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The role of nurses in the prevention of anal cancer in HIV-infected men having sex with men - a focus on papillomavirus vaccination and anal cytology screening

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Abstract

Anal cancer is a common disease in men who have sex with men (MSM) with HIV infection and is associated with human papilloma virus (HPV) infection, which is very prevalent in this population. Advanced anal cancer has an aggressive treatment, with a high risk of producing an impaired quality of life. In cases of late diagnosis, mortality remains elevated. Based on these findings, it is a priority to carry out a systematic screening to detect earlier and prevent the disease. In this review and based in our experience at the Infectious Diseases outclinic at Hospital de la Santa Creu and Sant Pau in Barcelona, Spain, we propose a series of actions carried out by trained nurses. We recommend a coordinated set of multidisciplinary activities on HIV + MSM focused on HPV immunization and periodic anal cytology screening. A good implementation of the program will provide significant benefits, since at this time, the best care for anal cancer relies in HPV prevention and early diagnosis of HPV oncogenic lesions.

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Keywords

Anal cancer. Cancer screening. Men having sex with men. Nursing. Papillomavirus.

Introduction

Anal cancer is a rare neoplasm in the general population[1]. However, the incidence has been rising during the last decades, generally among high risk groups, such as men who have sex with men (MSM), immunosuppressed individuals, and especially HIV-infected patients. Anal cancer is considered one of the most frequent non-AIDS defining tumors in persons living with HIV (PLWH). Incidence rates in MSM/HIV+ cohorts range from 55 to 144 cases/100,000 patients per year[2].

Risk factors associated with the development of anal cancer are the presence of human papilloma virus (HPV), anal sex, smoking, sex promiscuity, not being circumcised, and being immunocompromised, especially as result of HIV infection[3]. HPV is responsible for more than 90% of anal cancers. On the other hand, HPV is the most common sexually transmitted infection (STI)[4]. Although most HPV infections will spontaneously resolve, a considerable proportion persists. According to the epidemiological report of CEEISCAT[5], acuminate condyloma (genital warts) was the most frequent STI in 2014, with a rate of 102 cases per 100,000 inhabitants and an average age of 31 years.

HPV is double-stranded Deoxyribonucleic acid viruses. Over 160 types have been characterized, each

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with distinct pathogenicity. HPV species are classified based on their oncogenic risk into four groups: High-risk (variants 16 and 18), probably high risk (variant 68), possibly carcinogenic (variant 26), and without evident carcinogenicity (variants 6 and 11)[6]. HPV genotype 16 is the most frequent variant associated with anal cancer (roughly 70% of cases). The prevalence of HPV infection in the general population is variable according to age, sex, geographical area, and male gay relationships. Both incidence and prevalence of anal HPV infections exceed 85-90% among HIV + MSM. In this population, periodic anal cytological screening is cost-effective in the recognition of histological lesions[7,8]. Indeed, several studies have reported up to 38-fold relative risk for anal cancer in HIV + MSM[2].

A faster progression of lesions toward anal cancer has been described among HIV + MSM. The progression from anal intraepithelial neoplasia (ISA) to anal squamous carcinoma is around 1/156-600 per year in HIV + MSM in comparison with 1/4000 per year among HIV-uninfected MSM[2,3]. The range of HPV genotypes associated with anal cancer is largely influenced by the presence of HIV coinfection, being multiple high-risk HPV genotypes associated with more profound immunosuppression, that is, CD4 counts < 200/mm^3.[8,9]

Despite the widespread use of highly active antiretroviral therapy, the incidence of anal cancer continues to increase worldwide[8]. It may be due to an increase in the survival of PLWH which would facilitate the prolonged timeframe needed to develop ISA and progress to overt anal cancer[3,8,9]. The objective of any anal cancer prevention program should focus on detecting lesions at high risk for carcinogenesis and reduce its incidence[10]. Incipient lesions of anal cancer are generally asymptomatic. Therefore, when patients refer occasional anal bleeding or pain, often it is too late, as the tumor is already locally advanced. For this reason, following the implementation of routine periodic anal cytology screening, the incidence of invasive anal carcinoma has been reduced significantly.

It is important to apply an active search protocol for anal cancer in HIV + MSM. In a first assessment, we must check the HPV immunization status, to avoid development of any HPV lesions in the anus and/or in other locations, such as the oropharynx and penis[11]. Although there is no evidence that a population screening program could decrease morbidity and mortality related to anal cancer in the general population[3], addressing high risk groups such as HIV + MSM is a different consideration. Moreover, earlier diagnosis may decrease disease progression in this population. Nursing has an important role in providing adequate anal cancer prevention in HIV + MSM.

HPV vaccines give protective immunity and are an important tool for anal cancer prevention. The serological response to HPV vaccines is much stronger than the response after natural infection, which provides people strong long-term immunological protection against HPV[12,13].

The best way to prevent HPV is to get vaccinated. Until recently, the vaccine was limited to the female sex. For many years, the impact of anal cancer remained ignored in male, including HIV + MSM. In this regard, fortunately our region will start soon universal HPV vaccination of boys and not only girls.

It is important that HIV clinics have a functional unit for the prevention, diagnosis, and treatment of STI. Screening for anal cancer should be one of the most important tasks. Units composed by a multidisciplinary team will facilitate early diagnosis and provide more chances to provide less aggressive treatments[14,15]. From our experience at Hospital de la Santa Creu and Sant Pau in Barcelona, Spain, a large number of HIV + MSM are at high risk for developing anal cancer, based on the cumulative presence of multiple risk factors, including multiple partners, tobacco, low CD4 counts, and other STI[4,16,17].

Anal cytology procedure

It consists in the collection of cells from the anus using a swab. The procedure is rapid (< 5') and does not require anesthesia. It can be performed by a nurse in an office (Fig. 1A). The patient is previously informed that he should avoid anal sex practices and/or use of intra-anal solutions (enemas, creams, etc.) within the last 24 h. Simply advice to clean the area with soap and water as part of regular hygiene. There is no need to shave the area.

The purpose of the anal cytology examination is to detect premalignant lesions in the anal canal[17] (Fig. 1B). The procedure is generally not painful, although it generates some discomfort since it is necessary to introduce the stick –which is a small brush– through the anal canal, followed by scraping. After removal, the brush should be inserted into a solution to fix the sample by rotating for approximately 2 min (Fig. 1C). Thereafter, the specimens should be sent to the Pathology department. The results may take about 2-4 weeks.

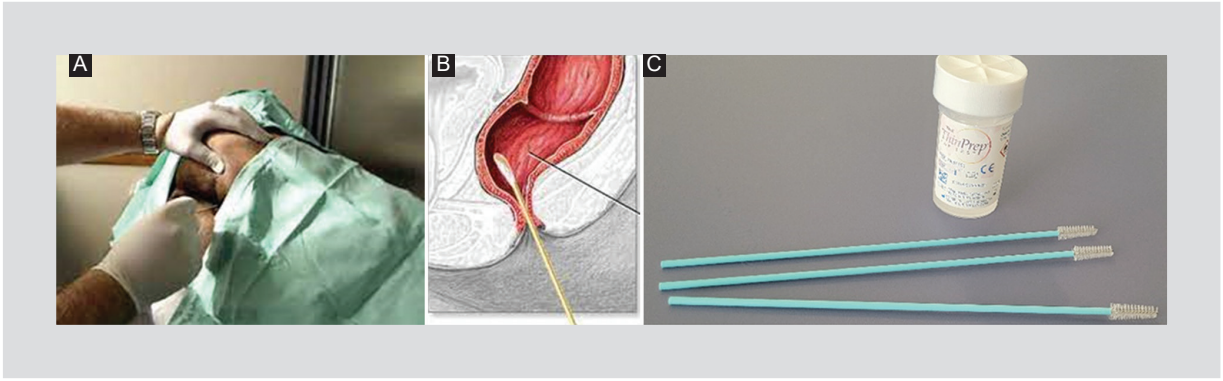

Figure 1. *Anal cancer screening procedure.* **A:** *patient positioning.* **B:** *site examination.* **C:** *material.*

Then, we arrange a telematic visit with the patient and inform him accordingly. If the results are negative, the next anal cytology examination should be scheduled for the next year. If positive, we will make an appointment with surgery.

Clinical experience

Over one decade, we have collected information in our unit on screening for anal cancer in a large number of PLWH. From 2026 individuals on regular follow-up at the hospital, men represent 85%. By far, MSM represent the largest proportion. Only one male that acknowledged having had sex with women and denying sex with men has been diagnosed with anal cancer at our unit. A total of 710 anal cytology examinations had been recorded from 522 HIV+ MSM by our nurse team. Two or more examinations had been performed in 60%. Malignant and premalignant lesions were recognized in around 10%.

Proposal for improving anal cancer prevention in MSM

These data reflect the large clinical need in HIV care. Although we initially encountered multiple challenges to provide proper anal cancer screening, due to nurse staff shortage, lack of offices, poor education on HPV infection, disease and diagnostic procedures, etc., the implementation of the program soon provided results. The anal cancer detection program resulted in a circuit for HIV + MSM.

The Nursing unit has a fundamental role in the anal cancer screening program[18], since it is responsible for performing all routine anal cytologies and, depending on the results, refer to surgery. There, anoscopy and other more invasive techniques are considered. Nurses also have the role of providing information on sexual practices, barriers and, if needed, recommending further STI testing. Finally, it is mandatory checking HPV and HBV vaccination status (Fig. 2).

The nursing staff is key for accompaniment of patients, acknowledging that they should feel comfortable and supported during the whole clinical circuit. Provision of support and information favors the attendance of visits, since at front anal cytology procedures may produce some rejection. To this end, as nurses we need to:

- Train professionals in the program and in techniques
- Identify patients at increased risk due to their sexual activities
- Expand care coverage in anal cancer screening agendas
- Educate patients about risk factors and healthy life and sexual habits
- Promote healthy sexual behaviors
- Check and expand HBV and HPV vaccination coverage.

Nursing care is a major actor in all these processes. Along with nurse activities, other professionals should complement their tasks. The burden of anal cancer among HIV + MSM is significant and a holistic approach to prevent it will result in a significant benefit for both patients and the health care system. Even now, efforts for increasing the awareness of professionals and patients on anal cancer continues to be a scenario where many improvements can be made.

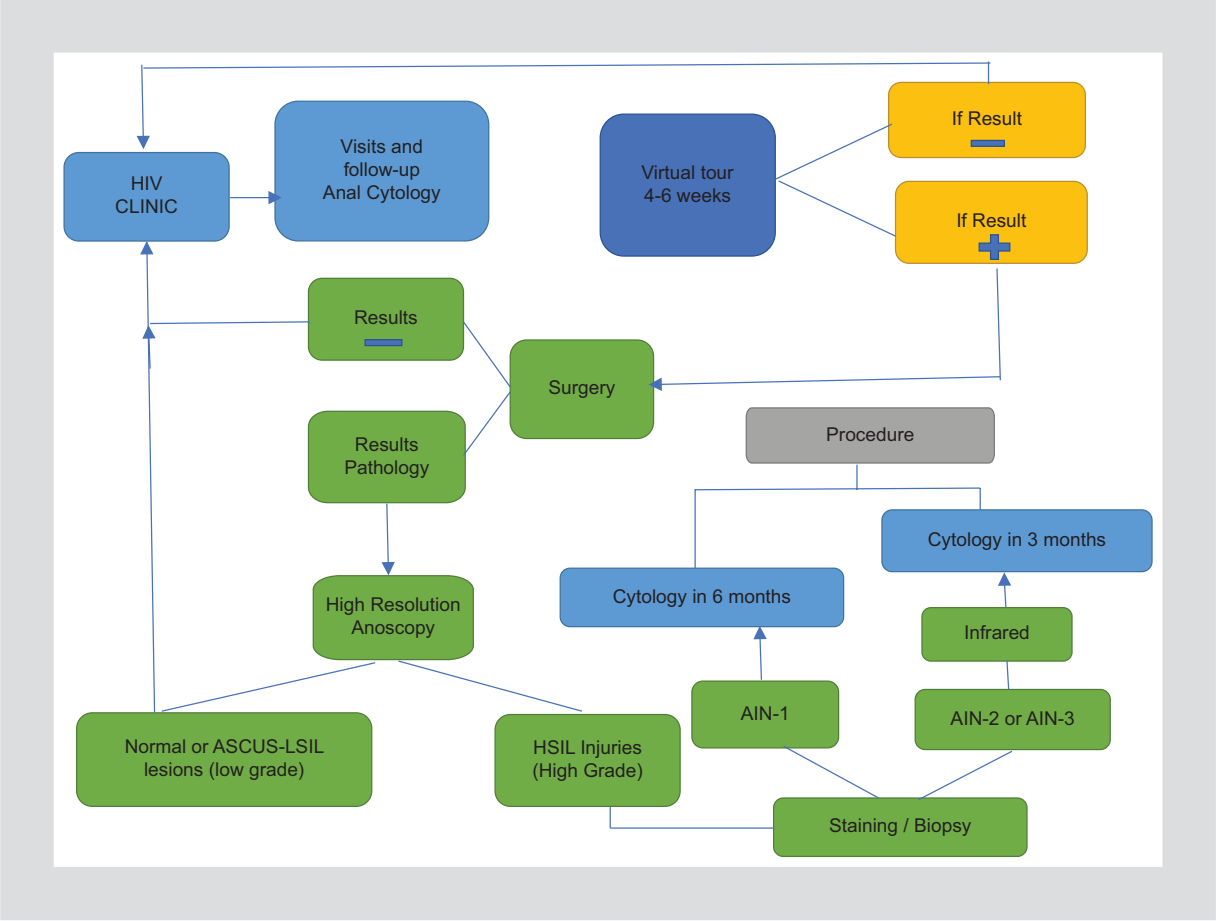

Figure 2. *Anal cancer prevention algorithm in HIV+ MSM.*

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