Evaluation of Primary Versus Secondary Prevention of Cervical Cancer: an evidence based literature review

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1. Introduction

Despite the availability of screening tests and treatment, cervical cancer remains the third most common gynecological cancer in the United States¹. Nearly half of the 15,700 women who will be diagnosed with cervical cancer this year alone are diagnosed at a late stage resulting in either locally or regionally advanced disease that is harder to treat¹. Cervical cancer begins as slightly abnormal squamous cell changes, or dysplasia. If left untreated these cells may progress to severe dysplasia, and then onto invasive carcinoma. The main cause of cervical cancer, which accounts for approximately 95% of all cases, is sexual exposure to the human papillomavirus (HPV)². The risk of acquiring this virus increases with several risk factors including age at first coitus, number of sexual partners, and the disregard for condom use³. The Pap smear along with a recently developed test that checks for the presence of HPV DNA in sample cells increases the probability of detecting abnormal cells while they are easily treatable is a valuable tool in the secondary prevention of cervical cancer⁴. However, cervical cancer is most commonly found in middle-aged or elderly women, women of low socio-economic status, and ethnic women. These women are more likely to not attend Pap smear screening⁵. Obtaining the knowledge to protect oneself is difficult and the time and expertise of the health care provider may not be readily available. Therefore, there is some discrepancy in whether primary (i.e. condom use and awareness) or secondary prevention is more appropriate in reducing the morbidity and mortality of cervical cancer. It is important to determine which method or technique is better in preventing the 4,900 avoidable deaths from cervical cancer in the United States each year⁶.

2. Experiment, Results, Discussion, and Significance

To assess the efficacy between primary and secondary prevention of cervical cancer, an evidence based literature review was performed by using Medline and FirstSearch databases from 1998 to the present date. The search was conducted using the MeSH terms cervical cancer, Pap smear, vaginal smear, safe sex, condom use, and human papillomavirus. Articles were chosen based on various criteria. One selection criterion was the date the article was published. Other criteria were that the articles be peer-reviewed and in reputable journals. Further selection criteria were based on the quality of the article, clear concise studies, and sufficient evidence to support the conclusions. Selected studies were randomized control studies and meta-analyses.

With a sensitivity range of 30 to 87% for dysplasia and good specificity, the Pap smear can detect cervical cancer in its earliest stage when effective treatment options are still available and is provided to approximately 79% of the United States population⁷. It is predicted that 600,000 women in the United States are diagnosed with some type of cervical changes each year⁸. The National Breast and Cervical Cancer Early Detection Program identified 15,119 cervical intraepithelial neoplasias in 472,188 Pap tests, with an occurrence of 3.2% in the United States; age varied inversely with the rate of atypical Pap results⁹. Data was comparable in other countries that have implemented similar cervical cancer screening programs. Over a 20-year span between 1950 and 1970, the National Cancer institute reported that morbidity and mortality of invasive cervical cancer had fallen by more than 70% and has continued to decline slowly since the early 1980s⁹. The addition of HPV screening to the Pap smear has further improved cervical cytology screening. In one study of over 1000 cervical cancer specimens that screened for HPV DNA, researchers found that the prevalence of HPV DNA in cancers of the cervix was higher than 95%². The results of screening 11,085 women for CIN 2 showed HPV testing to have a higher sensitivity (97.1%) compared to
(76.6%) for cytology and slightly less specificity (93.3%) than cytology (95.8%). Over 90% of cervical cancers can and ought to be detected through Pap smear screening; however, Pap smears are not performed on one-third of women. Approximately 50% of women who are diagnosed with advanced cervical cancer have never had a Pap smear, and approximately 10% of these women had not had one in the previous five years before their diagnosis. Data from the United States showed a significant difference between women of various economic groups, ethnic backgrounds, and age. Women with education less than 12 years, age greater than 70, and Asian/Pacific Islander groups were less likely to attend Pap smear screening. Determining who is at risk for cervical cancer is just as important as determining what information women know regarding cervical cancer, including causes and prevention strategies. Studies revealed that only 13% of sexually active college females were aware of HPV and less than 8% knew of an association between HPV and cervical cancer. In addition only 47% of these females used a condom during their last intercourse experience and were more concerned about pregnancy than STD’s. Further studies revealed the publics lack of knowledge of risk factors for cervical cancer. Only 6% of the women surveyed were able to correctly recognize all five risk factors including early at first coitus, several male sexual partners, HPV infection, smoking, and having intercourse with men.

Primary prevention combined with secondary prevention can help decrease the number of women diagnosed with cervical cancer each year. Each method is important in order to target every women in the United States and not just women that have access to health care or receive Pap smears on a regular basis. Health care providers need to take more of a holistic approach when dealing with patients and possible risk factors for cervical cancer. Just as important as identifying risk factors and discussing these with patients is the need to promote the significance of regular Pap smears and follow-up. Also important is using local and state officials to develop better screening programs and public education programs to remind women about the importance of Pap smear screening. These programs can teach women about HPV and the risk factors associated with contracting the virus as well as promote the use of condoms to prevent contracting the virus.

3. Conclusions

The identification of the link between HPV and cervical cancer has resulted in more prevention strategies. The Pap smear allows for early recognition of abnormal cells for treatment and the use of HPV typing differentiates various abnormal cervical results from those that demand treatment to prevent progression to cervical cancer. Public education teaches that cervical cancer is initiated by a sexually transmitted disease and gives women an opportunity to make knowledgeable decisions concerning certain sexual activity choices. Knowledge of these primary and secondary prevention strategies can help protect all women form what is considered a preventable disease. Secondary prevention has proven to be an effective means of preventing cervical cancer and with increasing emphasis on primary prevention, whether through individual healthcare providers or public awareness campaigns, women of certain subgroups that once experienced healthcare discrimination can increase their probability of protecting themselves against cervical cancer. Together these two prevention strategies can help reduce the morbidity and mortality of cervical cancer.

References