Prevalence of human papillomavirus infection in a clinic sample of transsexuals in Italy

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Abstract

Objectives Detectable human papillomavirus (HPV) DNA is the most common sexually transmitted infection. Reports on the prevalence of detectable HPV DNA among transsexuals (not sex workers) are scarce. The objective of the study was to determine the prevalence of detectable HPV DNA in a clinic sample of transsexuals and to assess the relationship between detectable HPV DNA and cytological outcomes.

Methods Clinical samples (oral, anal, vaginal, cervicovaginal and penile scraped cells) from 35 transsexuals (surgically treated and surgically untreated) who attended the outpatient Clinic of Gender Identity Dysphoria of the Department of Obstetrics and Gynecology of Policlinico Hospital (Bari, Italy) were collected for cytological analysis and HPV DNA detection and typing. All enrolled subjects answered an anonymous structured questionnaire about their sexual habits. Serological status for other sexually transmitted diseases (hepatitis B virus (HBV), hepatitis C virus (HCV), HIV and syphilis) was also evaluated.

Results HPV DNA was detected in 14 of 35 patients (40.0%). The prevalence of detectable HPV DNA was 38.2% (13/34) in tested anal samples, 9.1% (2/22) in vaginal samples and 8.3% (1/12) in penile samples. Oncogenic HPV genotypes have been detected in 93% of HPV-positive transsexuals. More than one-third (35.7%) of HPV-positive transsexuals were infected with at least one of the four vaccine-preventable genotypes, 6, 11, 16 and 18.

Conclusions The high rate of detectable HPV DNA by oncogenic types suggests that periodic cytological screening and clinical evaluation may be necessary since transsexuals are at high risk of anogenital cancer. Also promoting HPV vaccination in younger subjects may be advisable.

Introduction

Gender dysphoria is a condition characterised by a marked incongruence between one's experienced/expressed gender and assigned gender. Among individuals with gender dysphoria, those who seek, or have undergone, a social transition from male to female or from female to male, which often, but not always, involves a somatic transition by means of hormonal treatment and genital surgery, are defined as transsexuals.[1] In male-to-female (MtFs) and female-to-male transsexuals (FtMs), sexual reassignment surgery (SRS) may be necessary, together with lifelong hormonal therapy.[1]

Detectable human papillomavirus (HPV) DNA is the most common sexually transmitted infection, with approximately 75% of sexually active adults acquiring one or more HPV types during their lifetime.[2] Currently, data on the prevalence of detectable HPV DNA in transsexuals (not sex workers) are very scarce, although some authors have reported a significant prevalence of anal detectable HPV DNA among transsexual sex workers.[3] ,[4]

The aim of this study was to evaluate the prevalence of detectable HPV DNA in a clinic sample of transsexuals and to assess the relationship between detectable HPV DNA and cytological outcomes. Furthermore, the prevalence of detectable HPV DNA was analysed in relation to serological status for other sexually transmitted diseases (STDs; HBV, HCV, HIV and syphilis).

Methods

A prevalence study was conducted on a clinic sample of transsexuals recruited at the outpatient clinic of Gender Identity Dysphoria of the Department of Obstetrics and Gynecology of Policlinico Hospital (Bari, Italy). Of 40 eligible transsexuals who attended the outpatient clinic for hormonal treatment monitoring and clinical evaluation, 35 subjects (87.5%) (14 FtMs and 21 MtFs) were enrolled from April 2012 to March 2013. The criterion for inclusion in the study was ‘transsexualism’, with the exclusion of sex workers and those who desired to belong to the opposite sex as a symptom of a mental disorder.

Four FtMs underwent SRS (FtM-SRS): two were subjected to hysterectomy only and two also underwent surgery for a penile prosthesis. Twelve FtMs presented external female genitalia; all were treated with testosterone. Thirteen MtFs did not undergo surgery (MtF-noSRS) whereas eight underwent SRS (MtF-SRS) (penile inversion vaginoplasty); all were treated with oestrogens.

The study was carried out in accordance with the guideline for good clinical practice and the ethical principles that have their origins in the Declaration of Helsinki, and was approved by the local health unit. For each subject enrolled in the study, informed consent was obtained.

To ascertain the kind of sexual intercourse (oral, vaginal, anal, masturbation), all enrolled subjects were invited to answer an anonymous structured questionnaire about their sexual habits at the time of sample collection. Those who underwent SRS were requested to report the type of sexual intercourse they had before and after SRS. Information on serological status of subjects for other STDs (HBV, HCV, HIV, and syphilis) was also collected.

Clinical samples (oral, anal, vaginal, cervicovaginal and penile scraped cells) were collected with a cytobrush and suspended in ThinPrep Pap Test. Cytological analysis and HPV DNA detection were performed on each sample (cervicovaginal and anal samples). Cytological evaluation was performed by cytopathological experts from the University of Bari, Pathology Department, cytological reference services, and results were reported according to the Bethesda system. The Linear Array HPV genotyping test (Roche Diagnostics, Milan, Italy) was used for HPV DNA detection and typing as previously described.5

Results

The average ages of FtMs and MtFs were 30±7.33 years and 33±9.65 years, respectively. From questionnaire analysis, oral sex was the main sexual habit for both FtMs and MtFs (86% and 67%, respectively). Anal sexual intercourse was practiced by 29% of FtMs and 62% of MtFs. After SRS, one of two FtM subjects reported penile intercourse while four of eight MtFs reported vaginal (neovagina) intercourse.

HPV DNA was detected in 40.0% (14/35) of transsexuals (at least one clinical sample positive for HPV DNA). A prevalence of 21.4% was found in FtMs (3/14) and 52.4% (11/21) in MtFs. The prevalence of detectable HPV DNA was 38.2% (13/34) in anal samples, 9.1% (2/22) in vaginal samples and 8.3% (1/12) in penile samples.

In FtMs, the prevalence of detectable HPV DNA was 20% (2/10) in non-surgically treated subjects and 25% (1/4) in surgically treated subjects, whereas in MtFs, it was 53.8% (7/13) in non-surgically treated subjects and 50.0% (4/8) in surgically treated subjects. Among FtMs, two of three were affected by oncogenic HPV only in the anal region (patients 2 and 3 of table 1, of whom, one was surgically treated).

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Table 1

Distribution of HPV genotypes in anogenital specimens (oncogenic types are in bold)

One FtM subject (subject 1) showed the HPV CP6108 type (non-oncogenic) in a cervicovaginal specimen. Among MtFs, 11 HPV-positive subjects presented oncogenic types alone or associated with non-oncogenic HPV types in anal specimens (seven non-surgically treated and four surgically treated). One MtF-noSRS (subject 8) presented multiple types of detectable HPV DNA (oncogenic and non-oncogenic) in a penile sample, and one of eight MtF-SRS with neovagina (subject 11) was positive for HPV (oncogenic and non-oncogenic HPV types). HPV DNA was not found in any of the oral cytological scrapings. All subjects were negative for cytological analysis.

More than one-third (35.7%) of HPV-positive transsexuals were infected with at least one of the four genotypes, namely 6, 11, 16 and 18. HPV genotypes 6 and 11 were considered since they are responsible for genital warts, and are vaccine-preventable. Serological tests for HBV, HCV and syphilis were negative in all patients, while one subject was positive for HIV infection and negative for detectable HPV DNA.

Discussion

In this study, we detected HPV DNA in 40% of transsexuals. A relevant finding was the presence of oncogenic HPV genotypes in 93% of HPV-positive transsexuals and of multiple infections in 78%. Although the results of the study were obtained from a limited number of subjects, and therefore, cannot be generalised, our findings provide new information on detectable HPV DNA in transsexuals who are not sex workers.

The prevalence of detectable HPV DNA in transsexual sex workers was lower than that reported previously (97.4%),[3] ,[4] but significantly higher than that of the general population, indicating that anal intercourse is a major risk factor for detectable HPV DNA.

In MtFs, anal detectable HPV DNA as well as penile and vaginal (neovagina) infections was largely caused by oncogenic HPV types. Notably, mucosotropic oncogenic and non-oncogenic viruses were identified in a neovagina. This could be related to a pre-existing genital infection (in our experience the neovagina is created by introflection of penile skin), or it could be the result of 'colonisation' after exposure of the skin to HPV in a new biological environment (eg, low pO_2, bacteria or virus, spermatic debris and an altered immune response).[6]

HPV penile infection by multiple oncogenic and non-oncogenic HPV types was found only in one surgically untreated case that was positive for the same genotypes at the anal level. Studies on detectable HPV DNA in heterosexual men report prevalence rates ranging from 1.3% to 73%, depending on the population tested, the genital site, the sampling method and the sensitivity of the assay for HPV DNA detection.[7]

Persistent infection with oncogenic HPV types can cause cervical cancer in women and other anogenital and oropharyngeal cancers in women and men. Two HPV vaccines are currently available, a bivalent vaccine containing virus-like particle (VLP) types 16 and 18, and a quadrivalent vaccine containing VLP types 6, 11, 16 and 18. More recently, a 9-valent vaccine, containing additional VLP types 31, 33, 45, 52 and 58, has been made available. The quadrivalent vaccine is also recommended for men until the age of 26 years.[8]

Vaccine-preventable HPV genotypes were identified in more than one-third of HPV-positive transsexuals in the present study. The high rate of detectable HPV DNA by oncogenic types suggests that periodic cytological screening and clinical evaluation may be necessary since transsexuals are at high risk of anogenital cancer.[9] ,[10] Also, promoting HPV vaccination in younger subjects may be advisable. Further investigation is needed in the transsexual population to assess the real burden of detectable HPV DNA and the risk of developing associated carcinoma.

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Footnotes

- Handling editor Jackie A Cassell
- Contributors GL and MC conceived and designed the study. EDN and AMC collected the data. DL and EDN analysed and interpreted the data. ALDR performed laboratory tests. EDN and MC critically reviewed and edited the final draft. All authors provided critical

input into the analysis, read an earlier version of the paper, provided substantive feedback and approved the final paper.

- Competing interests None declared.
- Patient consent Obtained.
- Ethics approval Ethics committee approval number 02/CE-IG/2012.
- Provenance and peer review Not commissioned; externally peer reviewed.

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