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Cervical Cancer Screening and Management: An Updated Review

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Abstract
Cervical cancer poses a significant public health challenge, especially in low- and middle-income countries. This study reviews key advances in screening and disease management, emphasizing the importance of prevention, early diagnosis, and proper treatment. Screening, primarily conducted through the Pap smear test and HPV testing, is essential for the early detection of precancerous lesions. In management, the role of minimally invasive interventions and radiotherapy stands out. Moreover, educational campaigns and HPV vaccination are effective strategies to reduce disease incidence.

Keywords: Screening; Cervical Cancer; HPV; Pap smear; Prevention;

Introduction

Cervical cancer is one of the most common types of cancer among women worldwide, particularly in resource-limited regions. According to the World Health Organization (WHO), more than 90% of cervical cancer-related deaths occur in low- and middle-income countries, where access to screening and treatment is often inadequate. This type of cancer is primarily caused by persistent infection with oncogenic subtypes of human papillomavirus (HPV). While most HPV infections are transient and resolve spontaneously, a small proportion progress to precancerous lesions and, eventually, to invasive cancer if left untreated. The introduction of screening programs, such as the Pap smear and, more recently, HPV testing, has revolutionized the early diagnosis of the disease. However, significant disparities exist in the implementation and reach of these programs, particularly among vulnerable populations. Additionally, HPV vaccination has shown great efficacy in primary prevention by reducing the incidence of HPV infections and precursor lesions.

Cervical cancer management has also evolved substantially. Approaches combining surgery, radiotherapy, and chemotherapy have significantly improved outcomes for women diagnosed with early and advanced-stage disease. However, the lack of resources for specialized treatments remains a challenge in many regions. Despite advances, barriers such as unequal access to healthcare services, infrastructure gaps, and lack of education about the importance of screening contribute to persistently high morbidity and mortality rates. Moreover, stigma and cultural challenges in some communities hinder the effective implementation of prevention programs.

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Objectives

This article aims to review the methods and strategies for screening and discuss the advances and challenges in cervical cancer management.

Materials and Methods

A bibliographic review was conducted, analyzing articles published in the PubMed, ScienceDirect, and SciELO databases to support the study.

Discussion

The Pap smear test has revolutionized cervical cancer screening, significantly reducing its incidence in countries that have implemented systematic programs. However, its limited sensitivity requires frequent repetitions and a robust healthcare infrastructure. On the other hand, HPV DNA testing offers higher sensitivity and can be performed at longer intervals, making it a viable alternative, particularly in resource-limited regions.

HPV vaccination is a crucial preventive intervention, but adherence varies significantly among countries, reflecting socioeconomic and cultural disparities. The integration of vaccination and screening programs is essential to maximize benefits. Regarding cervical cancer management, advancements in minimally invasive surgical techniques and image-guided radiotherapy have significantly improved patient outcomes. However, the high cost of these treatments limits their availability in low-income settings. Policies that promote access to essential medications, training for healthcare professionals, and international partnerships are fundamental to overcoming these limitations. HPV vaccination campaigns have proven to be one of the most cost-effective interventions for preventing cervical cancer. However, it is crucial to expand vaccine coverage, especially in high-risk regions. Additionally, addressing gaps in knowledge about the importance of the vaccine and combating myths and misinformation are necessary steps. Another relevant aspect is the management of precancerous lesions, which requires adequate training for

healthcare professionals and access to modern treatments, such as ablation and excision. In the case of invasive cancers, advances in minimally invasive surgery and targeted therapies offer better outcomes for patients.

Conclusion

Cervical cancer screening and management are fundamental pillars in the fight against this disease. The integration of preventive measures, such as HPV vaccination and screening tests, is crucial to reducing the disease burden. Furthermore, advancements in clinical management offer hope for diagnosed women, increasing survival rates and improving quality of life. Despite progress, significant challenges remain, including the need to expand access to healthcare services and overcome cultural and social barriers that hinder adherence to prevention programs. Collaboration between governments, healthcare institutions, and non-governmental organizations is essential to promote sustainable and equitable initiatives.

As research progresses, new prevention and treatment strategies are expected to emerge, contributing to the eradication of cervical cancer as a public health issue. A global commitment to women's health is essential to achieve this goal. It is also important to emphasize that community education is vital for overcoming stigma and increasing adherence. Only with an integrated and equitable approach will it be possible to eliminate cervical cancer as a global public health concern.

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