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Risk factors for ovarian cancer in Yaounde: A case control study

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Abstract

Background: Ovarian cancer has the highest mortality rate amongst gynaecologic cancers but fails to have a screening method. The objective of this study was to assess the reproductive and clinical risk factors for ovarian cancer.

Methodology: We carried out a case-control study, from December 1st, 2011 till April 30th, 2016, in two reference hospitals in the city of Yaoundé. The cases were comprised of women diagnosed with ovarian cancer and the control group comprised of women without ovarian cancer consulted during the same period. Their Menstrual characteristics, reproductive and contraceptive history and history of exposure to various environmental factors were collected. The Chi Square and Fischer's exact tests were used to compare variables. The Odds Ratio was calculated to determine association between the variables. A p value of <0.05 was considered significant. To eliminate confounding factors a logistic regression analysis was done.

Results: A total of 125 patients were included in the study which comprised of 25 cases (women with ovarian cancer) and 100 controls (women having no ovarian cancer). Risk factors associated with ovarian cancer were: age greater than or equal to 48 years old (OR:37.85; p=0.000), being a widow (OR=15.25; p=0.003), being menopaused (OR=36; p=0.000), absence of contraception (OR:8.87;p=0.03)a family history of ovarian cancer (OR=24.20; p=0.004). After adjusting for the effect of the other factors, only the age group of more or equal to 48 years old was independently associated with ovarian cancer risk (aOR =29.12; p=0.01).

Conclusion: women greater than or equal to 48 years of age were independently at high risk of ovarian cancer in Yaoundé. Other reproductive parameters and clinical factors were linked to confounding factors.

Introduction

Ovarian cancer has the highest mortality rate amongst gynecologic cancers [1]. Early signs and symptoms are non-specific therefore commonly ignored. Thus, the diagnosis of ovarian cancer is frequently made in the later stages of malignancy (2). Therefore, ovarian cancer is referred to as a 'silent killer' [3]. Health professionals too often fail to identify the early symptoms and delay between presentation in primary care facilities and referral to specialist services is also common (4). While early recognition significantly may affect prognosis, earlier diagnosis has the potential to reduce mortality rates [2,4]. To raise awareness among health professionals and women, it is mandatory to know high risk populations in which any symptoms may lead to early work-up. Our objective was to study reproductive characteristics and clinical parameters in order to identify risk factors for ovarian cancer in Yaounde.

Methods

We carried out a case-control study with prolective data collection at two referral hospitals, the Yaounde General Hospital (YGH), and Yaounde Gyneco-Obstetric and Pediatric Hospital (YGOPH). Our study extended over a period of 5 years, from 2011 to 2016. The sampling was consecutive and exhaustive after institutional authorization, and ethical committee approval to carry out the study. We included all patients who were diagnosed with ovarian cancer representing the cases. The controls were made up of women who were being followed up and treated in the same setting for other gynaecological cancers in whom pelvic ultrasound did not reveal any ovarian tumour. All the women accepted to participate to the study had to sign a consent form. We excluded patients who had incomplete clinical records.

Data collection

The data collection started by examining the records of all patients who had a histological diagnosis of ovarian cancer, followed by a face-to-face interview. Then all socio-demographic characteristics, reproductive parameters, clinical and para clinical data were recorded. Each case was matched to four controls. The sample size was calculated from a pilot study [5] the minimum needed was 14 cases for 56 control.

Statistical analysis

The variables were compared using the Chi Square and Fischer's exact tests. The error threshold was set at 5% as statistically significant for each variable studied. The strength of association between the variables was made using the Odds Ratio expressed with its 95% confidence interval. To eliminate confounding effect between observed

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risk factors, we conducted a multivariate analysis in a logistic regression model. We included in the model all the variables with a significant (or close to the significance) p value at bivariate analysis. A p value of < 0.05 was considered statistically significant.

Results

A total of 125 patients were included in the study with 25 cases of ovarian cancers and 100 controls. The predominant histologic type was the serous adenocarcinoma type 22 cases (88%), followed by the mucinous carcinoma 2 cases (8%) and lastly the clear cell tumour 1 case (4%).

Sociodemographic characteristics

The age group greater than or equal to 48 years old was 37.85 folds more susceptible to have ovarian cancer. Also, being a widow increased the risk of having an ovarian cancer by 15.25 as highlighted in Table 1. Other factors such as profession, ethnic origin and literacy were not statistically significant.

Comparison of reproductive and familial history between cases and controls

Parity did not show any statistically significant difference between the cases and controls. But, being menopaused increased the risk of ovarian cancer by 36 times. Also, the absence of contraception revealed a susceptibility of having ovarian cancer by 8.87. Likewise, when there was a family history of ovarian or breast cancer, the risk of having ovarian cancer was multiplied by 24.75 as shown in Table 2.

Logistic regression of significant risk factors

After adjusting for confounding factors, the only independent risk factor for ovarian cancer in our study was the age group of greater than or equal to 48 years old, see Table 3.

Discussion

Previous studies have reported an association between late menopause with a risk of ovarian cancer [6,7] between family history

Table 1. Socio-demographic characteristics

Variables	Cases N=25 n(%)	Controls N=100 n(%)	OR (95% CI)	P
Age groups (Yearsp				
[15-32[	1(4.0)	40(40.0)	0.33(0.03-3.07)	0.331
[32-48[	4(16.0)	53(53.0)	0.02(0.007-0.10)	0.000
≥48	20(80.0)	7(7.0)	37.85(9.99-143.40)	**0.000**
Marital status				
Single	8(32.0)	61(61.0)	0.37(0.14-0.98)	0.046
Married	13(52.0)	37(37.0)	2.63(0.99-6.96)	0.050
widow	4(16.0)	2(2.0)	15.25(2.39-97.03)	**0.003**

Table 2. Reproductive and clinical characteristics

Variables	Cases N=25 n=(%)	Controls N=100 n=(%)	OR (95%) CI	P value
Parity				
Nulliparous	8(32.0)	39(39.0)	0.73(0.29-1.86)	0.519
Multiparous	17(68.0)	61(61.0)	1.35(0.53-3.44)	0.519
Menopaused				
No	10(40.0)	96(96.0)	0.02(0.007-0.10)	0.000
Yes	15(60.0)	4(4.0)	36.00(10.00-129.57)	**0.000**
Oral contraceptives				
No	24(96.0)	73(73.0)	8.87(1.14-68.85)	**0.036**
Yes	1(4.0)	27(27.0)	0.11(0.01-0.87)	0.036
Familial past history of breast/ovarian cancer				
No	20(80.0)	99(99.0)	0.04(0.004-0.36)	0.004
Yes	5(20.0)	1(1.0)	24.75(2.74-223.20)	**0.004**
BMI (kg/m^2)				
≤25	12(48.0)	28(28.0)	2.37(0.96-5.82)	0.059
>25	13(52.0)	72(72.0)	0.42(0.17-1.03)	0.059

Table 3. Multivariate analysis with logistic regression of significant risk factors

Variables	B	SE β	Wald's X^2	Df	aOR	95% CI	P value
Age-group ≥ 48 years old	3,308	0,994	11,076	1	**27,333**	**3.8 – 191.7**	**0,001**
Widow	0,120	1,446	0,007	1	1,128	0.07 – 19.2	0,934
Menopaused	1,655	1,023	2,616	1	5,234	0.7 – 38.9	0,106
Oral contraceptive pills	1,356	1,330	1,040	1	0,258	0.02 – 3.5	0,308
Familial history of breast/ovarian cancer	1,967	1,295	2,307	1	7,150	0.6 – 90.5	0,129
BMI > 25 (kg/m²)	-2,262	0,910	6,174	1	0,104	0.02 – 0.6	0,013
Constant	-1,765	0,566	9,715	1	0,171		0,002

Hosmer & Lemeshow test: p = 0.704; Likelihood ratio test: p < 0.001; Cox and Snell R^2=0.422; Nagelkerke R^2 =0.664; ***aOR****: adjusted Odds ratio*

of breast and ovarian cancer with an increased risk of developing an ovarian cancer [8,9]. Other studies have reported a high body mass index as a risk factor for ovarian cancer [10-12]. These results are similar with our findings. It is well established that, all conditions related to incessant ovulation increase the risk of developing ovarian cancer [13,14]. Some studies have found associations between some reproductive characteristics and subtypes of ovarian cancers [8,15] but, most of these studies were carried out western countries. Some studies have highlighted differences between whites and blacks in the duration of exposure to oral contraceptive pills and their protective factors for ovarian cancer [16].

In the present study, we found out that being greater than or equal to 48 years of age constituted an independent risk factor for ovarian cancer. Also, the menopausal and widowed status, a familial history of ovarian or breast cancer, absence of oral contraception and a body mass index more than 25 kg/m^2 were associated with a risk of developing ovarian cancer. Our results are consistent with previous studies carried out in developed countries [11,15-18]. But in contrary to those studies nulliparity was not risk factor for ovarian cancer. This may be due to the small size of our study population. This may not reveal the consequence of incessant ovulation on the risk of developing ovarian cancer. We did not study the age at menarche or the age at menopause. This is a pilot study that gives way for more studies to be carried out. The risk factors we identified in our study, may be further investigated to find out any association between each of the reproductive characteristics and the development of various sub types of ovarian cancer.

Conclusion

Risk factors associated with ovarian cancer identified in our study were: age greater than or equal to 48 years old, being a widow, being menopaused, absence of contraception and a family history of ovarian cancer. The age group of more or equal to 48 years old was independently associated with ovarian cancer risk. Further researches are necessary to evaluate the effect of each reproductive characteristic and anthropometric parameters on the risk of developing specific subtypes of ovarian cancer. This will contribute to have data from sub-Saharan settings with an environment which differs from that of western countries.

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