

The importance of Pap smear for the prevention of Cervical Uterine Cancer

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Abstract—It is a slow-developing malignant neoplasm with a high cure rate when diagnosed early. The most important risk factor is the Human Papilloma Virus (HPV) infection, with sexual intercourse as the main form of contagion. Contribute to women's awareness about the importance of performing the preventive examination in the early diagnosis of Cervical Cancer. The expected results are to clarify the risks of cervical cancer (CC) in women's health and inform the women about the importance of periodic pap smear in the prevention of uterine cancer. This is a descriptive analysis study regarding the importance of performing the Pap smear as early diagnosis and prevention of uterine cancer, description of the cervix, its lesions, and HPV virus infection. It is concluded that the lack of knowledge about the method of prevention of CC is relatively large, with this should occur a better orientation, greater dissemination, and more qualified professionals, thus increasing the adherence of women performing the examination periodically.

Keywords—Cervical Cancer, Preventive Examination, HPV, Prevention, Vaccine.

I. INTRODUCTION

Cervical cancer also called cervical cancer is a malignant neoplasm that affects the cells of the cervix. It consists of the growth of a disordered form of the lining epithelium of the organ and may invade organs near or far from the anomaly. It is a slow-developing disease with

high chances of cure when diagnosed early. It is the third most common malignancy in the female population, second only to breast and rectal cancer, being the fourth leading cause of death of women from cancer in Brazil [1]. The most important risk factor and present in virtually all cases confirmed with this malignant neoplasm is human papillomavirus (HPV) infection, also having as other risk

factors smoking, early sexual relations, several partners, prolonged use of contraceptives, unprotected sex, multiparity among others [2].

The primary and most effective method consists mainly of the use of condoms during sexual intercourse, HPV vaccination provided only for girls from 9 to 13 years of age and periodic performance of the preventive examination Pap smear, this test is considered the most effective method for control and early diagnosis of this type of cancer [3, 4]. Given the extent of the problem, there is a need to disseminate and raise awareness of the importance of performing the Pap smear in the prevention and early diagnosis of cervical cancer to increase information and adherence to it and thus avoid or minimize possible injuries arising from the non-performance of the preventive examination.

II. PROPOSED METHODOLOGY

In this study, a descriptive analysis was performed regarding the importance of performing the Cytopathological Pap smear as early diagnosis and prevention of uterine cancer, description of the cervix, its lesions, and HPV virus infection. He followed an approach on cervical injuries, in articles, monographs, dissertations, theses, books, and periodicals, published between 2000 and 2016. The observation unit of the study were the subjects that had as descriptors: Pap smear, prevention, uterine cancer, HPV.

III. LITERATURE REVIEW

1.1. Uterine cervix cancer

Cervical cancer is a disordered replication of the lining epithelium of the uterus that is located at the bottom of the vagina, harming the underlying tissue (stroma), thus invading near or distant organs. It is mainly caused by the HPV virus, and maybe asymptomatic and usually takes 10 to 20 years to develop its diagnosis is made through the examination called Pap smear. Two main types of cervical cancer vary according to the origin of the compromised epithelium: squamous cell carcinoma (represents about 80% of cases) and adenocarcinoma, the rarest type that affects the glandular epithelium (10% of cases) [3].

1.2. Risk factors

Uterine cervical cancer is related to several risk factors, including HPV infection being considered the most important, early onset of sexual intercourse, multiplicity of partners, unprotected sex, as they increase the spread of HPV virus, history of the sexually transmitted disease

(STD), prolonged use of oral contraceptives, multiparity, smoking, nutritional deficiency and fear of the patient to perform the preventive test due to fear, shame or difficulty in accessing health services [2, 5].

1.3. Prevention and treatment

The primary prevention method consists mainly of the use of condoms during sexual intercourse, both male and female, performing the preventive pap smear, where it is considered the most successful method in the control of uterine cancer, and currently we have the bivalent and quadrivalent vaccine against HPV where it is distributed by the Unified Health System (UHS) [4, 6, 7].

Among the most common treatments, they consist of destroying the lesions caused by the virus, being with surgery or radiotherapy. Some factors should be taken into account for choosing the method to be used, including age, location, lesion extensions, tumor size, symptoms, and patient mood (desire to have children) [4].

1.4. Pap smear

It was discovered in 1940 by Dr. George Nicholas Papanicolaou (1886-1962) during studies on hormonal cytology. This method aims to detect changes in squamous cells and early diagnosis of diseases and the risks of women developing this type of cancer, also allows observing the presence of warts, vaginal infections, lesions in the female reproductive system, such as possible HPV infection, tumors in the vagina and cervix, sexually transmitted disease (STD) and conditions of hormone levels. The earlier these changes are discovered, the greater the chance of cure, and the less laborious treatment, thus reducing the mortality rate from cervical cancer [8].

The Pap smear should be performed periodically by all women who have or have had sex. Initially, the examination should be performed annually, after two tests in a row, and with normal results, the preventive examination can be performed every three years. It is a painless examination, simple and fast, and can cause little discomfort at the time of collection due to the discomfort of the woman. To perform the examination, the woman must avoid having sex (even with a condom), 48 hours before the collection, avoid the use of showers, vaginal medications, and local contraceptives in the next 48 hours before collection. The patient mustn't be menstruating, pregnant women can also perform the examination [1].

The collection is performed in such a way: The patient is placed in a gynecological position on a stretcher where with the aid of the fingers shoes by procedure gloves moves away from the walls of the vagina, later an instrument called a speculum is

introduced into the vaginal canal until it obtains complete visualization of the cervix, then the professional causes a small scraping of exfoliative cells of cervical and vaginal secretions, through the ectocervical material (external) performed with the Ayre spatula and the endocervical (internal) performed with a brush adapted exclusively for this type of procedure. The collected cells are spread vertically on a microscopy lamina by the Ayre spatula and horizontally by the brush evenly, soon after it should be fixed by a cytopathological fixator to avoid desiccation and deformation of the cells, the material must be identified with the patient's name, age, and the collection unit. After all these procedures you will be referred to a clinical analysis laboratory specialized in cytopathology [1, 9–11].

After the examination, the patient should return to the place where the collection was performed on the scheduled date to receive the result and forward it to the doctor. As important as the performance of the examination is the receipt of the result presented to the doctor [10].

1.5. HPV x Uterine cancer

The Human Papilloma Virus (HPV) is the virus responsible for cervical cancer, where it is estimated that about 10 to 50% of people who have a sexually active life are infected with at least one type of HPV virus. Currently, about 150 different types of HPV are recognized, where 40 of these types dominate in the genital organs. Viruses are classified as causing benign tumors causing common warts, papilloma, and condylomas. It is responsible for being the most common STD in the world, transmitted by contact of any cell of the skin or mucous membranes, vulva, anus, oropharynx, mouth, feet, vagina and cervix, being sexual intercourse the main form of contamination, thus causing malignant or benign tumors. In males, the most common clinical exposure of the virus is genital and anal warts. In females, she also has warts, but, moreover, she is responsible for most degrees of neoplasms in the cervix [12].

Among the 40 different types of HPV viruses, there are low-risk and high-risk oncogenic ones. Low-risk ones are associated with benign lesions including viral types 6, 11, 26, 42, 44, 54, 70, and 73 cause simple warts, papilloma, and condylomas. The high risk is 16, 18, 31, 33, 35, 39, 45, 51, 55, 56, 58, 59, 66 and 68, are related to the different degrees of intraepithelial squamous lesions of the cervix, vulva, penis, vagina; cervical carcinomas, head, and neck, oral cavity, larynx, oropharynx. Types 16 and 18 are the ones with the highest incidence of cervical cancer present in 70% of the cases already confirmed and

the 6 and 11 as low risks are found in 90% of genital condylomas and papilloma [13].

1.6. HPV Vaccine as a prevention device

To combat the proliferation of the virus and HPV lesions, a vaccine against the HPV virus was developed, this vaccine is based on contact with virus-like particles, preventing viral DNA from acting against host cells [14].

In Brazil, two prophylactic vaccines were approved, the bivalent one where it protects against CC caused by HPV types 16 and 18 and the quadrivalent vaccine, where it protects against HPV types 6, 11, 16 and 18, avoiding cervical, vaginal, vulvar and anal cancer, in addition to the genital wart. It is estimated that both vaccines in addition to preventing CC, also prevent other types of cancer caused by the HPV virus, with moderate to high efficacy. HPV infection in sexually active women can occur in any age group, although the highest degree of getting some HPV-related disease is soon after the onset of sexual life [15].

The Food and Drug Administration (FDA) approved quadrivalent vaccination for women aged 9 to 26 years, where vaccination is advised to occur in girls aged 11 to 12 years, and can be extended by 9 to 26 years, but has more efficacy in girls who do not yet have an active sex life. The Society of Oncology Gynecology of the United States indicates that regardless of whether the woman has abnormal Pap smear, genital warts, and positive viral presence, the vaccine can be performed in the same way, as it will be effective against the other types of HPV present in the vaccine and that the patient has not yet acquired [16].

The ministry of health began offering the HPV vaccine to boys aged 12 to 13 from January 2017, where it will be extended, progressively until 2020 serving boys aged 9 to 13 years. The vaccine available is the quadrivalent, where it confers protection against subtypes 6, 11, 16, 18 of the HPV viruses. The immunization of the HPV vaccine aims to protect patients against penile, anus, and throat cancers and diseases directly related to the HPV virus. Having as greater effective protection before the beginning of sexual life, that is, before contact with the HPV virus [17].

It is noteworthy that the HPV vaccine, although highly effective, does not replace other methods of prevention against cervical uterine cancer [18].

1.7. The importance and knowledge of cervical cancer prevention

Cervical cancer is a problem that affects women of all ages, regardless of their sex life, occurs worldwide and is still responsible for much of the number of deaths.

Numerous factors lead to the onset of the disease, among them lack of knowledge by the target audience, embarrassment due to the fact of exposing the body, discomfort, shame, fear of patients in which the examination is performed by a male professional, not having any apparent gynecological disease, level of education and, difficulty in accessing health units. The prevention and health incentive measures should develop methods that value the information and dissemination of knowledge of the theme, enabling more and more women to become aware of what it is, how it is performed and the importance of the examination for the early prevention of cervical cancer and thereby increase the adherence of women in the performance of the same [19–21].

1.8. Cervical cancer prevention program

Since 1940, in Brazil, pioneering initiatives have been made to control uterine cancer by professionals who brought cytology and colposcopy to our country. In 1956 Juscelino Kubitschek sponsored the construction of the Luíza Gomes de Lemos Research Center, currently integrated with RCCI – treating cases of breast cancer and female genital tract. This was the first initiative of institutional dimensions aimed at the control of CC in Brazil. Between 1972 and 1975 the Ministry of Health developed and implemented the National Cancer Control Program, aimed at tackling cancer in general. In 1984, IWHCP (Integrated Women's Health Care Program) was implemented, where basic health services offered women activities to prevent CC. The main contribution of this Program was to stimulate the collection for the Pap smear as a routine procedure in gynecological consultation.

In 1986, the Oncology Program (PRO-ONCO) was constituted, where he elaborated on the project for the expansion of uterine cancer prevention and control. After the creation of the STD, in 1988 the INCA became the body responsible for the elaboration of the national policy for the prevention of CC, incorporating PRO-ONCO. Due to the high rate of death due to CC, in 1996 the Ministry of Health developed a pilot project called "Live woman", intended for women whose age group is 35 to 49 years. Protocols were elaborated for the collection of material and the segment and conduct in the face of each alteration related to the test result, also introducing high-frequency surgery for the treatment of preinvasive cancer lesions. Due to being a pilot project, the action was restricted only to Curitiba, Recife, Federal District, Rio de Janeiro, Belém and, Sergipe, but in 1998 this action was expanded throughout Brazil.

In 2011, the Brazilian guidelines for cervical cancer screening were also published by INCA. In 2014, the

National Immunization Program (NIP), began the vaccination campaign against the HPV virus for adolescent girls. The function of primary care is to organize actions for the prevention of CC through health education actions, group vaccination, and early detection of cancer through screening. Secondary and Tertiary Care has the function of confirming the diagnosis and treating ambulatory the precursor lesions of the CC with the performance of colposcopies, biopsies, and excision. The Pap smear performed periodically remains the most used technique in the screening of CC. Reaching a high number of target audiences is the priority in primary care, to significantly reduce the number of deaths from this neoplasm. Cervical cancer has a long period of lesions, and may be asymptomatic or not, curable in most cases where they are diagnosed early and when treated appropriately [17].

Valent et al., (2009) [22] in a study conducted with 1035 female night high school students in public schools in the city of Uberaba/MA to identify knowledge about the Pap smear test found that 38.4% of the women interviewed had an erroneous knowledge about this exam. In a study developed in the city of São José de Mipibu/RN, from March to September 2007, where 267 women were interviewed, aged between 15 and 69 years and who had already started sexual activities, it was observed that 98.1% of the women have heard about the procedure, but only 46.1% know what the preventive examination serves [23]. Corroborating the research conducted in a Basic Health Unit of the Northern State of Paraná where they interviewed 54 women, between 17 and 46 years old, reported that some women claim to know about the existence of uterine cancer, but did not know that the preventive examination Pap smear was the test in which they diagnosed cancer early [24].

In descriptive research with a quantitative approach, developed in a Unified Health System (UHS) of the Southern District of the City of Natal, capital of the State of Rio Grande do Norte, in the Northeast region of Brazil, some women reported that they did not perform the preventive test due to shame, fear at the time of performance and difficulty in making an appointment and receiving the results, where 41.7% are afraid of being diagnosed with the disease, thus generating one of the main reasons for not returning to the unit in search of results, and 33.3% do not perform it due to the delay in delivery of results and difficulty in scheduling, causing them to return several times to the health center [25]. An exploratory descriptive study, conducted in a Unified Health System (UHS) of a municipality in the north of Paraná, interviewed 54 women, between 17 and 46 years

old, emphasizing that the preventive exam is impaired due to the majority of women feeling ashamed at the time of collection and afraid to discover they have cancer. The rudeness of some professionals at the time of collection makes access to basic health services difficult [24]. In a study conducted by Brenna (2001) [26], where he interviewed 138 women, among them 80% were demotivated and ashamed to perform the test, 60% reported that the doctors did not examine and 50% complained about the waiting time for the consultation and the delay in scheduling.

IV. FINAL CONSIDERATIONS

Due to the facts mentioned, it is concluded that, given the lack of knowledge about the method of prevention of CC, public policies should be organized for the dissemination and training of health professionals so that they can guide and encourage, clearly transmitting the information that points out the importance of performing the Pap smear periodically, it should also be reported how the examination is performed, highlighting its advantages. With everything, the teams of professionals in this area must possess the knowledge and adapt to the reality of their community, to provide strategies and objectives to obtain better results in the prevention of this disease.

REFERENCES

- [1] Inca (2013). National Cancer Institute. National Cervical Cancer Control Program.
- [2] Bezerra SJS, Gonçalves PC, Franco ES, et al. ; (2005). Profile of women with cervical lesions caused by HPV regarding risk factors for cervical cancer. vol. 17. p. 143–148.
- [3] Inca. (2008). Nursing actions for cancer control. A proposal for teaching-service integration.
- [4] Rodrigues AF, Sousa JA. (2015). Human papillomavirus: prevention and diagnosis. Journal of Epidemiology and Infection Control. 5 (4): 197–202.
- [5] Lima CA, Palmeira JAV, Cipolotti R. (2006). Factors associated with cervical cancer in Propriá, Sergipe, Brazil. Cad Public Health of Rio de Janeiro. 22: 2151–2156. Available from: 10.1590 / s0102-311x2006001000021; <https://dx.doi.org/10.1590/s0102-311x2006001000021>.
- [6] Campisi G, Giovannelli L. (2009). Controversies surrounding human papilloma virus infection, head & neck vs oral cancer, implications for prophylaxis and treatment. Head & Neck Oncology. 1 (1). Available from: 10.1186 / 1758-3284-1-8; <https://dx.doi.org/10.1186/1758-3284-1-8>.
- [7] Scudellari M. (2013). HPV: Sex, cancer, and a virus. Nature. 503 (7476): 330–332. Available from: 10.1038 / 503330a; <https://dx.doi.org/10.1038/503330a>.
- [8] Burden EM. (2003). Human papilloma virus and cervical cancer. Revista Clinica Microbiologica. 16: 117–117.
- [9] Rodrigues DP, Fernandes AFC, Silva RM. (2001). Perception of some women about the Pap smear. Nursing magazine. 5 (1).
- [10] Stival CO, Lazzarotto M, Rodrigues YB, et al. (2005). Comparative evaluation of positive cytopathology, colposcopy, and histopathology: highlighting cytopathology as a method of screening for cervical cancer. Brazilian Journal of Clinical Analysis. 37 (4): 215–218.
- [11] Inca, National Cancer Institute. (2011) Brazilian Guidelines for Cervical Cancer Screening. Janeiro (RJ).
- [12] Brasil MDS, Department of Primary Care, et al. ; (2006). Control of cervical and breast cancers. In: Department of Health Care. Brasília: Department of Primary Care.
- [13] Silva AMTC, Cruz AD, Silva CC, Borges FR, Curado MP. (2003). Genotyping of human papillomavirus in a patient with recurrent laryngeal papillomatosis. Brazilian Journal of Cancerology. P. 167–174.
- [14] Zardo GP, Farah FP, Mendes FG, Franco CAGS, Molina GZM, et al. (2014). Vaccines as an agent for immunization against HPV. Science & Collective Health. 19 (9): 3799–3808.
- [15] Castellsagué X, Muñoz N, Pitisuttithum P, Ferris D, Monsonogo J, et al. (2011). End-of-study safety, immunogenicity, and efficacy of quadrivalent HPV (types 6, 11, 16, 18) recombinant vaccine in adult women 24–45 years of age. British Journal of Cancer. 105 (1): 28–37. Available from: 10.1038 / bjc. 2011.185; <https://dx.doi.org/10.1038/bjc.2011.185>.
- [16] Borsatto AZ, Vidal MLB, Rocha RCNP. (2011). HPV Vaccine and Cervical Cancer Prevention: Subsidies for Practice. Brazilian Journal of Cancerology. 57: 67–74.
- [17] Brasil MDS, National Institute of Cancer and Health José Alencar Gomes da Silva and Ministry of Health. (2016). Brazilian Guidelines for Cervical Cancer Screening.
- [18] Sanches EB. (2010). Prevention of HPV: the use of the vaccine in health services. Revista Saúde e Pesquisa. (2): 255–261.
- [19] Castro LF. (2010). Pap smear: women's knowledge about the preventive measure and the strategy of the PSF in the fight against cervical cancer. Contemporary Nursing Magazine. P. 1–20.
- [20] Santos ACS, Varela CDDS. (2015). Prevention of cervical cancer Reasons that influence the failure to perform the Pap smear. Contemporary Nursing Magazine. (2): 179–188.
- [21] Dias GE, Santos DDC, Dias ENF, Alves JCS, Soares LR. (2015). Knowledge Assessment Regarding Cervical Cancer Prevention Among Women in a Health Unit. Revista Epidemiológica e Infecção Control. (3): 136–140.
- [22] Valente CA, Andrade V, Soares MBO, Silva SR. (2009).

Women's knowledge about the Pap smear. FapUNIFESP (SciELO). Available from: 10.1590 / s0080-62342009000600008; <https://dx.doi.org/10.1590/s0080-62342009000600008>.

- [23] Fernandes JV, Rodrigues SHL, Costa, YGASD. (2009). Knowledge, attitudes, and practice of Pap smear examination by women, Northeastern Brazil. *Revista de Saúde Pública*, 43, 851-858.
- [24] Pelloso SM, Barros CMD, Higarashi IH. (2004). Women's knowledge of cervical cancer. *Acta Scientiarum Health Science*. 26 (2): 319–343. Available from: 10.4025 / actascihealthsci.v26i2.1582; <https://dx.doi.org/10.4025/actascihealthsci.v26i2.1582>.
- [25] Davim RMB, Torres GDV, Silva RARD. (2005). Knowledge of women from a Basic Health Unit in the city of Natal / RN about the Pap smear. *Revista de Escola de Enfermagem da USP*, 39 (3), 296-302.
- [26] Brenna SMF, Hardy E, Zeferino LC, Namura I. (2001). Knowledge, attitude, and practice of Pap smear in women with cervical cancer. vol. 17. Rio de Janeiro: FapUNIFESP (SciELO). Available from: 10.1590 / s0102-311x2001000400024; <https://dx.doi.org/10.1590/s0102-311x2001000400024>.