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Original Research Article

Common warts revisited: a clinical study

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ABSTRACT

Background: Common warts are cutaneous viral infections caused by various strains of human papilloma virus (HPV). Their variants include filiform, periungual and pigmented warts. At present more than 200 different HPV genotypes have been detected and a periodic clinical analysis will reveal whether any new morphological variations have occurred.
Methods: Hundred and ten patients with common warts were taken up for this study.
Results: The clinical characteristics of 637 common warts in 110 patients were studied over a span of 1 and a half years. The age group ranged from 18 years to 72 years. Seventy six were males and 34 were females. Majority belonged to the age group of 18-30 years. The most common occupational group involved were students followed by housewives. The initial site of onset in 44.5% of patients was on the fingers. Eleven patients had atopic diathesis. Similar complaints in friends and family were seen in 30%. The most common sites of involvement for classical common warts were on the fingers and for filiform warts were on the head. 30% had association with other warts out of which 28.1% had palmoplantar warts.
Conclusions: Common warts usually present as a cosmetic concern in most patients. Our study concluded that young male students are susceptible to acquiring them. Characteristics of warts in atopics did not differ significantly from non atopics. Regions most prone to contact and susceptible to trauma are the most common sites of inoculation i.e. fingers, scalp and face.

Keywords: Common warts, Verruca, Papillomaviruses

INTRODUCTION

Viral warts are common cutaneous infections caused by various strains of Human Papilloma virus (HPV). Papillomaviruses (PV) are small deoxyribonucleic acid (DNA) viruses which infects basal keratinocytes that serve as primary targets for the infection.[1] However viral replication occurs only in fully differentiated keratinocytes that results in cell proliferation. Today, the genomes of 120 HPV types have been fully characterized and additional partial DNA sequences have been obtained, indicating the existence of at least 200 HPV genotypes.[2]

The various clinical forms of cutaneous warts include- common warts, planar warts, palmoplantar warts, mosaic warts, flat warts and Butcher's wart; each caused by specific HPV strains. Common warts in addition have morphological variants- filiform warts, periungual warts, and pigmented warts.[1] They are resistant to heat and desiccation, as they lack a viral envelope.

Their incidence increases during the school years to reach a peak in adolescence and early adulthood.[3,4] In those living in larger households, an infected cohabitant is often reported, supporting the concept of person to-person transmission. Most warts regress spontaneously within 1–2 years. Impairment of the epithelial barrier function, by trauma or maceration greatly predisposes to

inoculation of virus.[5] Thereafter reinfection with the same HPV type is uncommon after clearance, suggesting that a protective type-specific immunity may have developed.[6] The apparent failure of the immune system in otherwise healthy individuals to clear warts for months or years is because Langerhans' cell numbers are reduced within warts and T lymphocytes are rare within the epidermal compartment.[1,7]

Common warts are hyperkeratotic, exophytic, dome-shaped papules or plaques that are typically associated with HPV-1, 2, 4, 27 or 57. They are most frequently located on the fingers and dorsal surfaces of the hands or in other sites prone to trauma such as the knees or elbows.[8] However this Köbner like isomorphic phenomenon is less marked than in plane warts.[1]

A new type of HPV is defined when a given HPV shows greater than 10% divergence in L1 sequence when compared to any known HPV types by DNA hybridization. About 120 different types of HPVs have been fully characterized. As mentioned earlier there are also a large number of additional types whose complete genetic sequence has not been obtained indicating presence of 200 HPV genotypes.[1] Hence we can expect to see certain morphological variations with these different strains. This can only be detected through a periodic clinico histopathological analysis of different types of warts. We have undertaken this study as there is a lack of clinical studies of common warts in adults.

METHODS

Data was collected from January 2015 to September 2016 from all adult patients (>18 years of age) diagnosed with common warts presenting to the tertiary care hospital.

Study design

Descriptive observational study.

History

A detailed history pertaining to onset, duration and progression of lesions was taken. Associated family history, past history and presence of other cutaneous and systemic illnesses were recorded in a standard proforma.

Clinical examination

Complete physical examination was carried out in all the cases along with local examination of the lesions with particular attention to the type, distribution of lesions and secondary changes. Digital images (photographs), of the patients who consented, were taken.

Statistical analysis

Data was analysed by both descriptive and inferential statistical methods and the data was summarized using frequency, percentage, mean, standard deviation, median and mode. To measure the significance Chi square test and Fishers exact test were used. Analysis was performed using SPSS software version 13. P value less than 0.05 was considered as significant.

RESULTS

One hundred and ten clinically diagnosed cases of common warts were studied. These patients belonged to both sexes and were between ages of 18 and 72 years.

Table 1: Age and sex distribution.

Age in years	Females	Males	Total	Percentage
18-30	26	58	84	76.4%
31-40	5	5	10	9.1%
41-50	3	6	9	8.2%
51-60	0	2	2	1.8%
Above 60	0	5	5	4.5%
Total	34	76	110	100.0%

The age and sex distribution is given in Table 1. The youngest was 18 years old and the oldest 72 years. The mean age was 28 years with a median of 22 years. Seventy six (69.1%) were males and 34 (30.9%) were females with a male to female ratio of 2.2:1. Statistical analysis showed these findings were highly significant (Fishers exact test p <0.01).

Table 2: Distribution of patients in relation to occupation.

Occupation	Frequency	Percentage
Student	47	42.7%
Housewife	15	13.5%
Shop keeper	9	8.1%
Driver	8	7.2%
Office worker	7	6.3%
Labourer	6	5.4%
Hotel staff	3	2.7%
Nurse	4	3.6%
School Teacher	3	2.7%
Unemployed	2	1.8%
Other occupations	6	5.4%
Total	110	100.0%

Occupational stratification showed maximum being in student group (42.7%) followed housewives (13.7%) (Table 2).

In 49 (44.5%) patients the most common first site of inoculation was on the fingers. Forty two (38.2%) had involvement of head and neck. Most common site of classical common warts was on the fingers of which right was more commonly involved than left. In addition the index and middle fingers were more frequently affected. The most common site for filiform warts was over the

face and neck. Statistical analysis showed these results are highly significant (Fisher exact test p <0.01) (Table 3).

Table 3: Site wise initial onset of common warts.

Initial site of onset	No. of patients	Percentage
Finger	49	44.5%
Face	20	18.2%
Neck	11	10.0%
Scalp	11	10.0%
Arm+forearm	6	5.4%
Foot	5	4.5%
Hand	4	3.6%
Thigh+leg	4	3.6%
Total	110	100.0%

Fifty (45.5%) had common warts for a duration of 6 to 12 months. Thirty eight (34.5%) had duration lasting for less than 6 months. 3 (2.7%) people presented with warts lasting for more than 5 years. The mean duration was 14.56 months with a median of 6 months and mode of 4 months. Maximum number of patients (45.5%) presented with warts between 6-12 months after onset. Those patients presenting with duration of warts of more than 5 years had more than 5 warts, with size range of 1 to 4 cm. However these findings were not statistically significant and there was no significant correlation between duration of warts and age of patients.

Table 4: Local symptoms associated with common warts.

Symptom	No. of patients	Percentage
Pain	10	9.0
Pruritus	3	2.7
Bleeding	2	1.8
Purulent discharge	2	1.8
Hyperhidrosis	1	0.9

Localised symptoms were seen in 18 (16.3%) patients. The most common symptom was pain which exacerbated on applying local pressure in 10 patients (9%) (Table 4). History of similar lesions in friends and family were seen in 33 (30%). Statistical analysis showed 'p' value =0.776 which was not significant.

Association with other dermatologic disorders and systemic illness

The most common dermatologic manifestation present was acne in 24 (21.8%) of patients followed by infections which included pyoderma, dermatophytosis, molluscum contagiosum and scabies in 7 (6.3%) patients. The most common systemic illness was atopy seen in 11 (10%) patients. This was followed by diabetes mellitus in 5 (4.5%) patients and hypertension in 4 (3.6%). These results were not significant.

Clinical characteristics

Out of 110, 45 (40.9%) of patients presented with 1- 2 warts. Only 11 patients had more than 10 warts with the maximum being 60 common warts in a 38 year old post renal transplant male. Total number of warts studied was 637. The mean number of warts is 5.8, median was 3 and mode was 1. Statistical analysis showed these findings were highly significant (p <0.01) (Table 5).

Table 5: Number of common warts per patient.

Number of warts	No. of patients	Percentage
1 – 2	45	40.9%
3 – 5	32	29.1%
6 – 10	21	19.1%
Above 10	12	10.9%
Total	110	100.0%

Figure 1: Common warts on the dorsum of fingers.

Figure 2: Filiform warts on the scalp.

We found that 80.8% of warts measuring 0.5cm and below had duration of 1-12 months. 86.4% of warts measuring 0.6 -1.0 cm also has duration lasting 1-12 months. Those verrucae persisting for more than 60

months had a size larger than 0.5cm. These findings were found to be statistically significant using Chi square test p =0.032.

The most common regions of involvement were over dorsum of fingers in 86 (78.2%) patients. Fifty seven (51.8%) had over the dorsum of hands (excluding the fingers) and 42 (38.2%) had involvement of the head (includes scalp and face). The most common sites of involvement for common warts were on the fingers and for filiform warts were on the head. Statistical analysis showed these findings to be highly significant (Fishers exact test p <0.01) (Figure 1 and Figure 2).

Table 6: Common warts and their variants.

Common warts and their variants	No. of patients	Percentage
Classical common warts	78	71%
Filiform warts	19	17.3%
Classic common + filiform warts	4	3.6%
Periungual warts	6	5.4%
Pigmented common warts	3	2.7%
Total	110	100%

Figure 3: Common warts with Koebnerization.

Table 7: Common warts in association with other warts.

Association with other warts	No. of patients	Percentage
Common warts+ palmoplantar warts	28	25.4%
Periungual warts + palmoplantar warts	3	2.7%
Common warts+planar warts	1	0.9%
Common warts+oral warts	1	0.9%
Only common warts	77	71%
Total	110	100%

Varied morphological variants of common warts were seen. The most common being the classical common warts in 78 (71%), 19 (17.3%) had filiform warts, 6 (5.4%) had periungual warts, 4 (3.6%) had both classical and filiform warts and 3 (2.7%) had the pigmented common warts (Table 6). Two (1.8%) patients having classical common warts had koebnerization (Figure 3). We saw presence of other wart types in 33 (30%) patients. Twenty eight (25.4%) patients had common and palmoplantar warts (Table 7).

Figure 4: Pigmented common warts.

DISCUSSION

The present study was undertaken to study the clinical characteristics of common warts and to assess whether any variations has occurred over the years.

The maximum incidence was between the 18-30 year age group with a median of 22 years and mode of 20 years. This observation confirms the observations in literature that common warts occur in young adults. Rao et al did a clinical study on warts in 90 patients and found that 33.3% belonged to age group 11-20 years and 32.2% between 21-30 years.[9] Kushwaha et al did an observational study on 384 patients with warts and found a higher incidence in the second and third decade of life in 48.2% of patients. The age range was 3-70 years and incidence decreases after the 5th decade which was also seen in our study.[10] Berth Jones and Hutchinson did a study on 400 patients with warts and found 54% patients were in the age group of 11-25 years.[11] Ghadgepatil et al. conducted a clinicoepidemiological study of warts and found that the incidence of common warts were highest in 11-20 and 21-30 year age groups i.e. 33.3% of patients in each group.[12] These correlate well with our findings that common warts occur more commonly in younger age group as chances of contact in schools and colleges are higher.[9]

However Antonsson et al showed that HPV colonization of skin occurs early in infancy.[13] Furthermore Hazard et al. found that cutaneous human papillomavirus persists on healthy skin for several years.[14] Their findings support that contact with multiple individuals can predispose to infection even if every individual clinically do not manifest with verrucae.

We found involvement of males significantly higher than in females with male to female ratio of 2.2:1. In the study

by Rao et al. 74.4% were males and 25.5% were females.[9] Laxmisha et al also found higher incidence of warts in males with a male to female ratio of 1.8:1.[15] These findings correlate well with ours that involvement of men are twice more than women and can be attributed to increased outdoor activities and rising trend of cosmetic concern.[12]

In the present study students comprised majority of patients (42.7%) followed by housewives (13.5%). Patients in other professions included shopkeepers, drivers, office workers, labourers, nurses, hotel staff and school teachers. Though the incidences of the latter were lower most of these professions involved daily contact with multiple people. The higher incidence seen in students confirms observations in textbooks. Rao et al also found highest incidence of warts in students (50%) followed by servicemen (25.5%) and housewives (16.6%).[9] Laxmisha et al had similar findings of higher incidence in students (53%), labourers (8.6%) and housewives (6.1%).[15] In the study by Kushwaha et al verruca vulgaris were more common among students and barbers.[10] Ghadgepatil et al also found that common warts were highest in students. In this study the next occupational group to be involved were labourers (23.8%), housewives (14.3%) and office workers (19%).[12] The maximum involvement in the student group is attributed to the fact that chances of contact in schools and colleges are higher.[9] Higher incidence in housewives and labourers can be due to higher chances of sustaining trauma facilitating virus entry.[1,12]

In our study we elicited history pertaining to first site of onset of the common wart which was recorded. This is a new parameter which has not been assessed in previous studies. Forty nine (44.5%) of patients had initial involvement of lesions over the dorsum of fingers and right was more commonly involved than left. This is probably due to increased chance of trauma over these sites and most of the population are right handed.

Fifty (45.5%) patients had duration of warts ranging from 6 to 12 months. The mean was 14.56 months with median of 6 months. Rao et al found the duration at time of presentation was 1-6 months in 53.3% of patients. The duration ranged from 1 month to 7 years.[9] Laxmisha et al found the most common duration was within 1-2months (39.6%).[15] In the study by Kushwaha et al the duration of warts ranged from 1 month to more than 3 years.[10] Ghadgepatil et al found that 57.1% patients presented between 1-6 months and 38.1% presented between 7 months to 1year.[12] The longer duration of warts can be attributed to the clinical impression that they are slower to regress in adults.[16]

Out of 110 patients only 16% had symptoms of which pain was the most common in 9% followed by pruritus. The rest (84%) presented with verrucae solely as a cosmetic concern. According to Ghadegepatil et al, the most common symptom was that of pain (19%), followed by prutitus (14.3%) and bleeding (14.3%).[12] However the symptoms in our patients were at a much lower incidence. Their finding that pain was the most common symptom correlated with ours and is probably due to repeated trauma over common sites of hands.[12]

The most common associated dermatological disorder was acne. Durai et al found that incidence of acne in adults is highest between 18-21years and 26-30 years.[17] As both acne and common warts occur in the young adults this was an expected finding.

Atopic diathesis was the most frequent systemic manifestation. A higher incidence of HPV-2 was found in atopic individuals but other investigators failed to find such an association.[8] In our study 10% individuals were atopic. However characteristics of their warts were not significantly different from non-atopic individuals.

Thirty three (30%) patients gave history of similar cutaneous lesions in friends and family. Warts are more common in larger families and overcrowded homes due to cumulative overexposure.[10]

All classical common warts appeared as a dome shaped firm papules or coalesced into plaques with a rough keratotic surface. The Köbner like isomorphic phenomenon was seen in 2 patients. Periungual warts also had the same appearance and were located within and around the nail. Filiform warts appeared as soft pedunculated lesions with thin finger like growths perpendicular to the skin surface. We did not see pseudo Köbners phenomenon in these patients. They did not have a tendency to coalesce but often appeared in clusters.

These observations were similar to those in textbooks and the review article on human papilloma virus infection by Leto et al.[5] We also had 2 patients with pigmented common warts that appeared as firm dome shaped papules or plaques with a rough surface having a black brown pigmentation. These findings were similar to those reported by Egawa et al and Leto et al.[5,18] When the HPV enters the proliferating basal layer of the epidermis through trauma or abrasion, induction of infection and hyperproliferation are initiated. This leads to a gross hyperkeratosis, acanthosis and papillomatosis that lead to formation of a firm elevated papule with a rough grey keratotic surface corresponding to these features. In filiform warts the papillae are more elongated leading to finger like projections.[1,8] The pigmentation in pigmented viral warts is attributed to the presence of melanin blockade melanocytes. The dispersion of melanin granules in the dendrites of the melanin blockade melanocytes and the increased melanin granules in keratinocytes are the primary contributors to the pigmentation of the warts.[18]

In our study, the most common sites were over the dorsum of fingers (78.2%) and hands (51.8%) followed

by head (38.2%). For classical common warts, the most common site was on the fingers and for filiform warts was on the head. According to Ghadgepatil et al, 62% of patients with common warts had involvement over upper extremities and 50% of patients with filiform warts had involvement of the face.[12] Rao et al, Laxmisha et al and Kushwaha et al also found most common sites for common warts were on the dorsum of hands.[9,10,15] The most common morphological type of common warts was the classical common warts. They were also found to be associated with palmoplantar warts in 28% of patients. Most of these patients had common warts on the dorsum of hands and fingers. 64.3% of these patients were students followed by housewives (21.4%). Inoculation of different virus strains could have been due to contact with multiple individuals and facilitated by repeated trauma in form of minor cuts, abrasions and microinjuries which often occur in these areas. Frequent involvement of the face is probably attributable to the increased cosmetic procedures like waxing, threading, facials, shaving, and so forth, in the salons.[1,12]

CONCLUSION

Our study concluded that young male students are susceptible to acquiring cutaneous warts. This is because of increase in chance of contact with multiple individuals in schools and colleges. Thirty percent patients gave similar complaints in close contacts further supporting that mode of acquiring warts is through repeated contact. The most common site of inoculation was naturally over the fingers and dorsum of hands as these regions are most prone to contact and also susceptible to trauma. For filiform warts it was commonly seen on the scalp and face as a result of increase in facial procedures like shaving and facials.

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