

## Ano-genital Warts in Consecutive Male Heterosexual Patients Referred to a CO<sub>2</sub>-laser Clinic in Copenhagen

CARSTEN SAND PETERSEN and TORKIL MENNÉ

Department of Dermatology, University of Copenhagen, Gentofte Hospital, Copenhagen, Denmark

**The relation between sexual practices and location of ano-genital warts is discussed. Results were derived from clinical examination and interview of 56 consecutive male patients referred to CO<sub>2</sub>-laser treatment of therapy-resistant genital warts, at a clinic at the Department of Dermatovenereology, Gentofte Hospital, located in the northern area of Copenhagen. Twenty (100%) patients with anal warts and 36 (100%) patients with penile warts all claimed to be strictly heterosexuals. None of the patients interviewed had had anoreceptive coitus or been engaged in sexual practices with oro-anal contact. The study population otherwise had a heterosexual profile with approximately one fifth of the patients having had other sexually transmitted diseases, mainly chlamydia. The group of patients with anal warts had significantly fewer known sex partners with genital warts (25% versus 58%,  $p < 0.05$ ) compared to the patients with penile warts. All patients received one or more CO<sub>2</sub>-laser treatments using local anesthesia, resulting in cure rates of 80% (16/20) and 89% (32/36) in men with anal warts and penile warts, respectively. Anal warts seem to be much more common in a heterosexual male population. There is a need to elucidate the nature and epidemiology of anal human papillomavirus infection in heterosexual males.**

(Accepted June 21, 1993.)

Acta Derm Venereol (Stockh) 1993; 73: 465-466.

C. Sand Petersen, Department of Dermatology, Gentofte Hospital, DK-2900 Hellerup, Denmark.

Previously it has been widely accepted that the presence of anal warts in males are acquired as a result of receptive anal intercourse (1). This was based on the observation that anal warts are more common than penile warts in homosexual men (1) and that most published reports on anal warts have focused on homosexual men with anal human papillomavirus (HPV) infection (2-4). However, one study indicated that anal warts are more common than generally perceived in heterosexual men with penile warts (5). The majority of patients consulting the STD clinic at our department are heterosexuals. To our surprise, a large proportion of the males presented anal warts.

The aim of this study was to evaluate possible routes of transmissions of anal warts in heterosexual male patients.

### PATIENTS AND METHODS

In a 15-month period in 1989-1991 we studied 56 consecutive male patients referred to CO<sub>2</sub>-laser treatment due to refractory ano-genital warts. The majority of patients had had warts for at least 6 to 12 months and had been treated unsuccessfully with podophyllin or podophyllotoxin. A full history of sexual behaviour was taken by the same investigator (Carsten Sand Petersen), particularly with respect to anal receptive intercourse. Signs of other sexually transmitted diseases (STDs) were noted. Appropriate microbiological and serological tests

were performed for concomitant STDs. None of the patients had any known immunodeficiency or received immunosuppressive drugs, and none were HIV-antibody positive. One patient had diabetes mellitus and one patient sarcoidosis; the other patients were otherwise healthy.

All patients were treated with CO<sub>2</sub>-laser in local anesthesia using 5 to 15 ml of 2% lidocaine. CO<sub>2</sub>-laser vaporizations were performed as described previously (6). Perianal and intraanal warts were treated with the patient in lithotomy position and buttocks parted. An anoscope was used in patients with warts above the dentate line. Colposcopy/periscopy with application of 3 to 5% acetic acid solution in order to detect subclinical HPV lesions was not carried out routinely.

All operations were performed by the same doctor (Carsten Sand Petersen), with seven years of experience in the procedure. Patients with recurrence of the disease were offered repeated CO<sub>2</sub>-laser treatments at intervals of 1 to 2 months. The patients were followed for a mean of 6 months (range 3 to 12 months).

We used the  $\chi^2$  and Fisher's exact tests for statistical analysis in the study.  $P < 0.05$  was considered significant.

### RESULTS

Twenty male patients presented primarily with multiple anal warts. Eleven patients had warts present in rectum above the dentate line. Four (20%) of the patients with anal warts also had a few acuminate penile warts. Thirty-six male patients had primarily penile warts, of which 5 (14%) also had anal warts at examination. None of the patients with anal warts gave a history of homosexual contacts and none had been engaged in sexual practices involving the anal or perianal area, i.e. anal receptive intercourse, genito-anal or oro-anal contact.

Approximately one fifth had had either chlamydia or genital herpes (4/20 (20%) in the group of patients with anal warts versus 7/36 (19%) in the group of patients with penile warts), and even fewer patients had other STDs at examination (chlamydia was detected in 2/20 (10%) of patients with anal warts compared to 4/36 (11%) of patients with penile warts). Twenty-one (58%) of the patients with penile warts either had or had had sexual partners with genital warts, whereas only 5 (25%) of the patients with anal warts gave identical information ( $p < 0.05$ ). There was no difference in the rate of steady female partners among patients with anal and penile warts.

In patients with anal warts a total of 33 CO<sub>2</sub>-laser treatments (mean = 1.7, range 1-5) were performed, compared to 58 CO<sub>2</sub>-laser treatments (mean = 1.6, range 1-4) in the group of patients with penile warts (non-significant). The cumulated cure rate after 1, 2, 3 and  $\geq 4$  CO<sub>2</sub>-laser vaporizations was 9/20 (45%), 13/20 (65%), 15/20 (75%) and 16/20 (80%) among patients with anal warts, respectively, and 20/36 (56%), 27/36 (75%), 31/36 (86%) and 32/36 (89%) among patients with penile warts (non-significant). Apart from slight pain during injection of the local anesthetic, no adverse reactions were observed during or after the CO<sub>2</sub>-laser procedures.



## DISCUSSION

Our data contradict the general opinion that anal intercourse is the only main reason for the development of anal warts. Sexual practices involving the anal area seem to be rare in patients with anal warts referred to our clinic. In a recently published study there was no statistically significant correlation between anal intercourse and the presence of anal HPV infection in a group of women seen in an STD clinic (7). It may be argued that the proximity of the female genitalia and anus could readily permit spread of infection from one region to the other without anal contact with an infectious partner (1). The same authors, however, have similarly found no correlation between anal HPV infection and receptive anal intercourse among homosexual men (8). Other factors, yet unknown, pertinent to both women and men, seem to be more important for the development of anal condylomata than receptive anal intercourse.

Our results confirm that anal warts in a non-inner city STD clinic are not uncommon in heterosexuals (5). Our male population with anal warts did not show the promiscuity frequently seen in homosexuals consulting STD clinics, and none had present or earlier gonorrhoea, syphilis, hepatitis B or HIV infection. The rather low prevalence of STDs concomitantly with ano-genital warts is to be expected, as many patients were screened for STDs before they were referred to the CO<sub>2</sub>-laser treatment.

Oriel (1) found an association between anal warts and anal coitus in an inner-city STD clinic, but he was unable to demonstrate penile HPV infection in secondary contacts to men with anal warts. As a consequence it was stated that anal warts in this respect did not resemble a sexually transmitted disease (1). This, combined with the observation that anal warts were seen seven times more commonly than penile warts, did not support the concept that anal warts were simply a sexually transmitted disease (9). Although Oriel found an association between anal warts and anal coitus there was doubt whether sexual contact with an infected person was necessarily the course (1). Our finding that only a minor fraction of patients with anal warts had known sexual partners with ano-genital warts should probably be considered in this context.

It is known that a substantial part of patients with acuminate or papular warts also have acetowhite subclinical lesions induced by HPV infection (10, 11). It may well be that heterosexual men with anal warts have acquired a penile either subclinical or latent focus of HPV, with secondary transmission (autoinnoculation) of the agent to the anal region. Further studies should look for subclinical foci of HPV infection and include HPV typing of all lesions, in order to elucidate the nature and epidemiology of anal warts in male patients.

The mode of anesthesia used in CO<sub>2</sub>-laser treated patients is rarely mentioned in the published studies (6). Most patients with multiple disseminated refractory lesions are, however, often treated in general anesthesia (12). In our experience local anesthesia is sufficient in male patients irrespective of the number and localization of the warts. Female patients with

multiple refractory ano-genital warts can similarly be treated with CO<sub>2</sub>-laser in local anesthesia (data not shown).

Local anesthesia has a number of advantages compared to general anesthesia: it diminishes the potential risk of complications during and after the operation, it is less time-consuming and abolishes the need for anesthesiological assistance, making the procedure more cost-effective.

One possible explanation for the high cure rate obtained as compared to previously published reports (6, 12, 13) may be that only one experienced person was responsible for the outcome of the treatment. In these patients with multiple refractory warts it is, however, important to reoperate in case of recurrence in order to achieve an acceptable high cure rate. The definition of cure in this study was the disappearance of visible lesions. This is based on the experience that most patients with ano-genital warts concurrently have subclinical foci of HPV infection and that it is impossible totally to eradicate the HPV infection in these patients (14).

## REFERENCES

- Oriel JD. Anal warts and anal coitus. *Br J Vener Dis* 1971; 47: 373-376.
- Carr G, William DC. Anal warts in a population of gay men in New York. *Sex Transm Dis* 1977; 4: 56-57.
- Frazer IH, Medley G, Crapper RM, et al. Association between anorectal dysplasia, human papillomavirus and human immunodeficiency virus in homosexual men. *Lancet* 1986; ii: 657-660.
- Medley G. Anal smears to diagnose occult anorectal infection with human papillomavirus in men. *Br J Vener Dis* 1984; 60: 205.
- Gorney BP, Waugh MA, Clarke J. Anal warts in heterosexual men. *Genitourin Med* 1987; 63: 216.
- Larsen J, Petersen CS. The patient with refractory genital warts in the STD-clinic. Treatment failure with CO<sub>2</sub>-laser. *Dan Med Bull* 1990; 37: 194-195.
- Law CLH, Thomson CH, Rose BR, et al. Anal intercourse: a risk factor for anal papillomavirus infection in women? *Genitourin Med* 1991; 67: 464-468.
- Law CLH, Qassim M, Thomson CH, et al. Factors associated with clinical and subclinical human papillomavirus infection in homosexual men. *Genitourin Med* 1991; 67: 92-98.
- Oriel JD. Natural history of genital warts. *Br J Vener Dis* 1971; 47: 1-13.
- Petersen CS, Albrechtsen J, Larsen J, et al. Subclinical human papillomavirus infection in condylomata acuminata patients attending a VD clinic. *Acta Derm Venereol (Stockh)* 1991; 71: 252-255.
- Petersen CS, Lindeberg H, Thomsen HK. Human papillomavirus types in cervical biopsy specimens from pap-smear negative women with external genital warts. *Acta Obstet Gynecol Scand* 1991; 70: 69-71.
- Petersen CS, Bjerring P, Larsen J, et al. Systemic interferon alpha-2b increases the cure rate in laser treated patients with multiple persistent genital warts: a placebo-controlled study. *Genitourin Med* 1991; 67: 99-102.
- Duus BR, Philipsen T, Christensen JD, et al. Refractory condylomata acuminata: a controlled clinical trial of carbon dioxide laser versus conventional surgical treatment. *Genitourin Med* 1985; 61: 59-61.
- Riva JM, Sedlacek TV, Cunnane MF, et al. Extended carbon dioxide laser vaporization in the treatment of subclinical papillomavirus infection of the lower genital tract. *Obstet Gynecol* 1989; 73: 25-30.