases.

Visual inspection using acetic acid: On VIA, we noted 2.8% (31 cases) of precancerous cervical lesions. The mean age of patients detected with precancerous lesions was 36.7 years ranging from 25 to 50 years and the mean age of participants having suspected invasive cancer was 43.2 years ranging from 29 to 54 years.

Table III. Distribution of screened

Age group	VIA negative		VIA positive		Clinicaldetected cancer		Total
	Number	Percentage	Number	Percentage	Number	Percentage	
25-29	283	26.3	6	19.3	1	03.5	290
30-34	234	21.7	10	32.3	3	10.3	247
35-39	238	22.1	2	06.4	3	10.3	243
40-44	158	14.7	7	22.6	6	20.7	171
45-49	112	10.4	3	09.7	11	37.9	126
50-54	52	04.8	3	09.7	5	17.3	60
Total	1077	100	31	100	29	100	1137

For screened patients with positive VIA results, 45.1% (14) were multiparous with a mean parity of 4.1, ranging from 1 to 10. For screened patients with suspected cervical cancer, 86.2% (25) were multiparous with a mean parity of 6.9, ranging from 2 to 11.

Table IV. Distribution by parity

Parity	VIA negative		VIA positive		Clinicalcancerouslesions		Total	
	Number	Pourcentage	Number	Pourcentage	Number	Pourcentage	Number	pourcentage
Nulliparous	90	08.4	0	0	0	0	90	07.9
Primiparous	142	13.2	2	6.5	0	0	144	12.7
Pauciparous	484	44.9	15	48.4	4	13.8	503	44.2
Multiparous	287	26.6	9	29.0	8	27.6	304	26.7
Large multiparous	74	06.9	5	16.1	17	58.6	96	8.5
Total	1077	100,0	31	100	29	100	1137	100

Among VIA positive patients, 3.2% were HIV positive and among patients with suspected cervical cancer, 6.9 % were HIV positive.

Table V. HIV status of patients with precancerous or cancerous lesions

HIV status	VIA positive		Clinical cancerous lesions	
	Number	Percentage	Number	Percentage
Unknown	10	32.3	26	89.7
HIV positive	1	03.2	1	03.4
HIV negative	20	64.5	2	06.9
Total	31	100	29	100

Risk factors of precancerous lesions

HIV status and precancerous lesions: The risk of developing cervical precancerous lesions was 2.53 times higher among HIV positive patients compared to HIV negative patients.

Table VI. HIV status of patients with precancerous and cancerous lesions

HIV status	VIA positive		VIA negative		Total	
	Number	%	Number	%	Number	%
VIH+	1	6.7	14	93.3	15	100
VIH-	20	2.7	707	97.3	727	100
Total	21	2.8	721	97.2	742	100

Results: Odd ratio=2.53 with confidence interval [0.32; 20.19], Chi-square=0.82 with $p>0.30$

Parity and precancerous lesions: The risk of developing cervical precancerous lesions was 2.3 times higher among patients with 3 or more parity compared to patients with less than 3 parity.

Tableau VII. Distribution of patients by parity and precancerous lesions

Parity	VIA positive		VIA negative		Total	
	Number	%	Number	%	Number	%
3 or more parity	23	3.7	598	96.3	621	100
Less than 3 parity	8	1.6	479	98.4	487	100
Total	31	2.8	1077	97.2	1108	100

Results: Odd ratio=2.30 with confidence interval [1.02; 5.19], Chi-square = 4.26 with $p<0.05$

Description of precancerous lesions using VIA:

The precancerous lesions observed had different shapes and sites:

- 19 women (61.3% of patients with precancerous lesions) had lesions at the squamocolumnar junction. Such lesions were seen in 13 (41.9%) HIV negative patients and 1 (3.2%) HIV positive patient.
- Lesions were involving the ectocervix for 3 (9.7%) women who were also HIV negative.
- Lesions extended to the endocervix for 9(29%) patients. Such lesions were found in 4 (12.9%) HIV negative patients.
- Lesions involving multiples sites of the cervix were seen in 23 cases (74.2 %). Such lesions were seen in 16 (51.6%) HIV negative patients.

Treatment

31 women were diagnosed with precancerous lesions using VIA and cryotherapy was indicated for 28 (90.3%). Extended lesions were detected in 3(9.7%) women treated by loop diathermy excision. On direct visual inspection, cervical lesions were detected in 29 women in whom biopsy was indicated for histopathology examination and further management.

Table III. Precancerous lesions and type of management

VIA positive	Type of management	Number	Percentage
	Immediate cryotherapy	14	45.2
	Cryotherapy postponed	14	45.2
	Loop diathermy excision	3	09.6
	Total	31	100

14 patients had postponed cryotherapy. The different reasons are: shortage of CO2 in 8 (57.1 %) cases, financial constraints in 2 (14.3%) and other reasons in 4 (28.6%) cases.

Follow-up: Screened women diagnosed with infected cervix received anti-infective treatment for 2 weeks and VIA were done. Patients with negative VIA were scheduled for a 3-years appointment for review after the screening and VIA positive patients were given an appointment 30 days after cryotherapy. Patients with cervical cancerous lesions on direct visual inspection were referred to the gynecologist for further management.

DISCUSSION

Limits of the study: Given that it is a retrospective chart study, information available on the screening data collection sheet were used. No data about histopathology was available.

Frequency of VIA positive precancerous lesions: In our study, VIA was positive for 2.8% of screened patients. This result is similar to the results found by Millogo T.F.D in Burkina Faso and Diallo, M.H. in Guinea (Millogo *et al.*, 2004; Diallo *et al.*, 2017) who reported respectively 4.2% and 2.8%. However, the frequency of precancerous lesions in our study is much lower compared to the results found by Tegueté, I. in Mali, Moukassa, A. in Congo Brazzaville and Serdouma, E. in Central African Republic (Tegueté *et al.*, 2008; Moukassa *et al.*, 2007; Serdouma *et al.*, 2010) who found respectively 10.1%, 15.36% and 15.6%. These studies were done by screening conducted in hospital settings. The screening tests done in hospital settings are usually confirmation tests done by trained cervical screening providers. During screening campaigns with a large number of participants, the false negative results are high because some screening providers are not experienced compared to screening providers in a hospital setting. However, the frequency of precancerous lesions in this study can be explained by the limited access to health services, the level of education on health problems and the lack of information on screening campaigns that can go unnoticed in some areas reducing people's attendance.

Cervical abnormalities observed on unaid visual inspection: Invasive cancer was suspected when speculum examination showed a cervical lesion bleeding on contact. We detected 29 cases of suspected cancer representing 2.5% of patients. This frequency is low compared to the results of Tegueté, I. in Mali and Millogo, T.F.D. in Burkina Faso (Tegueté *et al.*, 2008; Millogo *et al.*, 2004) who found respectively 13.1% and 10.4%, hence the importance of unaid visual inspection in detecting precancerous lesions.

Risk factors for precancerous lesions: HIV is a major risk factor for precancerous lesions. The risk of developing precancerous cervical lesions in our study was 2.53 times higher among HIV positive patients compared to HIV negative patients even though the association was statistically not

significant ($p > 0.30$). Our result is similar to the results of authors in French Guyana who found that the prevalence of precancerous cervical lesions was 11.8% among HIV negative patients, 22% among HIV positive patients having more than 500CD4lymphocytes/mm³ and 40% among HIV positive patients with less than 500T4/mm³ lymphocytes (Spuhlers, 1993). Chirenje and Koffi, (Chirenje, 2005; Koffi *et al.*, 2010) reported that precancerous lesions were more frequent in HIV positive women. Berrebi, A. (Berrebi *et al.*, 2008) showed that precancerous lesions were more frequent with a higher recurrence rate in HIV positive women. Parity is also a risk factor of developing precancerous lesions of the cervix. In our study, we found that the risk of developing precancerous lesions is 2.53 higher in women with 3 or more parity compared to women whose parity less than 3. The association is significant ($p < 0.05$). According to the literature (WHO, 2017; Hedon *et al.* 1998; Womack *et al.*, 2000), parity is a risk cofactor of developing precancerous lesions of the cervix because it increases the risk of exposure to HPV infection.

Management options: In our study, cryotherapy was indicated in 90.3% of patients with precancerous lesions. This result is similar to the result of Sandjong Tietchou I. (Sandjong Tietchou *et al.*, 2015) in Cameroun who reported indication of cryotherapy in 98.36% of patients. *Loop diathermy excision* was indicated in 3 patients with precancerous lesions, representing 9.7% of patients with precancerous lesions. This result is higher compared to the result of Millogo, T.F.D. (Millogo *et al.*, 2004) who reported this procedure in 4.2% of patients. Dem, A. in Senegal (Dem *et al.*, 2008) reported loop diathermy excision in 17% of patients with precancerous cervical lesions. The Ouahigouya Teaching Hospital is the only center in the Northern region where the cryotherapy procedure can be performed. This can explain the higher rate of cryotherapy in our study. Some patients screened in other health care centers in the regions have been referred to the teaching hospital for cryotherapy. Cryotherapy is the first line therapy for women with positive lesions after screening when it is not contra indicated (WHO, 2017; Garcia *et al.*, 2003).

Conclusion

Screening for precancerous cervical lesions by the visual inspection method with Acetic Acid and Lugol are simple, easily acceptable tests by women, less expensive and the result is systematic at the end of the examination; to effectively detect these lesions. The management of these precancerous lesions is easy and is mainly done by cryotherapy and in some cases by diathermic loop resection. The reduction in mortality associated with this disease is through the struggle against the predisposing factors and the HPV vaccine; but through early detection and appropriate treatment stage.

Contribution of the authors: All authors contributed to the writing of the present study.

Declaration of interest: The authors don't report any conflict of interest.

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