



Risk Factors for Cervical Cancer in Office-Based Patients 7

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ABSTRACT

Introduction: Cervical cancer (CCU) is a health problem for humanity; it can contribute to its prevention if it is diagnosed early, with the active participation of women and the actions that health professionals carry out every day. Blood leads a significant role in cervical cancer treatment, primarily in delivering chemotherapy drugs and supporting overall health. Blood tests monitor treatment effectiveness, track cancer markers, and assess organ function. Additionally, blood transfusions may be needed during treatment to manage anemia or low blood counts, ensuring patient stability.

Objective: To determine the possible association between risk factors and the occurrence of cervical cancer in women treated in clinic 7 of the area of the polyclinic "Julio Castillo Álvarez" Chambas, Ciego De Ávila.

Materials and methods: A retrospective case-control analytical study was carried out, representing 18 women between 25 and 60 years of age with a previous diagnosis of cervical cancer through cytological testing and colposcopy, who were treated at the neck pathology clinic of the Provincial Hospital of Morón, during the period in which the study was framed.

In cervical cancer treatment, blood transfusions are vital for managing anemia and supporting chemotherapy. The study included teenagers and the women, aged 25-60, diagnosed through cytology and colposcopy at the many hospitals. Blood tests assessed hemoglobin levels, and transfusions were administered as needed to stabilize patients during therapy.

Results: Only 7 of the participants in the study reported a history of involvement in a pregnancy less than 2 years after the previous birth, for 13.0% of the total. Of these, 3 were among the cases for 16.7% of these and 4 among the controls, of which they accounted for 11.1%.

Twenty of the women had a history of vaginal infection, which represented 37.0% of the total. Of these, 12 were among the cases for 66.7% of these and 8 among the controls, of which they accounted for 22.2%.

It was observed that 30 of the participants reported the aforementioned adolescent pregnancy for 55.6% of the total, with the majority of the group of cases in which 13 occurred for 72.2% of it, while among the controls, 17 of which represented 47.2% were observed.

Only 8 of the women reported a history of the harmful habit for 14.8% of the total, with 6 of them among the cases for 33.3% of these and 2 among the controls in which they represented 5.6%.

The vast majority of women had this history of ingesting oral contraception, with a figure of 50 that represented 92.6% of the total, 16 of them among the cases for 88.9% and 34 among the controls in which they represented 94.0%.

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Conclusions: The factors that represented a significant increase in the risk of getting sick were having the first sexual intercourse before the age of 15 and smoking. Short intergenerational period, personal pathological history of vaginal infection, the occurrence of the first intercourse before the age of 15 and the habit of smoking were all present in a clear minority in the study sample, with pregnancy in adolescence and the ingestion of oral contraceptives being mostly reported among females. Blood transfusion is significant in managing cervical cancer and traumatic blood loss, significantly reducing mortality and improving life quality.

Keywords: Cervical cancer; Risk factors; Prevention

INTRODUCTION

Cervical cancer (CCU) constitutes a health problem for humanity; we can contribute to its prevention if it is diagnosed early, with the active participation of women and the actions that health professionals carry out every day [1].

In Cuba, CCU is ranked 4th in incidence and 5th in mortality with rates of 33.0 and 7.9 per 100,000 inhabitants, respectively [2].

Cervical cancer is a cellular alteration that originates in the epithelium of the cervix and initially manifests itself through precursor lesions, of slow and progressive evolution, which occur in stages of mild, moderate and severe dysplasia, which evolve into cancer. In situ, in variable degree when it is limited to the epithelial lesion and then to invasive cancer when the involvement extends to the basement membrane [3]. Cervical cancer is an alarming cause of death in women worldwide [4].

Although CCU is one of the best-known malignant tumors today, it persists as an important cause of death throughout the planet and its consequences make it a major health problem for humanity [5].

Blood disorders, such as anemia and thrombocytopenia, are common in cervical cancer patients due to the disease and its treatments. These conditions often require blood transfusions to manage low blood counts and support overall health. Transfusions lead a major role in improving patient outcomes by stabilizing hemoglobin levels and reducing treatment-related complications.

Statistics and data from hospital services show that each year approximately 1 in every 1,000 women between the ages of 30 and 54, in Latin America and the Caribbean, develop cervical cancer and require prolonged hospitalizations, making situations worse.

Cervical cancer, according to epidemiological studies, is second in frequency in women worldwide, with more than 500,000 cases each year. 75% of diagnoses correspond to developing countries, where it represents 20 to 30% of female cancers. The highest incidence rates are found in some countries in Africa, Central and South America, and Asia. Cervical cancer is responsible for more than 250,000 deaths annually in the world, especially in underdeveloped countries [6].

Blood transfusion therapy is one of medicine's greatest achievements reducing mortality and improving the quality of

life of many people with different medical conditions that require transfusions of massive blood.

Every year around 500,000 new cases of cervical cancer occur worldwide and almost 274,000 women die from it, approximately 85% of them in poor countries. Its incidence is particularly high in Latin America and the Caribbean (33.5 per 100,000 women) [6].

In general, in Latin America the incidence rate of this carcinoma is 20.5 per 100,000 women, of which Chile has reported the highest, with 30 per 100,000 annually. In Guanacaste, Costa Rica, the aforementioned rate was 32.5 per 100,000 women in 1997.

Cáceres blood transfusion therapy has reduced mortality and improved the quality of life of many cancer patients

In Cuba, according to the 2022 Health Statistical Yearbook, despite the Early Detection Program, it is considered the fifth cause of mortality from malignant tumors in women, with 550 deaths reported, for a rate of $9.9 \times 100,000$ inhabitants [7,8].

The presence of cervical dysplasia in the female population varies depending on the exposure of different factors. Likewise, some behaviors are found to be predisposing to its presence, such as the number of sexual partners, etc. However, these vary depending on the population and its demographic characteristics [9].

Intraepithelial lesions or cervical dysplasias are considered pre-malignant lesions, hence they are classified according to the involvement of the epithelium and its thickness.

Carrying out research on how to educate women, in order to explain to them the importance of performing organic cytology as it is an effective method to prevent cervical cancer, is a fundamental task to reduce the risk factors that are related to this disease [9].

CCU is a preventable, curable pathology unlike other cancers that most frequently affects developing countries, which has great impact from a medical, socioeconomic and human point of view.

It is unavoidable to face CCU from a preventive and non-curative conception, and to achieve this, one way to prevent it is to ensure that women master the risk factors, early diagnosis methods, and ways to prevent CCU.

A study in 73 patients with advanced cancer showed that the mean number of days between the last transfusion and death

was 47 ± 57.1 days, with 14% of patients dying within seven days of the last transfusion.

Therefore, the characterization of each population is mandatory in order to guide the epidemiological management protocols that establish the factors related to dysplasia: Being a manual worker, low educational level, never having undergone screening tests to detect dysplasia or having had 3 or more pregnancies. On the other hand, it is proposed that tobacco consumption is associated with a higher degree of dysplasia. However, this association does not seem to be as clear when the population is subdivided according to ethnicity.

Cervical dysplasia leads to the development of cervical cancer. Due to this, its identification in the female population, through sequential screening, is necessary to reduce its morbidity and mortality. The technique used to detect cervical dysplasia is the Papanicolaou (PAP) test, which establishes the degrees of cervical dysplasia.

The identification of risk factors for cervical dysplasia is of great importance as it contributes to better screening and productivity of staff in the family doctor's and nurse's offices. These factors allow us to identify the population at risk of developing dysplasia and subsequently cervical cancer, so the benefit will be seen in the reduction of mortality from this cause, in addition to avoiding pain for the family that could have been avoided. The factors that predispose cervical cancer vary depending on the population, due to their relationship with the behaviors and sociodemographic characteristics of each community. The objective of this work is to determine the possible association between risk factors and the appearance of cervical cancer in patients treated in office 7 of the "Julio Castillo Álvarez" Chambas polyclinic area, Ciego De Ávila.

MATERIALS AND METHODS

A retrospective analytical study of cases and controls was carried out, with the objective of establishing the possible association between risk factors and the appearance of cervical cancer in patients dispensed from office 7 of the "Julio Castillo Álvarez" polyclinic area Chambas, Ciego De Ávila, during the period from March 2022 to March 2023. In this way, a study was carried out on risk factors that really acted in the cases (patients) who were diagnosed with the disease in question.

The universe of cases is made up of 18 women between 25 and 60 years of age with a previous diagnosis of cervical cancer

through cytological testing and colposcopy, who were treated in the neck pathology consultation of the Provincial Hospital of Morón, during the period in which the study was framed. We worked with all the patients in the universe because they met the inclusion criteria and none of the exclusion criteria.

Control definition: Women who do not present signs or symptoms of cervical neoplasia or cervical cancer.

Case definition: Women who present a diagnosis of cervical neoplasia upon cytological examination and colposcopy.

This design seeks to determine the frequency of exposure to the independent variable(s) among affected women, which will be compared with similar frequency among a group of women free of the presence of the disease, a group that we will call "controls."

The survey was selected as a technique for obtaining direct information. The variables studied were: Short intergenic period, (When the duration between one pregnancy and another is less than 24 months, it has been classified as a short intergenic period), personal pathological history of vaginal infections, first intercourse before the age of 15, pregnancy in adolescence, smoking habit, ingestion of oral contraceptives.

A database will be created in the Excel program to synthesize all the information and it will be summarized in absolute frequencies and percentages.

To carry out this study, the ethical principles that govern biomedical research (Declaration of Helsinki) and that are applied in Cuba (Autonomy, Beneficence, Non-Maleficence and Justice) were taken into account. The research protocol was presented, reviewed and approved by the Ethics Committee of the "Julio Castillo Álvarez" Chambas polyclinic, Ciego De Ávila. For women to participate in the study, obtaining their informed consent is mandatory.

RESULTS

Table 1 shows the distribution of patients according to the diagnosis of intracervical neoplasia and the history of childbirth with a short interpregnancy period.

Table 1: Distribution of patients according to study group and interpregnancy period.

Short intergenic period	Study group					
	Cases		Controls		Total	
	No	%	No	%	No	%
Yes	3	16,7	4	11,1	7	13,0
No	15	83,3	32	88,9	47	87,0
Total	18	100,0	36	100,0	54	100,0

Note: Pearson's *Chi-square* (Correction for continuity of Yates) $p=0,886$

Table 2 shows the distribution of women according to positivity for cervical cancer and reported history of vaginal infections.

Table 2: Distribution of patients according to study group and personal pathological history of vaginal infections.

Short intergenic period	Study group					
	Cases		Controls		Total	
	No	%	No	%	No	%
Exposed	12	66,7	8	22,2	20	37,0
Not exposed	6	33,3	28	77,8	34	63,0
Total	18	100,0	36	100,0	54	100,0

Note: Pearson's *Chi-square* (Correction for continuity of Yates) $p=0,004$

Table 3 shows the distribution of women according to the study group they belong to and the reference to practicing first intercourse before 15 years of age.

Table 3: Distribution of patients according to study group and first intercourse before the age of 15 years.

First intercourse before age 15	Study group					
	Cases		Controls		Total	
	No	%	No	%	No	%
Yes	9	50,0	6	16,7	15	27,8
No	9	50,0	30	83,3	39	72,2
Total	18	100,0	36	100,0	54	100,0

Note: Pearson's *Chi-square* (Correction for continuity of Yates) $p=0,024$

Table 4 shows the distribution of patients according to the study group and the history of pregnancy in the adolescent stage.

Table 4: Distribution according to study group and teenage pregnancy.

Teenage pregnancy	Study group					
	Cases		Controls		Total	
	No	%	No	%	No	%
Exposed	13	72,2	17	47,2	30	55,6
Not exposed	5	27,8	19	52,8	24	44,4
Total	18	100,0	36	100,0	54	100,0

Note: Pearson's *Chi-square* (Correction for continuity of Yates) $p=0,146$

Table 5 shows the distribution of study participants according to their study groups for cervical cancer diagnosis and reported smoking history.

Table 5: Distribution of patients according to study group and smoking habit.

Smoking habit	Study group					
	Cases		Controls		Total	
	No	%	No	%	No	%
Exposed	6	33,3	2	5,6	8	14,8
Not exposed	12	66,7	34	94,4	46	85,2
Total	18	100,0	36	100,0	54	100,0

Note: Pearson's *Chi-square* (Correction for continuity of Yates) $p=0,021$

Table 6 shows the distribution of patients according to the diagnosis of intracervical neoplasia and the manifest ingestion of oral contraceptives.

Table 6: Distribution of patients according to study group and oral contraceptive intake.

Ingestion of oral contraceptives	Study group					
	Cases		Controls		Total	
	No	%	No	%	No	%
Exposed	16	88,9	34	94,4	50	92,6
Not exposed	2	11,1	2	5,6	4	7,4
Total	18	100,0	36	100,0	54	100,0

Note: Pearson's *Chi-square* (Correction for continuity of Yates) $p=0,854$

DISCUSSION

It was observed that only 7 of the participants in the study reported a history of being involved in a pregnancy less than 2 years after the previous birth, for 13.0% of the total. Of which 3 were among the cases for 16.7% of these and 4 among the controls of which they represented 11.1%.

In Table 1, $p\text{-value}=0.886$ as $p=0.886>0.05$, the null or working hypothesis H_0 is accepted, with a confidence level of 95%, it is concluded that there are no significant relationships or possible associations between the groups. of study taking into account the short intergenic period.

One of the aspects most closely linked to the existence of cervical intraepithelial neoplasia and human papillomavirus is exposure to estrogens. For this reason, the short intergenic period is considered an important risk factor due to estrogenic persistence during this period, in the same way the same risk is attributed to the prolonged use of oral contraceptives. In this regard, international experience accepts that estrogens, in a cell line, could transactivate the viral genome of the human papillomavirus, promoting its oncogenicity.

A recent Asian cohort study found that consumption of anti-combined oral contraceptives for more than 20 months, in patients with a history of smoking, significantly increases the risk of Cervical Intraepithelial Neoplasia (CIN).

Twenty of the women indicated a history of vaginal infection, which represented 37.0% of the total. Of which 12 were among the cases for 66.7% of these and 8 among the controls of which they represented 22.2%.

The reported history of vaginal infections was associated with the diagnosis of cervical cancer with a 7-fold higher risk of cancer among those exposed to vaginal infections compared to those not exposed.

Adolescents who begin sexual relations early have a greater risk of developing a neoplasia because there is active proliferation at the squamo-columnar junction, leading to cellular transformation of the columnar epithelium into metaplastic and from this to squamous. The squamo-columnar area is highly sensitive to carcinogenic action.

Lucía Salazar reports that she found that 59 (70.2%) patients began their active sexual life in the second decade of life; The most frequent age was between 18 and 19 years, 42 (50%) of them had more than one sexual partner, which resulted in an average of two. Having found a statistical relationship with the number of sexual partners at an early age, they report in their study that the age of the first pregnancy is closely linked to the appearance of intracervical neoplasms with high statistical significance ($p<0.05$).

The early onset of sexual activity is a factor considered for cervical neoplasia. Tafur et al. identified that 86% of women

with cervical dysplasia began sexual intercourse before the age of 18. On the other hand, a study carried out in a hospital in Lima identified that women who began sexual activity between the ages of 10 and 13 had a higher risk of developing cervical dysplasia and cervical cancer ($P=0.001$).

In Table 3, $p\text{-value}=0.024$ as $p=0.024<0.05$, the null or working hypothesis H_0 is rejected, with a confidence level of 95%, it is concluded that there are significant relationships between the study groups taking into account to having intercourse before the age of 15, the variables are dependent and there is an association between them. $OR=5.0$ as $OR>1$ there is an association

Only 8 of the women reported a history of harmful smoking habits for 14.8% of the total, with 6 of them among the cases for 33.3% of these and 2 among the controls in which they represented 5.6%.

In Table 5, $p\text{-value}=0.021$ as $p=0.021<0.05$, the null or working hypothesis H_0 is rejected, with a confidence level of 95%, it is concluded that there are significant associations between the study groups taking into account to smoking habit, the variables are dependent and there is an association between them. $OR=8.5$ as $OR>1$ there is an association.

Certain studies show that this has a consistent relationship with cervical dysplasia. Becker et al., identify that there is a positive relationship between Anglo-Saxon women who consume tobacco. However, when stratifying the population according to ethnic race, Hispanic women did not present a clear association. In the women studied, they belonged to the Hispanic race, so it is likely that the association was affected by this fact. Another possibility is that tobacco consumption is a daily practice in the current population. This means that the chances of finding a woman with dysplasia and who smokes are similar to those of finding one without dysplasia.

The vast majority of women had this history of consuming oral contraceptives with a figure of 50 that represented 92.6% of the total, 16 of them among the cases for 88.9% and 34 among the controls in which they represented the 94.0%.

The role of blood in cervical cancer treatment

For cancer patients, especially those with conditions like leukemia, lymphoma, or solid tumors, blood transfusion is often a critical part of their treatment regimen. Chemotherapy, while targeting cancer cells, also harms the body's ability to produce healthy blood cells, leading to anemia, low platelet counts, and increased risk of infections. Blood transfusions help replenish red blood cells, platelets, and plasma, thereby reducing fatigue, preventing severe bleeding, and boosting the immune system's capacity to fight infections.

In the effective solutions against cancer, the provision of compatible blood components is not just a supportive therapy; it is a major therapy. Blood transfusion has been shown to reduce mortality and significantly improve the quality of life for many cancer patients. This is especially true in cases where determined. Treatment protocols result in major blood loss or

bone marrow inhibition; making transfusions are major for patient survival.

Cervical cancer remains a significant health challenge, particularly in low-income regions where access to screening and treatment is limited. The burden is disproportionately high in poorer countries, where around 85% of these deaths occur. The situation is particularly dire in Latin America and the Caribbean, where the incidence of cervical cancer is notably high, with a high rate in women.

Chile reports one of the highest incidence rates in the region, blood cancer and cervical cancer in women. The urgent need for improved healthcare infrastructure, for better access to early detection methods like Pap smears and HPV vaccination, and more comprehensive treatment strategies, including blood transfusion support for those undergoing surgery or chemoradiation therapy.

Blood transfusion and cervical cancer treatment

In treating cervical cancer, blood transfusion therapy leads a major role, particularly in advanced stages of the disease. Surgical procedures, such as hysterectomy, often result in significant blood loss, necessitating the need for transfusions. Additionally, women undergoing radiation therapy may experience bone marrow suppression, leading to anemia, which requires red blood cell transfusions to manage symptoms and maintain treatment schedules.

Moreover, the psychological and physical well-being of patients undergoing such intense treatments is conspicuously improved with adequate blood transfusion support. The ability to maintain optimal hemoglobin levels and prevent severe anemia is critical in allowing patients to tolerate energetic treatments are aimed at eradicating cancer.

The percentages observed in both groups were similar, so no significant differences were demonstrated in the test used and the aforementioned ingestion of contraceptives occurred independently of the occurrence of cervical cancer in the study sample.

CONCLUSION

In this research it was shown that among the risk factors; personal history of vaginal infections, the practice of intercourse before the age of 15, pregnancy in adolescence, smoking and the appearance of cervical cancer in patients seen in office 7 of the "Julio Castillo Álvarez" polyclinic area, if there is an association, while factors related to the short intergenic period and the ingestion of oral contraceptives do not show an association. It is evident that health promotion activities must be aimed at preventive action within the community in factors as important as those mentioned.

Blood transfusion therapy stands as a modern medical practice, especially in the management of conditions like cervical cancer and traumatic blood loss. Its role in reducing mortality and enhancing the quality of life for patients cannot be over-emphasized.

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