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Histopathological Spectrum of Warty Skin Lesions among Patients of A Tertiary Care Center in India

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Abstract

Introduction: The largest sensory organ in the body, the skin serves as a barrier to protect the body from many dangerous environmental elements. It encompasses a broad range of illnesses, from neoplastic tumors to inflammatory diseases. Warty lesions / verrucous lesions closely resemble each other clinically but vary in their etiologies and prognosis. They can range from infectious to neoplastic (benign to malignant). Warty lesions may or may not be associated with human papillomavirus (HPV). Histopathological diagnosis of skin biopsy is necessary for confirmation of infection or disease, which supports suitable management.

Objectives: The objective of this research was to study the histopathological spectrum of warty lesions of skin and to categorize them.

Materials and Methods: An observational study (both retrospective and prospective), was done to note the histopathological spectrum of warty skin lesions in a tertiary hospital for 2 years (July 2021- June 2023). Skin biopsies of patients presented with warty lesions were included. The biopsies were processed according to standard procedures and Haematoxylin and Eosin stain (H&E) stained slides were evaluated and recorded.

Results and discussion: It was observed that among the 100 patients participated in this study, comprised of 58 males and 42 females and the age ranged between 14 years and 90 years. Out of the 100 biopsies, 24% have infectious type, 2% malignant lesions and remaining 74% were benign. Seborrheic keratosis (22%) was found to be the most common warty lesion in our study and the most common site involved was the lower limb (53%).

Conclusion: Hence we conclude that though Warty lesions clinically have many differential diagnosis, Biopsy and histopathological study is necessary in differentiating them which will help in appropriate management.

Keywords: Histopathology, warty lesion, human papillomavirus, skin biopsy

Introduction

The largest sensory organ in the body, the skin serves as a barrier to protect the body from many dangerous environmental elements. It involves a wide spectrum of disorders ranging from inflammatory conditions to neoplastic lesions.[1] The skin has lots of functions which is also a complex organ. The three main anatomic components of skin are epidermis with skin adnexa, melanocytic system, dermis and subcutis.[2,3]

Skin diseases are common in developing countries which are prevalent among all age groups and gender groups. There is a wide variation of skin diseases which may be due to factors like age, sex, environment, racial and social customs.[4,5]

The term "pertaining to or marked by wart like growth pattern" describes verrucous lesions. Some appear to be warts at first glance, but their behavior and prognosis differ greatly. Verrucous lesions, also known as warty lesions, are exophytic skin lesions with a jagged, flowing surface. Clinically, they are quite similar to one another, however their etiologies and prognoses differ. They can range from infectious to neoplastic (benign to malignant). Not all verrucous lesions are related to the human papillomavirus (HPV), despite popular perception. Warty lesions and the human papillomavirus (HPV) may or may not be related. Anogenital lesions are more likely to be associated with HPV.[6-8]

Exophytic papillae with fibrovascular cores, polygonal cells with distinct cellular boundaries, eosinophilic cytoplasm, and noticeable koilocytotic atypia—wrinkled hyperchromatic nuclei with perinuclear halo and frequent multinucleation—are the components of the warty component. The stroma exhibits desmoplasia and the base is invading. Histopathological diagnosis of skin biopsy is necessary for confirmation of infection or neoplasm, which helps in appropriate management.[6-9]

So, an observational study (both retrospective and prospective), was done to study the histopathological spectrum of warty skin lesions from skin biopsies in a tertiary hospital.

Objective of the Study

The objective of this research was to study the histopathological spectrum of warty lesions of skin and to categorize them.

Materials and Methods

We conducted an Observational study (both retrospective and prospective) for 2 years (July 2021-June 2023) in a tertiary hospital in India. All patients with warty lesions those referred for skin biopsies irrespective of age & gender were the study participants.

Skin biopsies of patients those presented with warty lesions received for histopathological diagnosis within the above study duration were included irrespective of age & gender. Inadequate skin biopsy samples and mucosal lesions were excluded from this study.

Estimation of Sample Size

On the basis of statistics obtained from Department of Pathology, an average of 6 cases per month fitting the criteria of the study with study duration of 18 months, we can expect to have N=108. Based on this

population size, using YAMANE equation, for a known population size, sample size (n) equal to

n =N/1+Ne2

n=sample size

N=population size

e= margin of error (for 95% of confidence level, margin error =0.05)

n=108/1+108*0.05*0.05 = 108/1.27 = 85

Therefore, after approximating with a non-response rate of 10%, the sample size of the study participants was fixed at 100.

Method of Collection of Data

Skin biopsies of patients presented with warty lesions were included. The biopsies were processed according to standard procedures where the samples were stained with Haematoxylin and Eosin stain (H&E) and evaluated. Demographic and clinical data were collected from records both retrospectively and prospectively.

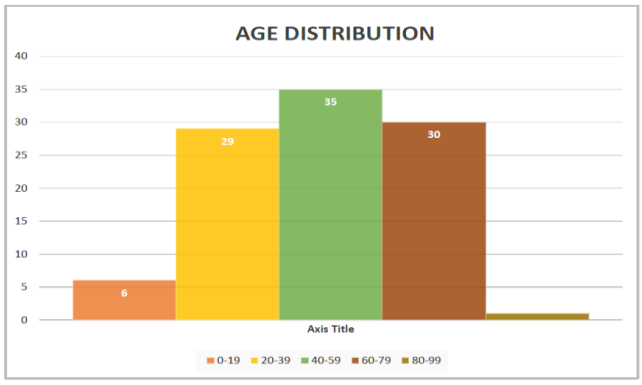
Statistical Analysis

The data was collected and compiled in MS Excel. Descriptive statistics has been used to present the data. To analyse the data SPSS (Version 26.0) was used. Significance level was fixed as 5% ($\alpha = 0.05$). Qualitative variables are expressed as frequency and percentages and Quantitative variables are expressed as Mean and Standard Deviation.

Results

A total of 100 patients participated in this study, which comprised of 58 males and 42 females. The patients were widely distributed in age between 14 years and 90 years of age, where the average age was 48.11±20.12 years. Among them, 6% were in the age category of 0 to 19 years of age, 29% among 20-39 years of age, 35% among 40-59 years of age, 30% among 60-79 years of age and 1% in the age group between 80 and 99 years respectively [Figure 1].

Figure 1: Age Group Distribution Among The Study Patients



The histopathological spectrum of the warty skin lesions observed in our study included verruca vulgaris, seborrheic keratosis, plantar warts, lichen simplex chronicus, accrokeratosis verruciformis, verruca plana, condyloma acuminata, lymphangioma circumscriptum, tuberculus verrucosa cutis etc and their distribution is given in [Figure: 2] and listed in [Table:1].

Figure 2: Distribution of Histopathological Diagnosis of Warty Skin Lesions In The Study Population

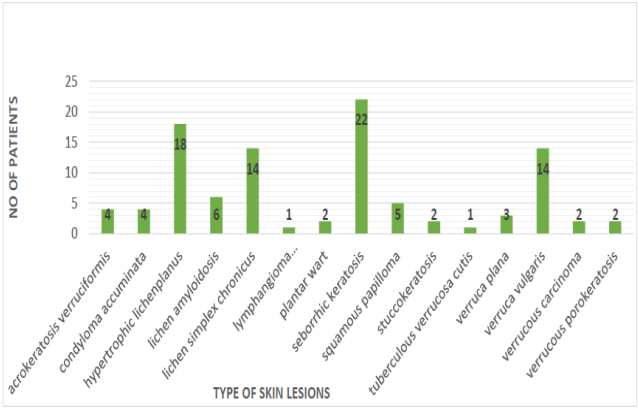


Table 1: Distribution of Histopathological Diagnosis of Warty Skin Lesions in the Study Population

Type of lesions	No of patients	Type of lesions	No of patients	Type of lesions	No of patients
Verruca vulgaris	14	Seborrheic keratosis	22	Verrucous carcinoma	2
Condyloma acuminata	4	Hypertrophic lichen planus	18		
Verruca plana	3	Lichen Simplex Chronicus	14		
Plantar wart	2	Lichen Amyloidosis	6		
Tuberculous verrucosa cutis	1	Squamous papilloma	5		
		Acrokeratosis Veruciformis	4		
		Porokeratosis	2		
		Stucco keratosis	2		
		Lymphangioma Circumscriptum	1		
Infectious	**24**	**Benign**	**74**	**Malignant**	**2**

Out of the 100 biopsies taken, 24% had infectious type, 2% malignant lesions and remaining 74% benign. [Table: 2]

Table 2: Classification of Warty Lesions As Infectious, Benign And Malignant

Infectious (24%)	Benign (74%)	Malignant (2%)
Verruca vulgaris	Seborrheic keratosis	Verrucous carcinoma
Plantar wart	Hypertrophic lichen planus	
Verruca plana	Lichen Amyloidosis	
Condyloma acuminata	Lichen Simplex Chronicus	
Tuberculous verrucosa cutis	Stucco keratosis	
	Porokeratosis	
	Acrokeratosis Veruciformis	
	Lymphangioma Circumscriptum	
	Squamous papilloma	

Verrucous carcinoma [Figure: 3] was seen in the histopathological examination among 2 patients, where both of them were males and the site involved was face and great toe respectively. Among the infectious type of lesions, Verruca vulgaris [Figure: 4] was the most commonest which was 14%, followed by Condyloma acuminata (4%) [Figure: 5], Verruca plana (3%), Plantar wart (2%) [Graph: 6] and Tuberculous verrucosa cutis (1%). In our study, the infectious type of skin lesion had a male preponderance (75%).

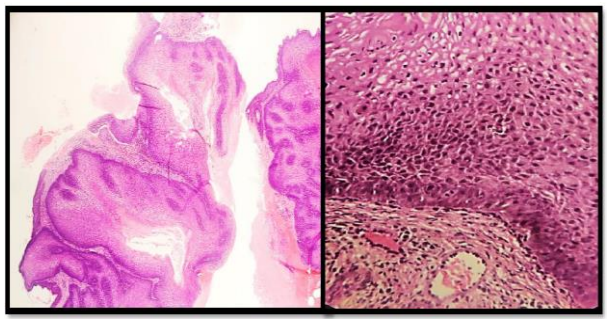


Figure 3: Histopathology of Verrucous carcinoma

Figure 4: Histopathology of verruca vulgaris

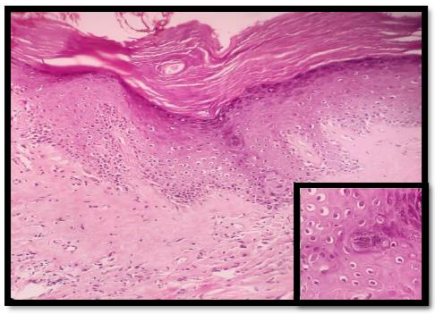


Figure 5: Histopathology of condyloma acuminata

Figure 6: Histopathology of Plantar wart

Among the benign lesions, Seborrheic keratosis (22%) [Figure: 7] was most common followed by Hypertrophic lichen planus (18%) [Figure: 8] and Lichen Simplex Chronicus (14%). The age group was widely distributed and was almost similar in both the gender groups for the non-infectious type of lesions.

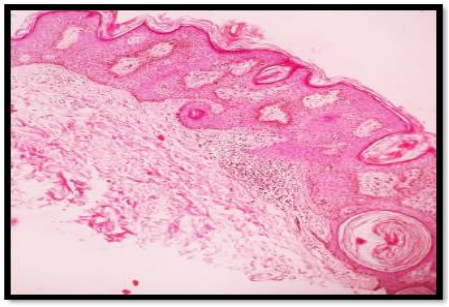


Figure 7: Histopathology of Seborrheic keratosis

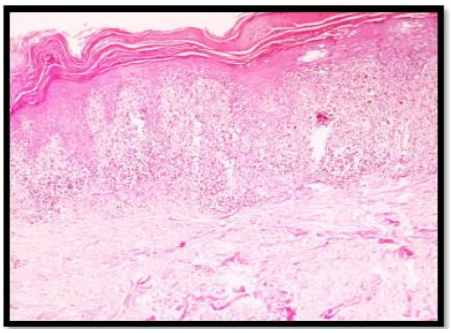


Figure 8: histopathology of Hypertrophic lichen planus

The pediatric age group (0-18 years) reported 3% of Acro keratosis Verruciformis [Figure :9] 1% of Verruca vulgaris and 1% of Hypertrophic lichen planus respectively.

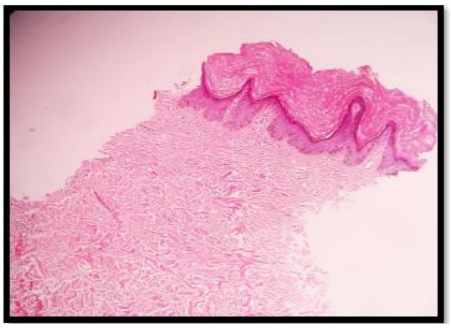
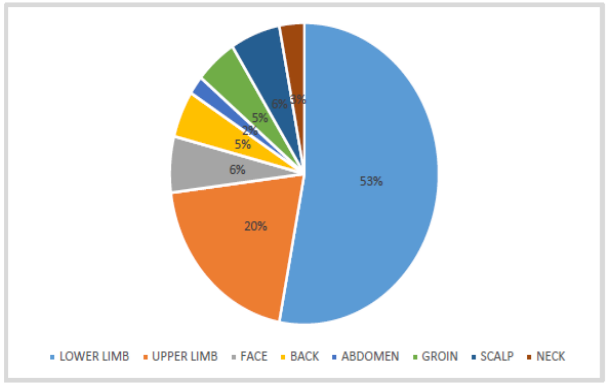


Figure 9: Histopathology of Acrokeratosis verruciformis

The most common site involved was the lower limb (53%) followed by upper limb (20%), face (6%), scalp (6%), back (5%), groin (5%), neck (3%) and abdomen (2%). [Figure 10].

Figure 10: Distribution of Site of Lesions Among Study Patients



Discussion

Warty lesions are diverse group of skin disorders which are morphologically similar but have different etiologies.[6-9]

According to our research, those aged between 30 and 70 years had a wide distribution in occurrence of skin lesions, where the average age was 48.11±20.12 years. In contrary, Adhikari RC et al.[4] discovered the maximum frequency in 31–40 years of age and Bezbaruah R et al.[10] and Abubakar SD et al.[11] identified the highest frequency in 21–30 years of age. Slight male preponderance with Males: Females – 1.38:1 was found in our study. It contrasted with the female predominance in Bezbaruah R et al.,[10] and Adhikari et al.,[4] and was comparable to Chauhan K et al.,8 Dayal et al.,[12] and Kumar V et al.[13]

Seborrheic keratosis clinically have a dull, waxy, verrucous surface resulting in their characteristic "stuck on" appearance. Seborrheic keratosis (22%) was found to be the most commonest warty lesion in our study which was similar to Goswami et al.[14] However, the widely encountered lesion of spongiotic dermatitis in Adhikari et al.,[4] was not consistent with the results of our investigation.

Similar to our study, Verruca vulgaris (common wart) was found to be more common than plantar wart and it was contradicted to a study by Sudhakar Rao et al.,[15] where plantar wart was commonest presentation of warty lesions of lower limbs.

N S Jayanti 16 in her study of verrucous lesions of lower limb found Hypertrophic lichen planus as the most common etiology. Many studies have shown that verrucous lesions are more common in the lower limb.[19-23]

Hypertrophic lichen planus (HLP) is a kind of Lichen planus that is rarely seen elsewhere and is often limited to the shins. Raised, widespread, hypertrophic, hyperpigmented pruritic plaques are the most noticeable characteristic. Mruthyunjayappa, et al[17] found in only 6% of their patients, in contrary we found it high among 18% of the patients. Central lichenified plaque is the hallmark of lichen simplex chronicus (LSC), which is frequently hyperpigmented as a result of initial, intense scratching. In our study, Lichen Simplex Chronicus was found among 14% of them, where another study showed 8%.[17] One type of primary localized cutaneous amyloidosis is lichen amyloidosis, where our study diagnosed in 6% of them which was in contrary to Mruthyunjayappa, et al[17] where they found in only 1.5% of their patients.

In this study, two cases of verrucous carcinoma were found, located on face & great toe respectively. In contrast to our study, Verrucous carcinoma were more common in the genitocrural area and plantar region according to a study by Mc Kee PH et al.[18]

Acrokeratosis verruciformis is a rare genodermatosis usually seen in children, 24 where 3% of the children in our study were found to have this rare lesion.

One case each of Tuberculosis verrucosa cutis having granuloma in the dermis and Lymphangioma Circumscriptum showing dilated endothelial lined spaces with many lymphoid cells were also found in this study.

Almost all warty lesions showed hyperkeratosis and parakeratosis but they can be differentiated on the basis of their certain specific features.

Based on this discussion, a histological diagnosis might serve as the foundation for a differential diagnosis which has been concluded in other studies too.[4,8-14,17-21]

Conclusion

As Warty lesions clinically have many differential diagnosis, this study was conducted to categorise warty lesions by using histopathological examination. Therefore, Biopsy and histopathological study helps in differentiating them which necessitates appropriate management.

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