

The Prevalence of Penile Pearly Papules among Young Men

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ABSTRACT The aim of this study was to determine the prevalence of pearly penile papules (PPP) among young men in Eskisehir, Turkey. This was a prospective, non-randomized, cross-sectional study. From December 2014 to September 2015, 2613 consecutive male patients who were referred to the dermatology outpatient clinic were included in the study. Patients were inspected for the presence of PPP, localization, and association with human papilloma virus (HPV). A total of 2613 patients were included in the study. The average age of the patients was 21.33 ± 2.08 (mean \pm Standard Deviation (SD); ranging from 18 to 24) years. All of the patients were white and circumcised men. Of the 2613 patients, 449 (17.18%) PPP were observed. PPP were localized on the corona of the glans penis (100%), coronal sulcus (18.9%), frenulum (15.1%), ventral shaft (5.3%), and dorsal shaft of the penis (2.4%). Of the 449 patients with PPP, 23 (5.3%) underwent treatment; 73 (16.2%) would consider removal, 7 (1.5%) had a previous treatment for HPV, and 5 (1.1%) had HPV. PPP are encountered very commonly in the pubertal age in boys and young men. All medical practitioners should be familiar with PPP. Their similarity to genital warts may generate a false apprehension of venereal disease and may lead to unwanted and hazardous treatments. Therefore, better health education is needed.

KEY WORDS: human papilloma virus, penile pearly papule, vestibular papillae.

INTRODUCTION

Pearly penile papules (PPP) have been called hirsutis papillary corona of the penis, papilla in the corona glandis, Tyson glands, hirsutoid papillomas, corona capilliti, and pink pearly papules by different authors (1). PPP are a common, asymptomatic form of angiofibroma of unknown etiology. PPP are clinically marked by rows of white-pink, 1 to 3 mm papules located around the coronal sulcus. Young men in particular commonly worry about them. Although penile papules are often misdiagnosed as condyloma acuminatum by both patients and physicians, medical treatment is not necessary (2).

The prevalence of PPP varies from 14.3% to 48.0% (3,4). It seems to commonly present in pubertal boys and young men (1). Epidemiological studies on the prevalence of PPP are very rare, and there are no data on them for Turkey. The aim of this study was to determine the prevalence of PPP, localization, and the association with human papilloma virus (HPV) among young men in Turkey.

PATIENTS AND METHODS

This was a prospective, non-randomized, and cross-sectional study. Ethical approval was obtained

from the Ethical Committee of the Osmangazi University Hospital. The study period was from December 2014 to September 2015, and 2613 consecutive male patients who were referred to the dermatology outpatient clinic were included in the study.

Patients were examined for the presence of PPP. We noted the localization of lesions (corona of glans penis, coronal sulcus, frenulum, dorsal and ventral penile shaft, and scrotum), onset time (year), treatments (already performed or requested), symptoms (itching, rubor, burning, ache, etc.), and associated diseases such as STD (sexually transmitted diseases) (especially HPV). Diagnosis was based on the clinical examination. Patients were diagnosed with HPV using history and physical examination, without any HPV test such as HPV DNA testing.

Data were analyzed using the Statistical Package for Social Sciences 16.0 for Windows (SPSS Inc., Chicago, IL). The results for all items were expressed as a mean \pm Standard Deviation (SD), assessed within a 95% confidence interval and at a level of $P < 0.05$ significance.

RESULTS

Between December 2014 and September 2015, 2613 men were enrolled in this study. The average age of the patients was 21.33 ± 2.08 (mean \pm SD; ranging from 18 to 24) years. All of the patients were white and circumcised men. Of the 2613 men who enrolled the study, 449 (17.18%) men were diagnosed with PPP (Figure 1). The average age of the patients with PPP was 21.3 ± 2.3 years. The mean onset year for PPP was 15.8 ± 1.9 years.



Figure 1. Inspection of the penis showed 1 to 2 mm, notably soft, fleshy papules confined to the corona of the penis and distributed circumferentially.

Table 1. Five PPP locations

Location of PPP	n	%
Corona of glans penis	449	100.0
Coronal sulcus	85	18.9
Frenulum	68	15.1
Ventral shaft	24	5.3
Dorsal shaft	11	2.4

*PPP: Pearly penile papules.

Of the 449 patients with PPP, 23 (5.3%) underwent treatment, 73 (16.2%) would consider removal, 7 (1.5%) had a previous treatment for HPV, and 5 (1.1%) already had HPV.

We did not find any relation between HPV and PPP ($P = 0.897$).

PPP were localized on the corona of the glans penis (100%), coronal sulcus (18.9%), frenulum (15.1%), ventral shaft (5.3%), and dorsal shaft of the penis (2.4%) (Table 1).

Our patients did not complain about any symptoms such as itching, rubor, burning, ache etc.

DISCUSSION

The term PPP describes a distinct entity affecting young adults, characterized by multiple, uniform, regularly distributed, asymptomatic, pearly white or flesh colored, transparent, smooth, dome-shaped, 1 to 2 mm diameter papules generally localized on the corona and sulcus of the glans penis. Histopathologically, PPP are angiofibromas. Enlarged vascular space associated with fibrosis in the dermis is seen in pathological examination. The etiology of PPP is unknown. The lesions arranged in groups or in rows are fixed (1-5).

No agreement has been reached on the exact prevalence of PPP. Reports vary from 14.3% to 48% (3,4). In 1995, Khoo *et al.* showed that the prevalence of PPP was 14.3% (in 67 of 467 patients) in the public STD clinic in Singapore (3). A prevalence of 48% was noted in a genitourinary medicine clinic in Cambridge (4). The youngest case was a 11-year-old boy, and the oldest was a 52-year-old man (4). In 2012, Michajlowski *et al.* noted PPP presence (24%) in 96 of 400 examined patients (6). Glicksman and Freeman found PPP to be present in 20 of 229 (15.2%) men at the Houston Social Hygiene Clinic (7). A prevalence of 15.2% was documented among college students and teenagers (8).

PPP usually present in pubertal boys and young men (8). The inter-racial variance is probably insignificant (7,8). A higher incidence has been noted in

Table 2. Previous studies on the prevalence of PPP

Authors	Year	Total patients	PPP %	Patients, Clinic, Additional funding	
Present study	2015	2613	17.18	Young adults (from 18 to 24), 21.33±2.08 (mean ± SD) years	
Michajlowski <i>et al.</i> (6)	2012	400	24.00	Average age: 21.4 (from 16 to 30) years. The prevalence of consultation patients	
Sonnex <i>et al.</i> (4)	1999	200	48.00	Department of genitourinary medicine	
Khoo <i>et al.</i> (3)	1995	467	14.30	Public STD Clinic	
Neinstein <i>et al.</i> (8)	1984	151	15.20	Adolescents (11-22), No PPP found under 14 years, the Houston Social Hygiene Clinic	
Rehbein <i>et al.</i> (9)	1977	840	30.00	Detroit Social Hygiene Clinic, Onset after age of 14 years, max. rate in 20 to 30 years (35%), A higher prevalence in black and circumcised men	
Glicksman <i>et al.</i> (7)	1966	229	15.20	College students (16 to 78), No PPP found after 41 years	
Agha <i>et al.</i> (10)	2009	188	38.30	< 25 years	<i>P</i> < 0.001, PPP regress in older men and with circumcision
		70	11.40	> 50 years	
		49	26.50	Circumcised, < 25 years	
		139	42.40	Uncircumcised, < 25 years	

PPP: Pearly penile papules; max.: maximum; SD: standard deviation

black (9) and uncircumcised men (7,8). These studies may imply that PPP develop in adolescence and disappear with age (10). The present study had the highest number of participants (Table 2). We think that our results may have been influenced by race, age of the patients, included patient group, patients with circumcision, and the experience of the authors. In the present study, 2613 participants were young men (the average age was 21.33±2.08 years) and all of them were white and circumcised men. The prevalence of the PPP was 17.18%.

The teenager who starts looking at himself and notices the papules on his penis for the first time thinks that it is a disorder, perhaps genital warts in particular, and for this reason he wants to be examined by a physician (11). The patient who comes to the physician for assessment of a penile lesion is probably anxious, embarrassed, afraid, and has psychological and social difficulties (12,13). Without doubt, one of his biggest worries is whether he has contracted a STD and, if so, has he infected his partner? Partners may not believe that the lesions are not contagious. However, one of the most important aspects of the physician's role is to be sensitive to the probable mental state of their patient by being nonjudgmental and committed to helping him (2). The basic treatment of PPP is to reassure the adolescent that they is not a disease, but a normal anatomical variation. PPP are not always accepted by the patients. Although treatment is not required, they may wish to have the lesions removed due to cosmetic discomfort or venereophobia. Suc-

cessful treatment has been reported with carbon dioxide or Nd: YAG laser vaporization, cryosurgery, curettage, podophyllin, and electrodesiccation (6). Sonnex *et al.* found that many of their patients (38%) concerned about their lesion and requested (17%) treatment (8). Similar results were obtained in the present study. Of the 449 patients with PPP, 23 (5.3%) underwent treatment and 73 (16.2%) considered removal.

In some studies about PPP, the possible association of HPV infections with PPP was investigated by researchers. However, Ferenczy *et al.* and Hogewoning *et al.* suggested that there is no relation between the presence of HPV and PPP (14,15). We also did not find any relation between HPV and PPP (*P*=0.897). Patients were diagnosed with HPV using medical history and physical examination, without any HPV test. This is a limitation of our study.

Vestibular papillae (VP) were first described by Altmeyer. VP are very small, usually asymptomatic soft or filiform papules. They are located in the inner aspect of the labia minora or are frond-like projections on the vestibular epithelium. This normal variant has a similar color to the adjacent mucosa and a smooth surface. Although common, the condition may be unfamiliar to clinicians and may be also misdiagnosed as a genital wart. VP are probably the female equivalent of PPP (16).

This study differs from previous studies because it sought to determine the distribution of the PPP (Table 1). Distribution of PPP was not investigated in pre-

vious studies. Five locations, such as the corona of the glans penis (100%), coronal sulcus (18.9%), frenulum (15.1%), ventral shaft (5.3%), and dorsal shaft of the penis were described in this study. No lesions were seen elsewhere on the scrotum, suprapubic, or crural area.

CONCLUSION

PPP are encountered very commonly in pubertal boys and young men. All medical practitioners should be familiar with PPP. Their similarity to genital warts may generate a false apprehension of venereal disease and may lead to unwanted and hazardous treatments. Therefore, better health education is needed.

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