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Review Article

The Cervical Cancer (CC) Epidemiology and Human Papillomavirus (HPV) in the Middle East

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Abstract: Viral infections contribute 15–20 percent of all human cancers as a cause. Oncogenic virus infection may spur various stages of carcinogenesis. For several forms for HPV, about 15 associated with cancer. Following successful test techniques, cervical cancer remains a significant public health issue. Prevalence and mortality of per geographic area of cervical cancer were vastly different. The fourth most common cause of death from cancer among women is cervical cancer (CC). Human papillomavirus (HPV) infection in the cervix is the most significant risk factor for forming cervical cancer. Inflammation is a host-driven defensive technique that works rapidly to stimulate the innate immune response against pathogens such as viral infections. Inflammation is advantageous if it is brief and well-controlled; however, it can cause adverse effects if the inflammation is prolonged or is chronic in duration. HPV proteins are involved in the production of chronic inflammation, both directly and indirectly. Also, the age-specific prevalence of HPV differs significantly. Two peaks of HPV positive in younger and older people have seen in various populations. A variety of research has performed worldwide on the epidemiology of HPV infection and oncogenic properties due to specific HPV genotypes. Nevertheless, there are still several countries where population-dependent incidences have not yet identified. Additionally, the methods of screening for cervical cancer differ among countries.

Keywords: Genotypes, Infection, Screening, Treatment, Pap Smear, Women.

1. Introduction

Virtually all cervical cancers caused by a recurrent high-risk human papillomavirus (HR-HPV) infection [1]. HPV is a sexually transmitted infection (STI) [2], involving both men and women, and 80 percent of individuals aged 50 years and older have reported developing genital HPV infection [3]. There are several categories of HPV, and they classified into low-risk categories (which may not trigger cancer but may induce genital warts or verruca's) and high-risk styles (which may lead to abnormal cells contribute to cancer if kept unchecked over time). Although HR-HPV is the root cause of virtually all cervical cancers, HR-HPV seldom induces disease and spontaneously cures most infections within two years [4].

The first connection between Human Papillomavirus (HPV) and cervical cancer reported in 1976 by Noble Prize winner Harald Zur Hausen, which dramatically changed the field of cervical cancer prevention. Nowadays, HPV is well known to be essential for the development of cervical cancer [5]. This knowledge has resulted in many medical breakthroughs such as the introduction of prophylactic HPV vaccines in 2006, and the more recent large-scale use of HPV tests for cervical cancer screening and follow-up after treatment testing [6]. Likewise, successful usage of systematic cervical cancer screening has dramatically lowered the incidence of cervical cancer in many areas of the globe. Despite these advances in the field and being a strongly preventable disease, the fourth most common

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cancer among women in the world remains cervical cancer [7]. It seeks to tackle many concerns, including geographic inequalities in access to cervical cancer screening and HPV vaccinations. Cervical cancer prevention is often absent nowadays in regions where it is most needed. A significant concern in regions with well-established screening and vaccination services is the achievement of high screening and vaccination take-up [8]. In this report, we want to explain the human papillomavirus epidemiology and its connection to cervical cancer, and the degree to which it affects culture in the Middle East (Iraq).

2. Human Papillomavirus (HPV) and Cervical Cancer (CC) Etiology

The belief that the sexually transmitted HPV now generally recognized as having This is a causative function in cervical cancer production. Nearly 100 percent of retrospective studies reported high-risk oncogenic HPV (HR-HPV) in all cervical cancer [9]. HPV is a small and heterogeneous family of viruses with around 150 recognized types of human infection [10], about 30-40 of which are genital tract infections [11]. Identified as an oncogenic individual, HPV 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 68; The International Cancer Research Agency (IARC) has defined twelve of these types of HR-HPV as carcinogenic to the cervix and formula 68 rated as carcinogenic as possible [12]. HPV 16 is the most active, carcinogenic cervical type of HPV led by HPV 18 [13]. Condyloma induces HPV 6 and 11 (genital warts), but not cancerous and graded as low-risk HPV (LR-HPV) [14]. A global HPV dissemination meta-analysis of 30 000 invasive cases of cervical cancer (ICC) identified HPV 16 to be the most predominant form of HPV in all regions of the world (57%, 95 % confidence interval (CI), 54.3-58.9), led by HPV 18 (16%, 95 % CI, 14.6-17.4). Gathered, they represent approximately 73 percent of all ICCs. The next most frequent types of HPV were 58, 33, 45, 31, 52, 35, 59, 39, 51 and 56. Although their relative order varied from one part of the world to the next. HPV output sometimes differed between ADC and SCC. HPV 18 was the most common in ADCs (36.8%, 96% CI 34.9-39.7). The most famous among ADC's was HPV 16. SCC (59.3, 95% CI 56.8-61.7), whereas HPV 16 was the most prevalent in SCC (59.3, 95 % CI 56.8-61.7) [8]. Cervical cancer is the fourth most prevalent form of the breast [15], colorectal, and lung cancer in women worldwide, reporting 528,000 new diagnoses and estimating 266,000 deaths in 2012 [16].

Nearly half of the most common events arise in individuals under the age of 50 [17], unlike some other malignancies. There is considerable Global cervical cancer prevalence, with fatalities in 84 percent of all cases and 87 percent of economically developing countries. Cervical cancer is the second most prevalent cancer in less developed regions, while it is less prevalent in more industrialized regions, whereas the estimated age-standardized prevalence of cervical cancer is 14 per 100,000 for 4.4 to 42.7 per 100,000. East Southern and Middle Africa and Melanesia are high-level regions of over 30 per 100,000 typically age-standardized concentrations. In all these regions, Cervical cancer is prevalent in women in eastern and middle Africa [18]. In addition to the regions listed above, individual countries in Latin America still have an age-standardized occurrence of more than 30 per 100 000 [19].

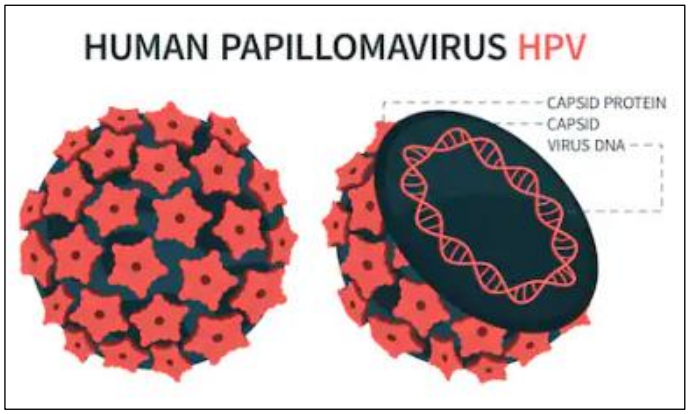

Figure 1. The internal and external structure of human papillomavirus HPV. An enlarged schematic representation (Illustration).

3. Etiology Epidemiology of Cervical Cancer (CC)

Cervical cancer is the fourth most recorded disease worldwide, and the fourth leading cause of death from cancer among women. Giving it the second most deadly female cancer in 1975 [20]. However, the global spread of cervical cancer deaths reveals substantial disparities between low- and middle-income (LMIC) and high-income (HIC) countries [21]. Following a growing trend in recent decades, LMICs accounted for nearly 90 percent of the 311,000 deaths reported in 2018 [22]. Countries in Sub-Saharan Africa and South and Southeast Asia. However, age-standardized cervical cancer incidence rates in Eastern, Northern, Middle, and Western Africa are more than 30 per 100,000 (high-risk) cases, but less than 7 per 100,000 (low-risk) cases in Australia/New Zealand, Western Asia, North Africa and North America [23].

The decline in cervical cancer incidence and mortality in HICs primarily attributed to the impact of regular screening and early intervention programmers [21]. Population-based cervical cytology screening services in North America, Western Europe, and Oceania have culminated in a reduction of up to 80% in national cervical cancer mortality [24]. Several decades to the past. The International Agency for Research on Cancer (IARC)

analysis of five Nordic countries from 1955 to 1980 shows a substantial decrease in mortality rates; for cervical cancer (84% and 50% respectively) in countries such as Iceland and Finland, which implemented screening programs across the country in the mid-1960s. While countries like Norway that provided screening services only in a few counties reported a more modest drop in mortality rates (11%) [20], although recent data indicate that previous predictions might have undervalued HIC mortality, current forecasts, particularly among minority communities, Expect almost all deaths from cervical cancer in LMICs by 2030 [25]. National programs have contributed significantly to the growing difference in the prevalence of cervical cancer and mortality rates globally Due to differing early screening access and effective monitoring of suspected cases. Routine patient vaccine and clinical surveillance and care services have established to enhance pre-invasive lesion diagnosis and control in LMICs and thereby reduce the overall risk of mortality [20].

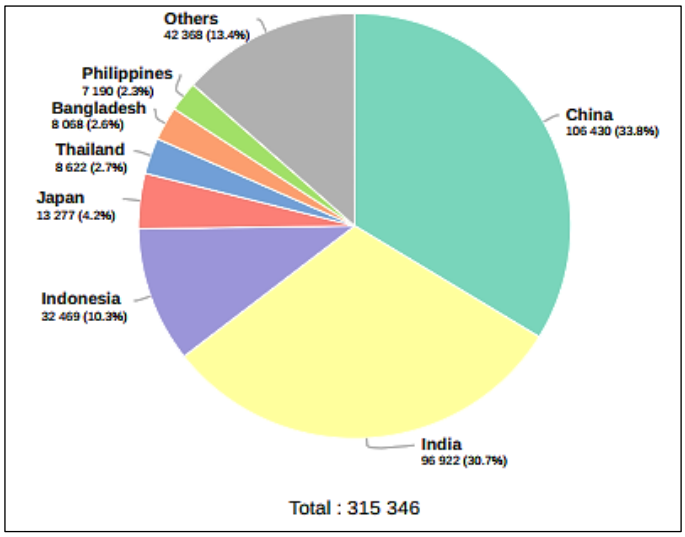

Figure 2. Cervix uteri, of all ages, the estimated number of new cases in 2018 (Data source: Global Cancer Observatory, http:/gco.iarc.fr)

Cervical cancer transmitted primarily through local pelvic invasion. However, sometimes it will travel to the region of lymph nodes or metastasize the lungs, liver, bone, and brain [26]. Early manifestations of cervical cancer can be asymptomatic, while cardinal indicators of regular bleeding (e.g., intermenstrual, post-coital, and postmenopausal bleeding) can suggest. Such signs include persistent vaginal discharge or more advanced stage discomfort, such as irritation of the nerves, or tumor expansion-related rectal or urinary symptoms of other organs [27]. Staging, like tumor size, conducted on a histopathological confirmed cervical cancer case, irrespective of whether it has affected the neighbor or spread to remote areas. Different staging schemes are in use; staging is a therapeutic classification considered to be suitable for low-resource settings, according to the International Gynecology and Obstetrics Association (FIGO) [8]. Common in several high-settings [28], this intervention is more effective than surgical staging. Can even attain FIGO. Phase I Is cancer that does not extend past the cervix; this subdivided into stages IA-IB2, with stage IA and 4 cm micro-invasive or higher lesions in stage IB2. Move II passes across the cervix does not touch the pelvic wall to the upper two-thirds of the vagina; the pelvic wall or lower vaginal portion. Phase IV is a distributed disease that has either metastasized to neighboring pelvic organs (urine bladder and rectum, step IVA) or distant organs (stage IVB) [8]. The American Joint Cancer Committee (AJCC) method for tumor, node, and metastasis (TNM) is another staging scheme; Calculated tomography (CT) and positron emission tomography (PET) monitoring for lymph node disorders and radiology examinations for pretreatment are also involved [29]. Survival levels are strongly related to stage, with 5-year survival rates dropping from 76-98 percent at stage I, 66-73 percent at stage II, 40-42 percent at stage III, to 9-22 percent at stage IV [8]. However, lymph node invasion is yet another significant indicator of survival [30]. TNM staging has also shown to be more successful in prognostic evaluation [31].

4. Screening and Treatment

Screening can find conditions that lead to pre-cancer before they become invasive cancers. It is crucial to screen for cervical cancer regularly because it is usually too late by the time symptoms are detected. If cancer found at a very early stage, then the five-year survival rate can reach 90 percent. This number falls dramatically to less than 10 percent when cancer is detected at Stage 4, when cancer has come out to other organs, such as the intestine or bladder, or has spread to other organs, such as lymph nodes far away, liver, lungs, and bones.

One of the most common screening methods for cervical cancer is the Pap smear and a human papillomavirus (HPV) test. Both carried out in outpatient clinics. The examination carried out using a plastic or metal instrument called a speculum to dilate the vagina. Then the doctor or nurse will examine the vagina and cervix and take some cells from the cervix and the surrounding area with a swab. Then these cells are placed on a microscope glass and sent to a laboratory to check whether they contain abnormal cells. However, it should note that the Pap smear is not always accurate - meaning that it can give wrong results, for example, if the sampling of the entire cervix not done correctly. Therefore, it is vital to be aware of the symptoms of cervical cancer. Women must begin screening for cervical cancer at the age of 21 or within three years of first sexual activity - whichever comes first.

Early detection screening using the Pap smear method can reduce the rate of death caused by cervical cancer. Various methods for the detection of HPV genotype in patients have also developed so that it can know whether there is an infection, both high and low-risk HPV, even before cytological abnormalities occur. Besides, HPV prophylactic vaccine commercial products approved by the FDA in June 2006, namely Gardasil® and Cervarix™, have proven to be quite effective in preventing infection. Merck and Co. Inc. produce Gardasil® to prevent HPV 6, -11 -16, and -18 and Cervarix™ infections by Glaxo Smith Kline for the prevention of HPV -16 and -18 infections [37], [38]. Unfortunately, the vaccine does not offer protection against all types of HPV and does not function therapeutically in infected patients [38], while HPV infection and associated malignant diseases are still quite high, and there is no effective antiviral available for therapy. The current therapeutic approach usually aimed at the removal of HPV lesions by excision surgery or invasive cryotherapy. Several non-surgical treatments have been approved, including topical clinical application or podophyllum imiquimod for the treatment of genital warts. However, because of viral persistence and its efficacy is limited and not specific, the recurrence rate is quite high, especially for patients with immunological deficiencies [39].

Many cervical cell modifications induced by HPV are reversible, and 90 percent usually recover within 12 to 36 months of the virus killed by the immune system [32]. The active immune response in local lymph nodes is a cell-mediated reaction to the HPV infection. There is often a humoral immune reaction; however, the local rates of HPV-specific immunoglobulin G (IgG) and IgA and viral clearance are not correlated [33]; It is in the tissue. The Virus clearance correlated with the HPV-common systemic IgA numbers. Systemic HPV-specific IgG rates have most frequently found in patients with chronic HPV infections—the propensity for HPV infection to relapse inversely linked to the extent of the cervical condition. Just a limited percentage of mild to severe cervical diseases grow into invasive cancer, but at least 12 percent is expected to progress from severe cervical cell abnormality to invasive carcinoma [34].

For women with invasive cancer, additional tests required to determine the stage of the illness. Treatment mostly based on the severity of the lesion, although it often based on considerations such as the woman's age, her ability to maintain pregnancy, and other medical conditions [35]. Virtually all patients with stage IA disease are either treated by simple hysterectomy or conization, where disease-free margins needed if fertility protection is necessary. Prognose after severe hysterectomy is best for people with stage IB disease without affecting lymph nodes. Current phase III randomized trials concerned with stage IB or stage II cancer and metastatic pelvic node infection showed significant survival advantages through combined cisplatin chemotherapy and radiation at the time of primary treatment, with a 30%-50% drop in mortality risk [36]

Although HPV infection cannot treat, women can reduce the risk of infection and getting HPV-related cancers by vaccinating. The HPV vaccine proved to prevent 70 to 80 percent of cervical cancers. This vaccine has approved for use in women aged 9 to 26 years and recommended before they have sexual contact and exposed to HPV. The HPV vaccine schedule for children under 12 years in two doses, given at least six months apart. The usual schedule is for three injections to given for six months, each injection given in intervals of several months. It is important to remember that vaccination does not guarantee a woman will not get HPV infection or avoid cervical cancer because it cannot prevent all types of HPV that can cause cervical cancer. Therefore, it is still essential to have regular Pap smears. To reduce the risk of cervical cancer as much as possible, women must learn to pay attention to their symptoms and have regular screening to ensure that they can detect cancer early.

5. Conclusion

We have performed a detailed review report on cervical cancer, which remains a significant health and economic problem in Iraq and worldwide. Cervical cancer worldwide linked to significant morbidity and mortality. High-risk forms of HPV are widely known to be a significant source of cervical cancer; And may avoid this kind of malignancy. Several research over the decades has helped to elucidate the evolutionary background and Pathogenesis of Neoplasm of the cervix. Over the past five years, the prevalence of cervical cancer and its related mortality has declined, primarily owing to the extensive introduction of screening services utilizing Pap tests to detect abnormal cervical cells.

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