



Clinical-Epidemiological Characterization of Human anal Papilloma Virus Infection Coloproctology Unit. Central University Hospital Dr. “Antonio Maria Pineda”

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Abstract

Human papillomavirus (HPV) infection is one of the most common sexually transmitted viral diseases. A descriptive cross-sectional study was conducted with the purpose of clinically and epidemiologically characterizing anal HPV infection in patients who attended the Benign Orificial Pathology Consultation of the Coloproctological Unit at the Dr. “Antonio María Pineda” Central University Hospital, during the period March 2022 - February 2023, by selecting 288 patients whose average age was 47.09 ± 14.61 years, being the 41-50 years old group (29.17%) and the 51-60 years old group (19.44%) the most affected groups by pathologies of the anal region, with a predominance of male (54.17%). The sociodemographic characteristics with the highest frequency included married (48.61%) and single (47.22%); secondary level of education (44.44%) and traders (18.05%) and housewives (15, 28%) as predominant occupations. The risk factors were represented by onset of sexual intercourse between 16-20 years of age (65.28%), heterosexuality (91.67%), 22.22% reported having anal sex and 5.56% oral sex. Likewise, 5.56% were reported with a history of genital HPV and 4.17% were HIV positive. In addition, 48.61% stated not to use condoms. The initial clinical diagnosis included hemorrhoidal disease (30.55%), anal fistula (25%) and anal fissure (18.05%), and one patient (1.39%) with anal HPV infection. Anal cytology results showed 8.33% flat epithelial cells with cytopathic changes suggestive of HPV infection and 1.39% squamous cells with cytopathic changes suggestive of HPV infection: 50% mild inflammatory negative for malignancy and 33.33% flat epithelial cells without atypia. In conclusion, the anal cytology investigation should continue to determine the actual frequency of anal HPV infection.

Keywords

- ▶ Human Papilloma Virus
- ▶ anal infection
- ▶ epidemiological characteristics
- ▶ clinical characteristics
- ▶ anal cytology

Introduction

The Human Papillomavirus (HPV) infection has increased in recent decades. In fact, anogenital HPV infection represents the most prevalent viral sexually transmitted infection

worldwide, especially in the sexually active young population, which may explain the close relationship between anal carcinoma and sexual activity.^{2,4}

Although prevalence of anal HPV infection differs by gender, in the case of men, their sexual orientation and habits also have

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an important influence, particularly, in patients seropositive to the Human Immunodeficiency Virus (HIV).³²

The anal region is an area with similar characteristics to those of the cervix in respect of histology.² However, prevalence and infection of this area remains controversial. This is mainly due to the difficulties in diagnosis and therapeutic control as a result of the well-known prejudices and taboos among the population, mainly since the infection is “fundamentally” linked to intercourse with anal penetration.^{5,30} Frequently, the infection is subclinical or remains latent for a long time and presents somewhat different characteristics from those found in other locations.^{8,13}

Despite the important advances that are being made regarding the treatment of HPV infection, there is no doubt that the best treatment for this disease continues to be prevention through the reduction of risk factors. The following have been identified as risk factors for persistent HPV infections: history of multiple sexual partners; initiation of sexual activity at an early age, lack of protective barrier, and other sexually transmitted infections, including HIV, immunocompromised levels in patients, alcohol consumption and smoking, among others.¹⁹

Regarding diagnosis, studies on the performance of anal cytology in which both a screening test (cytology) and a high-resolution anoscopy diagnostic test are used in patients with suspected anal HPV infection, remain rare in some health institutions.^{20,21}

The Coloproctology Unit at the Central University Hospital Dr. “Antonio Maria Pineda” was created as a specialty of medicine derived from general surgery with the purpose of providing diagnosis and surgical and non-surgical treatment for colon, rectum, and anus diseases. For this reason, the study of anal HPV infections, based on the number of cases registered in this unit, becomes relevant.

Based on these considerations, an observational, descriptive, cross-sectional study was conducted with the objective of clinically and epidemiologically characterizing anal HPV infection in patients who attended the Benign Official Pathology Consultation of the Coloproctology Unit at the Central University Hospital Dr. “Antonio Maria Pineda”, during the period February 2022–March 2023.

Materials and Methods

For the effective development of this research, an observational study of descriptive type was conducted.

The target population consisted of all patients with suspicion of anal HPV infection who attended the Benign Official Pathology Consultation of the Coloproctology Unit at the Central University Hospital Dr. “Antonio Maria Pineda”, during the period February 2022 - March 2023. Intentional non-probabilistic sampling was used selecting 288 patients during the aforementioned period, meeting the following criteria:

Inclusion Criteria

- Adult patients of both sexes
- Patients with benign pathology who attended the consultation for the first time

- Non-infected patients or with no active bleeding
- Patients with benign pathology in the subacute phase (after 14 days)

Exclusion Criteria

- Patients with a diagnosis of oncological pathology in the anal area
- Patients with acute phase infection

For the development of this research, an informed consent letter was given to each participant explaining the risks and benefits that may be obtained by participating in this study and providing additional information on a continuous basis.

For this, each patient was questioned about sociodemographic characteristics such as age, sex, occupation, marital status, and educational level. Likewise, information was obtained on risk factors for anal HPV infection, such as sexual conduct and behavior, use of condom, in addition to clinical diagnosis.

Subsequently, samples for anal cytology were taken, for which a previous intestinal evacuation is required. No colonic preparation (special diet, enemas) was necessary. In addition, no anal intercourse should have taken place, suppositories applied, lubricants used, or anal area soaked for at least 24 hours prior to taking the samples. Patients were asked to lie on a stretcher, and using a special brush, a sample of the cells was taken from the anal and rectal cavities, making a gentle sweep through the anal orifice. The samples obtained were processed in a single laboratory, thus, the interpretation of the results was performed by a single pathologist specialized in diagnosis of these lesions using the Bethesda criteria. Changes identified on anal cytology can be reported as low- and high-grade lesions. These cellular changes do not necessarily indicate malignancy but promptly require review to define management and treatment plan. Once the data was obtained, a database was prepared using the Statistical Package for Social Sciences (SPSS), version 22.0 applicable for the objectives of this study. Finally, the information was tabulated for presentation, which allowed providing clear and sufficient information to establish pertinent conclusions and recommendations.

Results

During the period February 2022 - March 2023, 288 patients were attended by the Benign Official Pathology Consultation, which are demographically characterized by an average age of 47.09 ± 14.61 years, being the 41–50-year group the most affected by pathologies of the anal region with 29.171%, followed by the 51–60 year group with 19.44% and 18.05% for the 31–40 year group. Furthermore, a predominance of the male sex was found with 54.17% (– **Table 1**).

When questioned in the initial consultation about their sociodemographic characteristics, it was found that 48.61% of the patients were married and 47.22% single, the level of education with the highest frequency was secondary with 44.44% and regarding occupation, trader with 18.05%,

Table 1 Demographic characteristics of patients with suspected HPV infection

| Demographic Characteristics | N° | % |
|-----------------------------|----------------|-------|
| Age group (Years) | | |
| ≤20 | 4 | 1,39 |
| 21-30 | 36 | 12,5 |
| 31-40 | 52 | 18,05 |
| 41-50 | 84 | 29,17 |
| 51-60 | 56 | 19,44 |
| 61-70 | 40 | 13,89 |
| 71-80 | 12 | 4,16 |
| ≥81 | 4 | 1,39 |
| Sex | | |
| Masculine | 156 | 54,17 |
| Feminine | 132 | 45,83 |
| | n = 288 | |

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housewife with 15.28% and administrator/accountant with 12.5% (► **Table 2**).

The table above describes some risk factors for anal HPV infection, obtaining 65.28% for onset of sexual intercourse between the ages of 16-20, with an average of 17.33 ± 2.43 years of age; 91.67% stated to be heterosexual and only 8.33% homosexual; In addition, 22.22% reported having anal sex and 5.56% oral sex; only 5.56% reported having a history of HPV, all of which were genital, and 4.17% were HIV positive. Also, the use of condoms was inquired, resulting in 48.61% not using them, 33.33% being casual users and only 18.06% regular users (► **Table 3**).

With reference to the initial clinical diagnosis, it was found that the highest frequency was hemorrhoidal disease with 30.55%, followed by anal fistula with 25% and anal fissure with 18.05%; It should be noted that only 1.39% had an anal HPV diagnosis (► **Table 4**).

All the patients studied underwent anal cytology processed in a single laboratory, resulting among the most important findings that 8.33% reported flat epithelial cells with cytopathic changes suggestive of HPV infection and 1.39% squamous cells with suggestive cytopathic changes suggestive of HPV infection; the rest were 50% mild inflammatory negative for malignancy and with 33.33% flat epithelial cells without atypia (► **Table 5**).

Discussion

Human papillomavirus (HPV) infection has increased in recent decades. Risk factors for contracting the disease have been determined, being anogenital sexual intercourse one of the main causes. Diagnostic and therapeutic management is difficult due to prejudices and taboos in the population, especially since the infection is linked to intercourse with anal penetration.¹

Table 2 Sociodemographic characteristics of patients with suspected HPV infection, Benign Orificial Pathology Consultation, Coloproctology Unit, Central University Hospital Dr. "Antonio Maria Pineda"

| Sociodemographic Characteristics | N° | % |
|----------------------------------|----------------|-------|
| Marital Status | | |
| Single | 134 | 47,22 |
| Married | 140 | 48,61 |
| Common Law | 10 | 2,78 |
| Widow | 4 | 1,39 |
| Level of Instruction | | |
| Primary | 68 | 23,61 |
| Secondary | 128 | 44,44 |
| University | 92 | 31,94 |
| Occupation | | |
| Trader | 52 | 18,05 |
| Housewife | 44 | 15,28 |
| Administrator/Accountant | 36 | 12,5 |
| Teacher | 24 | 8,33 |
| Worker | 24 | 8,33 |
| Driver | 20 | 6,94 |
| Student | 20 | 6,94 |
| Engineer | 12 | 4,17 |
| Publicist | 12 | 4,17 |
| Lawyer | 8 | 2,78 |
| Mechanic | 8 | 2,78 |
| Musician | 4 | 1,39 |
| Hairdresser | 4 | 1,39 |
| Police | 4 | 1,39 |
| Secretary/PA | 4 | 1,39 |
| Unemployed | 12 | 4,16 |
| | n = 288 | |

In this context, a descriptive cross-sectional study was conducted with the aim of clinically and epidemiologically characterizing anal HPV infection in patients who attended the Benign Orificial Pathology Consultation of the Coloproctology Unit at the Dr. "Antonio Maria Pineda" Central University Hospital during the period March 2022- February 2023. For this, 288 patients were selected with an average age of 47.09 ± 14.61 years, where the most frequent consulting group was 41-50 years (29.171%) and 51-60 years (19.44%), with a predominance of males (54.17%).

A higher frequency of females (55.80%) and an age group between 18-30 years (35%) was reported.¹⁸ While, other studies show that 92.7% of the participants were male, with a median age of 39 years of age for males and 45 years of age for females. In addition, 49.7% were between 30 and 50 years old.²⁵

Regarding the sociodemographic characteristics, the most outstanding figures were married and single patients

Table 3 Risk factors in patients with suspected anal HPV infection. Benign Official Pathology Consultation, Coloproctology Unit, Central University Hospital Dr. "Antonio Maria Pineda"

| Risk Factors | N° | % |
|------------------------------------|----------------|-------|
| Age of Onset of Sexual Intercourse | | |
| ≤15 | 68 | 23,61 |
| 16-20 | 188 | 65,28 |
| ≥21 | 32 | 11,11 |
| Sexual Conduct | | |
| Heterosexual | 264 | 91,67 |
| Homosexual | 24 | 8,33 |
| Sexually Active | | |
| Oral | 16 | 5,56 |
| Anal | 64 | 22,22 |
| History of genital HPV | 16 | 5,56 |
| HIV positive patient | 12 | 4,17 |
| Condom use | | |
| Yes | 52 | 18,06 |
| Casual user | 96 | 33,33 |
| No | 140 | 48,61 |
| | n = 288 | |

(48.61% and 47.22%, respectively), secondary education (44.44%), traders (18.05%) and housewives (15.28%) as main occupation. On the contrary, more than half of the population was divorced (55.55%),¹⁸ with primary level of education (37.5%) studies reported that 95% resided in urban areas,²⁵ 84.5% belonged to the medium-low socioeconomic level and 56% had accessed to higher education. Likewise, 465 women were evaluated with a median age of 33.5 ± 7.5 years, the majority with secondary level of education (65.8%) and single as predominant marital status (64.7%).³⁵

Furthermore, other factors related to anal HPV infection were taken into consideration, such as onset of sexual intercourse, resulting in 65.28% between the ages of 16-20, with an average age of 17.33 ± 2.43 . Also, 91.67% stated being heterosexual and only 8.33% homosexual; 22.22% reported having anal sex and 5.56% oral sex, although only 5.56% of the patients mentioned having a history of HPV and 4.17% being HIV positive. In addition, the use of condoms was investigated, resulting in 48.61% not using condoms at all, 33.33% being casual users and 18.06% being regular users.

Likewise, among the most outstanding risk factors are anal sex (73.07%), HIV carrier (75%) and smoking (50%).¹⁸ In turn, regarding sexual characteristics stated that the predominant sexual orientation was mainly heterosexual (91%), with more than half of the population onset of sexual intercourse between the ages of 15 and 18 years (53%).³⁷

However, the clinical form of genital HPV infection is variable and can range from asymptomatic condition with spontaneous resolution to the presentation of cancerous processes.³¹ With reference to the initial clinical diagnosis,

Table 4 Clinical diagnosis of patients with suspected anal HPV infection

| Clinical Diagnosis | N° | % |
|----------------------------|------------|--------------|
| Hemorrhoidal Disease | 88 | 30,55 |
| Anal Fistula | 72 | 25,0 |
| Anal Fissure | 52 | 18,05 |
| Rectal Prolapse | 12 | 4,17 |
| Anal Plicoma | 8 | 2,78 |
| Gluteal Tumor | 8 | 2,78 |
| Hematochezia in Study | 4 | 1,39 |
| Fecal incontinence | 4 | 1,39 |
| Anal Fistula Postoperative | 4 | 1,39 |
| Proctitis Viral | 4 | 1,39 |
| Rectocele | 4 | 1,39 |
| Perianal Wart | 4 | 1,39 |
| Anal VPH | 4 | 1,39 |
| Control | 4 | 1,39 |
| No Data | 16 | 5,55 |
| Total | 288 | 100,0 |

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it was found that the main cause of consultation was hemorrhoidal disease (30.55%), anal fistula (25%) and anal fissure (18.05%); however, 1.39% had a diagnosis of anal HPV, which was treated with imiquimod for 16 weeks.

Studies of the prevalence of HPV infection based on cytology may be limited by the variability that cytological diagnosis can show.

Table 5 Results of anal cytology in patients with suspected anal HPV infection

| Anal Cytology Results | N° | % |
|---|------------|--------------|
| Acellular | 8 | 2,78 |
| Mild Inflammatory negative for Malignancy | 144 | 50,0 |
| Inflammatory Moderate negative for Malignancy | 4 | 1,39 |
| Flat Epithelial Cells without Atypia | 96 | 33,33 |
| Atypical Squamous Cells | 4 | 1,39 |
| Flat Epithelial Cells Acute Inflammation | 4 | 1,39 |
| Flat Epithelial Cells with cytopathic changes suggestive of HPV infection | 24 | 8,33 |
| Squamous cells with cytopathic changes suggestive of HPV infection | 4 | 1,39 |
| Total | 288 | 100,0 |

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In this regard, anal cytology was performed on the patients studied, obtaining as results that 8.33% reported flat epithelial cells with cytopathic changes suggestive of HPV infection and 1.39% squamous cells with cytopathic changes suggestive of HPV infection; On the other hand, in the rest of the patients, mild inflammatory negative for malignancy (50%) and flat epithelial cells without atypia (33%) were reported.

Regarding the total number of patients involved in the study, 25.66% were diagnosed with human papillomavirus showing koilocytosis as pathognomonic sign.¹⁸ 32.7% of the people treated had low-grade anal intraepithelial lesions (LSIL) and 50% had high-grade lesions (HSIL).²³ The findings of this investigation show that the prevalence of anal HPV was 59.5% in people with HIV without anal lesions, 71.8% in those with LSIL, and 95.4% in those with HSIL.

The prevalence of HPV infections was 15%, prevalence of HPV infection in the anal canal was 8, 4% for high-risk (oncogenic) HPV types and 10.7% for low-risk (non-oncogenic) HPV types.²⁶ As an initial step it is important to identify the prevalence of High Risk human papillomavirus (HR-HPV) infection in the anal region in high-risk populations, finding a 32% prevalence of high-risk HPV infection and 2.8% of abnormal anal cytology (ASCUS) in the anal canal.²⁹

It should be noted that the results obtained in this study and the research reviewed use technologies such as anal cytology, which provides important clues about the genetic mechanisms of initiation and progression of intraepithelial lesions of the anus, as well as a better understanding of their clinical understanding and handling, which is most important in the population due to the high incidence and prevalence of HPV infection. For this reason, there is a need to include anal cytology screening in this type of patients, in addition to the characterization of the viral infection by means of molecular biology.

Conclusions

Human papillomavirus (HPV) infection is the most common sexually transmitted disease, both in men and women, and its persistence is considered the main causative agent not only of cervical cancer, but also of anal cancer. In spite of the progress made in the investigation of this type of infection, there are still aspects to be studied. The conclusions based on the results obtained in the present investigation are listed below:

1. During the period March 2022-February 2023, 288 patients were selected with an average age of 47.09 ± 14.61 years, being the most affected by pathologies of the anal region the group of 41-50 years and 51-60 years, with a predominance of males.
2. In the sociodemographic characteristics, many of the patients were either married or single, with a secondary level of education and traders and housewives as their occupation.
3. The most reported risk factors for anal HPV infection were represented by the onset of sexual intercourse between

16-20 years of age, the majority being heterosexual; less than half reported having anal intercourse and a low percentage having oral sex; Low frequency was reported in the history of HPV, which were genital and HIV positive. Likewise, most patients stated not to use condoms and few occasionally.

4. The initial clinical diagnosis at the time of consultation was, in order of frequency from highest to lowest: hemorrhoidal disease, anal fistula, and anal fissure; It is possible that only 4 patients consulted for anal HPV infection.
5. Anal cytology results showed a low frequency of patients with flat epithelial cells with cytopathic changes suggestive of HPV infection and squamous cells with cytopathic changes suggestive of HPV infection; the rest were mild inflammatory negative for malignancy and flat epithelial cells without atypia.

Conflict of Interest

None declared.

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