

Clinico – Pathological Study of 300 Cases of Cutaneous Warts in Immunocompetent and Immunocompromised Patients

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Abstract: ***Aim of the study:** To find out the various clinical types of cutaneous warts in immuno-competent and immuno-compromised patients (human immuno deficiency virus infected, renal transplant recipients), and its histopathological aspects. **Materials and Methods:** This study was conducted in dermatology department of a tertiary hospital and a total of three hundred patients were screened for this study in each groups. Detailed clinical history and examination, skin biopsy, HIV status, immunosuppressant used and period of follow up since transplant (for renal transplant patients) were taken for all the patients. **Results:** Among the 300 cases in immuno-competent patients, verruca vulgaris was observed in 157 (52%), plantar warts in 57 (19%), anogenital warts in 42 (14%) and plane warts in 21 (7%) respectively. Among the 300 HIV patients, ano-genital warts were observed in 35 (11.6%) and palmo-plantar warts in 1 patient respectively. Among the 300 patients screened in renal transplant patients, verruca vulgaris was seen in 4 (0.01%) patients, followed by 1(0.003%) plane wart and 1 (0.003%) filiform wart. **Conclusion:** Verruca vulgaris was the most common type in immuno-competent patients and ano-genital warts in immuno-compromised patients. In renal transplant recipients, the decreased incidence of warts in this study may be due to the difference in skin type, immunosuppressant used, and geographical location which needs further evaluation in a larger population.*

Keywords: Wart, immuno-competent, immuno-compromised patients, renal transplant recipients.

1. Introduction

Warts due to human papilloma virus (HPV) infection form an interesting study because of their frequent occurrence, varied morphology, asymptomatic behavior and their unpredictable course. The possibility of malignancy in genital warts, epidermodysplasia verruciformis and the heterogeneity in HPV serotypes adds importance in their study^[1, 2]. Increased HPV infections with human immuno deficiency virus (HIV) are of great concern and HIV-infected women are at a higher risk for cervical intraepithelial neoplasms. HIV-infected men are also at increased risk for anal HPV infection. It appears that renal transplant recipients are susceptible to infections with diverse HPV types including rare types, multiple infections and is often recalcitrant, and deeply affects the patient's quality of life^[3]. This study is conducted to find out the various clinical types of cutaneous warts in immuno-competent and immuno-compromised patients (human immuno deficiency virus infected, renal transplant recipients), and their histopathological aspects.

2. Materials and Methods

This study was conducted at the department of dermatology, in a tertiary hospital. A total of each three hundred patients were screened for this study in immuno-competent, HIV patients and renal transplant recipients. A detailed history was taken which included age, sex, presenting complaints, duration, history of trauma, history of drug intake, past history of similar lesions, presence of similar lesions in the family, history of exposure to sexually transmitted diseases and if any treatment has been given to the same. In renal transplant recipients, the immunosuppressant used and period of follow up since transplant was noted. Complete

clinical examination was carried out in each patient with emphasis to the sites of involvement, number of lesions, type of the wart and its morphological features. Koebner's phenomenon and Dowling's sign (in plantar warts) were looked for. The diagnosis in most cases was clinical and routine investigations including hemogram, mantoux, venereal disease research laboratory and enzyme linked immunosorbent assay for HIV ELISA were done in all cases. Skin biopsy was done only in atypical cases.

3. Results

Among the three hundred cases in immuno-competent group, Verruca vulgaris or common warts was observed in 157 patients (52%). This was followed by plantar warts, which occurred in 57 cases (19%). Anogenital warts which occurred in 42 (14%) and plane warts occurred in 21 (7%) cases respectively. In ten cases more than one type of wart was seen. The number of males was 189 (63%) and the number of females was 111 (37%).

Age and sex distribution of warts is shown in Table 1.

Table 1: Age And Sex Distribution In Wart Patients

Age	Male	Female	Total	Percentage (%)
2- 10	13	12	25	9
11-20	94	47	141	47
21-30	42	30	72	24
31-40	25	14	39	13
41-50	8	5	13	4
51-60	4	2	6	2
61-70	3	1	4	1
Total	189	111	300	100

Verruca Vulgaris

It was the wart occurred most commonly in this group. The most common age group affected was 16 – 20 years age group. The youngest patient was five year old male and the oldest was a sixty four year old man. The sex incidence was 113 males (65%) and 62 females (35%). History of trauma was elicited in twenty eight patients of whom sixteen were males and twelve females, a history of similar lesions in the past was found in seventeen patients of whom ten were males and seven females. The most common sited affected were the fingers, dorsum of hands and feet, forearms and palms. Koebner's phenomenon (Figure 1) was noted in thirty six cases (20 %), twelve of these patients were employed in jobs involving handling heavy machines and had multiple scars in their hands. The morphology of the common wart in a majority of patients was a well circumscribed, firm, rough surfaced, papules and nodules with a verrucous surface. More than hundreds of lesions were seen in a 29 year old HIV positive male. Verruca vulgaris was seen over chicken pox scars in patient. Histopathological examination showed hyperkeratosis, acanthosis and papillomatosis. Rete ridges at the edge of the lesion were elongated and inclined towards the centre. Koilocytes were seen in upper layers of stratum malpighii.



Figure 1: Koebner's phenomenon seen in lower end of forearm

Plantar Warts

These were the second most common type encountered in this study. Fifty seven patients out of the total three hundred cases studied had planter warts. The most common age group affected was 16 – 25 years. The sex distribution was thirty males (53%) and twenty seven females (47%) respectively. The most common sites affected were the pressure sites like the heel, the heads of metatarsals and the ball of the great toe. A cluster of small satellite warts were seen around a large wart. A majority of these were of the superficial type or mosaic type constituting thirty six cases. Deep warts or myrmecia were found in fourteen cases (Figure 2). A variant whitish keratotic punctuate type of wart was observed in seven cases. One HIV positive patient showed palmo plantar warts only. The histopathological examination showed massive hyperkeratosis, acanthosis and papillomatosis. The granular layer was sparse or absent. Numerous eosinophilic granules seen in the cytoplasm of many cells coalesce to form homogenous inclusion bodies.



Figure 2: Myrmecia warts seen in plantar aspect of foot.

Anogenital Warts

Anogenital warts were the third most common type encountered and were present in forty two patients of the study group. The most common age group affected was the 16 – 25 years age group. Of these thirty (72%) were males and twelve (28%) females. Twenty eight patients gave a history of multiple unprotected sexual exposures to known and un-known individuals. Out of the thirty male patients sixteen gave a history of homosexual behavior. Both the female patients had past history of similar lesions for which they were treated. The typical anogenital wart is soft, pink elongated and sometimes pedunculated or filiform. The lesions were multiple especially on moist surfaces. VDRL and ELISA were done as a routine in all cases. VDRL was negative in all cases. ELISA was positive in six cases with florid vegetating lesions. Histopathological examination showed flaky hyperkeratosis, massive acanthosis papillomatosis and koilocytes.

Verruca Plana

Also known as flat warts, verruca plana was found in twenty cases, out of the total three hundred cases. The most common age group affected was the 16 – 25 years age group. Among these twelve were males (60%) and eight females (40%). The most common sites involved were the face, dorsum of hands and dorsum of feet. The duration of these lesions varied between two months and three years. The lesions were seen as flat topped slightly elevated flesh colored or brown papules, varying in size between few mms to 1 to 2 cms. An atypical case which resembled a seborrheic keratosis with brownish papules on the dorsum of the hand, eventually turned out to be verruca plana on histological examination. Histopathological examination showed mild hyperkeratosis, acanthosis and hypergranulosis, numerous koilocytes were seen in the upper layers of stratum malpighii.

Filiform Wart

Filiform warts or digitate warts were found in six cases, out of the total three hundred cases. The most common age group affected was the 10 – 25 years age group (67 %). Among these 4 were males (67%) and two were females (32%). The face and the neck were the commonest site involved. A patient presented with digitate wart and verruca

in both eyelids associated with conjunctivitis. One patient had filiform wart over the pinna.

Atypical presentations of wart

Pigmented wart - multiple warts with pigmentation were seen in the soles of a patient, oral warts- An oral wart was seen over the lower lip, Epidermodysplasia Verruciformis- a twenty one years old male patient who was diagnosed with lichen sclerosus et atrophicus like skin lesion over the left knee turned out to be epidermodysplasia verruciformis on histological examination with hyperkeratosis, acanthosis and vacuolation in the keratinocytes.

Warts in HIV Patients

Among the three hundred HIV + cases in the various spectrum of HIV disease screened, 36 patients had warts. Genital warts were the commonest observed in twenty two cases followed by verruca vulgaris which occurred in eight cases. Perianal wart was seen in five patients and palmo-plantar warts in one patient. The commonest age group affected was 25 – 40 age groups. The number of males was twenty one (58%) and the number of females was fifteen (42%). The age and sex distribution is shown in Table – 2



Figure 3: Extensive verruca vulgaris in a HIV patient

Table 2: Age and Distribution – Warts in HIV Patients

Age	Male	Female	Total	Percentage (%)
2- 10	-	-	-	-
11-20	-	-	-	-
21-30	8	5	13	36
31-40	11	9	20	56
41-50	2	1	3	8
51-60	-	-	-	-
61-70	-	-	-	-
Total	21	15	36	100

All the thirty six cases gave a history of multiple exposures without condoms with known and unknown persons. Out of the twenty one male patients eleven gave a history of homosexual behavior. The CD4 counts of twenty two cases were above 200 and fourteen cases were below 200. The lowest CD4 count noted was 11 and the highest was 296. VDRL in all the cases was non reactive. A male patient

presented with a wide spread numerous, confluent verruca vulgaris (Figure 3) involving the face, upper and lower extremities, trunk and palms with characteristic periungual warts also seen. A female patient presented with a large exuberant cauliflower like plaques of anogenital condyloma that spread to the groins (Fig 30) and histopathological examination showing vacuolated cells in the granular and spinous layer. Two male patients presented with genital warts associated with genital herpes, extensive dermatophytosis and onychomycosis.

Warts in Renal Transplant Patients

Among the three hundred patients screened in renal transplant patients, only six patients had warts. Verruca vulgaris was the most common, seen in four cases followed by plane wart, digitate warts, genital wart, one each. All of the six allograft recipients were males of age between 24 to 62 years. All had transplants from related donors. The duration of follow up was 16 to 172 months. All the patients received kidneys from living donors and were kept on immuno-suppression with daily doses of Prednisolone, Azathioprine and Cyclosporine respectively. A Twenty eight year old male patient on follow up for 24 months on immuno-suppressants presented with filiform type of genital wart. A sixty two year old male patient on follow up for 172 months with immuno-suppressants presented with numerous verruca vulgaris, plane wart and digitate warts in the dorsal aspect of both forearms. Histopathological examination was classical of verruca with no dysplastic changes. A twenty two year old male patient on follow up for 22 months on immuno-suppressants presented with atypical lesions appearing as scaly macules and plaques with a Pityriasis Versicolor – like appearance seen over the trunk and both upper extremities. There was no family history of similar lesions. Histopathological examination showed with hyperkeratosis, acanthosis and koilocytes compatible with epidermodysplasia verruciformis with no dysplastic changes. None of the patients showed evidence of keratoacanthoma or squamous cell carcinoma or other malignant skin lesions.



Figure 4: Koilocytes seen in both upper and lower layers of epidermis.

4. Discussion

The most common type of wart encountered in this study was verruca vulgaris. The most common age group affected was the 16 - 20 age groups. Males were more commonly

affected than females because of a greater like hood of occupational trauma and environmental exposure. Though warts are highly infectious, history of contact with persons having similar lesions was elicited in only thirty one patients. This could indicate the presence of sub clinical or latent infections with papilloma virus in the general population, as observed in other studies [4]. The common sites affected were the extremities, which indicate trauma as the main route of the entry of the virus. Association of verruca arising from chickenpox scars was noted in this study. Immuno-compromised patients whether due to disease per se or drugs showed both increase in size and number of warts [5]. The histopathological findings correlated well with that of the morphological features.

Plantar warts were the second most common type of wart encountered in this study. The most common age group involved was the 16 - 25 years, like common warts. History of trauma in one fourth of cases suggest trauma as a source of infection. Past history of similar lesions may suggest an incomplete resolution of a deeper component or a reinfection. The most common sites involved were pressure points, which are common sites of wear and tear or trauma.

Anogenital Wart was the third most common type of lesion encountered in this study. All the cases were in the age range 16 - 25 years, a sexually active age group. Majority of the patients had sexual intercourse with known and unknown individuals. Other sexually transmitted diseases like trichomoniasis and candidiasis were also present as in several studies [6]. The common sites of occurrence of the lesions in the male patient were common sites of coital friction, namely coronal sulcus and glans penis. The morphology of the lesions was classical and biopsy showed typical histopathological features.

Verruca Plana or flat warts were confined to the extremities and face and the morphology of the lesions were also typical. One case, which presented as seborrhoeic keratosis eventually turned out to be plane wart on histopathological examination.

Other types of warts like classical digitate warts, pigmented warts were noted. One patient with atypical lichen scleroses like presentation on the knee joint was actually epidermodysplasia verruciformis on histopathological examination.

Warts in HIV Patients

Among the three hundred HIV + cases in the various spectrum of HIV disease screened 36 patients had warts. The incidence of warts is reported to be between 5 and 27% in HIV infection [7]. The incidence of warts of 12% is noted in this study. Increase in anogenital warts with florid manifestations was seen especially in homosexual men as seen in similar other studies conducted in HIV+ cases [8, 9, 10]. Epidermodysplasia verruciformis like lesions complicating HIV disease was noted in other similar studies [11, 12]. Florid manifestation of Vulvo-vaginal warts seen in this study was also noted in a previous study [13]. Associated genital herpes lesions and wide spread numerous, confluent verruca vulgaris with characteristic periungual warts was also noted in this study. The increased risk of genital warts in HIV

infection can occur early in HIV disease which was attributed to the progression from subclinical to clinical human papillomavirus disease [14].

Warts in renal transplant patients

Among the three hundred patients screened in renal transplant patients, only six patients had warts. The incidence of warts of 2% is noted in this study. Such decreased incidence of warts was also seen in the study by [15]. Our findings were in contrast to previous similar studies which showed that 90 % of the total patient population had warts 5 years after renal transplantation [16]. Multiple verruca vulgaris with associated plane and filiform warts in the sun exposed areas were recorded, with histopathological section showing no dysplastic changes. The main risk factors for development of warts and subsequent malignancy were the chronic usage of immuno-suppressants and sun exposure [17, 18].

5. Conclusion

The most common wart type in this study was verruca vulgaris and common age groups affected were from 16-25 years. Histopathological features of various clinical types of warts were characteristic. Warts in the immunocompromised patients, were numerous and exuberant. In HIV positive patients, anogenital warts were more common with florid manifestations was seen especially in homosexual men. In renal transplant recipients the decreased incidence of warts in this study may be due to the difference in skin type, immunosuppressant used, ethnic group and geographical location which needs further evaluation in a larger population.

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