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Human Papillomavirus and Cervical Cancer

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Introduction

Human papillomavirus (HPV) and cervical cancer are related issues that are important topics to discuss. According to the American Cancer Society (ACS) (2018) it is estimated that in 2018 "about 13,240 new cases of invasive cervical cancer will be diagnosed."

The National Cervical Cancer Coalition (NCCC) reports that cervical cancer "can almost always be prevented through regular screening and, if needed, treatment of abnormal cell changes" (2018). Human papillomavirus (HPV) is the virus that is linked to "abnormal cell changes on the cervix" (NCCC, 2018).

Why is this topic important?

- Future interest in women's health practice or public health would address the topic of cervical cancer and HPV.
- Nurse practitioners and other healthcare providers need to be aware of the up to date information to accurately screen and treat patients.

Underlying Pathophysiology

Caused by a virus?

According to the NCCC (2018) HPV "is the name of a group of viruses that infect the skin. There are more than 100 different types of HPV. Some types of genital HPV may cause genital warts, while other types of genital HPV are linked to abnormal cell changes on the cervix (detected through Pap tests) that can lead to cervical cancer. However, this cancer can almost always be prevented through regular screening and, if needed, treatment of abnormal cell changes."

"Epidemiological and molecular evidence indicates that high-risk HPV, especially HPV type 16 and type 18, plays a causative role in cervical cancer" (He, Mao, Hua, Lv, Chen, Angeletti, Dong, Remmenga, Rodabaugh, Zhou, Lambert, Yang, Davis, & Wan, 2015, p. 1439).

Underlying Pathophysiology

- According to the NCCC (2018), "Cervical cancer is the first cancer in women to be identified as being caused almost exclusively by a virus."
- HPV is detected in 99.7% of patients with cervical cancer. (He et al., 2015)
- HPV is linked to other cancers including oropharyngeal, oral, and some head and neck cancers (NCCC, 2018).
- Regular pap tests can be supplemented with additional HPV testing to optimize the prevention and treatment for cervical cancer (NCCC, 2018).

According to the ACS (2016), HPV is the main cause of cervical cancer and a common virus that is passed from one person to another during sex. Most sexually active people will have HPV at some point, but few women Squamous intraepithelial lesions (SILs) These abnormalities are divided into two categories:

- "In *low-grade SIL (LSIL)* the cells look mildly abnormal" (ACS, 2016)
- "In *high-grade SIL (HSIL)* the cells look severely abnormal and are less likely than the cells in LSIL to go away without treatment. They are also more likely to eventually develop into cancer if they are not treated" (ACS, 2016)

"Cervical cancer was one of the first human cancers to illustrate the now generally accepted concept that there is a step-wise progression from normal cells, to dysplastic cells, and finally to invasive disease. Cervical intraepithelial neoplasia (CIN) refers to pre-invasive dysplasia of cervical epithelial cells. It is the antecedent of malignant disease. CIN is categorized primarily according to the extent to which squamous cells fail to mature as they migrate from the basal zone next to the basement membrane to the surface of epithelium" (Garrison, Fischer, Karam, Leary & Pieters, 2015, p. 3).

The ACS reports (2016), "Pre-cancerous changes in a biopsy are called *cervical intraepithelial neoplasia (CIN)*. Sometimes the term *dysplasia* is used instead of CIN. CIN is graded on a scale of 1 to 3 based on how much of the cervical tissue looks abnormal when viewed under the microscope."

How are biopsy results reported?

The ACS (2016) also explains how the CIN results are reported,

- "In CIN1, not much of the tissue looks abnormal, and it is considered the least serious cervical pre-cancer (mild dysplasia).
- In CIN2 more of the tissue looks abnormal (moderate dysplasia)
- In CIN3 most of the tissue looks abnormal; CIN3 is the most serious pre-cancer (severe dysplasia) and includes carcinoma in situ."

HPV and cervical cancer: what's the connection?



How can women protect themselves?

1. By limiting their number of sex partners. Condoms may also lower the risk of HPV.
2. By getting Pap tests every three years. This test detects the abnormal cells that can lead to cervical cancer.
3. By getting vaccinated against the types of HPV that cause most cervical cancers.

"The virus is the lower narrow end of the uterus. Also known as the womb the uterus is where a baby grows when a woman is pregnant"

Image 1: HPV from common virus to cervical cancer. As retrieved http://www.picstopin.com/195/cervical-cancer-uv-a-health/https://7C7Cuvahealth.com%7CPlone%7Cebco_images%7C2434.jpg/

Significance of Pathophysiology

Recognizing the underlying pathophysiology is important for staging cervical cancer. "The treatment of cervical cancer is stage-specific. While early stage disease can be cured with radiotherapy or surgery, the most effective treatment for locally advanced stage patients is concurrent chemotherapy and pelvic irradiation." (Ordikhani, Arslan, Marcelo, Sahin, Grigsby, Schwarz & Azab, 2016, p. 1)

There are vaccinations that have been used to prevent HPV. As Camara (2014) explores the need for vaccines several facts are presented, "HPV is so common that one in every two sexually-active people will contract at least one HPV infection at some point during their lifetime. With over one-hundred identified strains, most infections present either minimal or no risk to health in "immunologically-competent" individuals. HPV infections are typically "asymptomatic and harmless; most people never know they are infected, and most infections typically resolve on their own" (p. 39). Information and statistical findings can be researched and reported to patients in order for them to make educated decisions to determine if vaccinations should be used.

Researching the appropriate treatment for cervical cancer according to the level of cell changes that are reflected by the CIN is important. "Pelvic floor disorders are widely encountered in women who survive gynecological cancers, and an increasing body of evidence shows that these problems are present at baseline, before initiation of cancer therapy. Because the primary focus in therapy is cancer eradication, pelvic floor disorders are frequently overlooked by both patients and specialists, although they have a major impact on patients' quality of life. Future research should focus on improving quality of life in cancer survivors using treatments that cause less damage to the pelvic floor compartment" (Bodean, Marcu, Spinu, Socea, Diaconu, Munteanu, Taus, and Cirstoiu, 2018).

The Natural History of HPV Infection

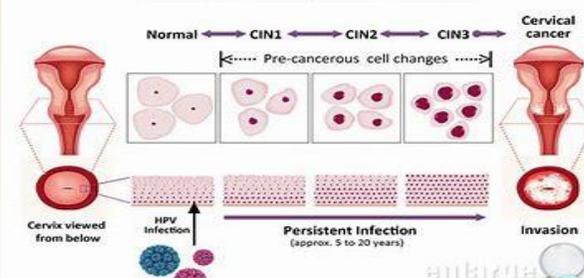


Image 2: The Natural History of HPV infection. As retrieved <http://www.cuhk.edu.hk/sphpc/hpvselfsampling/en/cc-n-hpv.html>

Signs and Symptoms

According to the CDC (2015), "Early on, cervical cancer may not cause signs and symptoms. Advanced cervical cancer may cause bleeding or discharge from the vagina that is not normal for you, such as bleeding after sex. If you have any of these signs, see your doctor. They may be caused by something other than cancer, but the only way to know is to see your doctor."

Cervical cancer most commonly takes 10 years to 20 years or more to develop; women who are no longer sexually active should still have Pap tests." (NCCC, 2018) According to the NCCC (2018), Abnormal bleeding includes the following

- Bleeding between regular menstrual periods
- Bleeding after sexual intercourse
- Bleeding after douching
- Bleeding after a pelvic exam
- Bleeding after menopause."

Other symptoms include, "Pelvic pain not related to your menstrual cycle, heavy or unusual discharge that may be watery, thick, and possibly have a foul odor, increased urinary frequency, pain during urination" (NCCC, 2018).

It is important to educate patients, even if they are not sexually active anymore because HPV can remain dormant for many years (NCCC, 2018).

Pathophysiologic Treatment

Additional outside testing can be completed to determine the best course of action when deciding when and how to treat the different stages of CIN and cervical cancer. "There is limited data to support or refute whether review of outside pathology for diagnostic confirmation is necessary or cost effective especially for CIN. This is especially important in younger populations that desire fertility...treatment for CIN was not associated with increased risk of total preterm delivery or spontaneous preterm delivery but did reveal an increased risk of preterm premature rupture of membranes... clinically relevant as CIN II is often the threshold for treatment and may present as a transient process especially in younger women." (Williams, Agner & Stockdale, 2018, p.4).

Implications of Nursing Care

Information can be provided to patients to prevent and screen for cervical cancer. Risk factors can be presented to encourage patients to be tested for cervical cancer. Education through nursing care is important to support patients.

According to the Centers for Disease Control and Prevention (CDC) (2016) There are many types of HPV and it usually will go away on its own. If it does not, it may cause cervical cancer over time.

There are other factors that can increase your risk of cervical cancer:

- Smoking.
- Having HIV (human immunodeficiency virus) another virus that can make it hard for someone to fight off other infections and other immunosuppressive diseases
- Using birth control pills for over five years.
- Given birth to three or more children. (ACS, 2016)

Nursing care includes providing information for patients to learn about diagnosed diseases.

"Education is a pivotal factor in promoting HPV preventative behaviors. Education for the general public about HPV, the many cancers predominantly caused by HPV infections, and characteristics of the vaccine is fundamental to increasing vaccination rates and dispelling myths about its safety and effectiveness. Research analyzing what methods are most effective for promoting HPV vaccines in women can be utilized to encourage receiving the vaccine" (Russell, 2016).

Conclusion

"The introduction of cervical screening with cytology has significantly reduced morbidity and mortality related to cervical cancer in developed nations. This is due to the detection of both preinvasive changes as well as invasive cancer at earlier stages which allows for earlier treatment. When abnormal cytology and histology is identified, patients may be referred to another facility for further evaluation and management" (Williams et al., 2018, p. 4).

By examining the pathophysiology, practitioners can assist patients with prevention and treatment of HPV and cervical cancer.

"Cervical cancer is the second most commonly diagnosed cancer and fourth leading cause of cancer death in women worldwide" (He et al., 2015, p. 1426).

Prevention is the key to stopping the progression of HPV into cervical cancer. Patients and practitioners alike can educate themselves to prevent the progression of this cancer in women.

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