



## Original Research Article

# THE HISTOPATHOLOGICAL SPECTRUM OF NON-INFECTIOUS & NON- NEOPLASTIC LESIONS OF THE SKIN AT A TERTIARY HEALTH CARE HOSPITAL IN GARHWAL UTTARAKHAND

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**ABSTRACT**

**Background:** Skin a multifaceted, multilayered and incredibly complex organ, having a plethora of diverse functions, accounts for approximately 15% of the total dry body weight. Dermatological disorders are common all over the world, with a highly variable spectrum of disease process, owing to different ecological factors. Skin disorders are generally diagnosed by the clinical presentation but many diseases have overlapping clinical features, moreover, a single disease may have variable presentations. Therefore, skin biopsy and histopathological examination, which is the gold standard tool for confirming the diagnosis, also aids in patient management and guides the clinician towards appropriate clinical interventions. Our study explores the diversity of the histomorphological spectrum of non-infectious and non-neoplastic lesions of skin in a tertiary health care centre in Garhwal region of Uttarakhand as there is paucity of the studies available in this field in this hilly region.

**Materials and Methods:** A cross sectional observational study of non-infectious benign skin lesions was conducted at Department of Pathology of VCSGIMS&R Srinagar Garhwal from August 2022 to September 2023. The skin biopsies were received in 10% formalin and after routine tissue processing and staining with hematoxylin and eosin, slides were examined. The clinical features were recorded from requisition forms of patients. The histological features were noted and histopathological diagnosis was made.

**Results:** Out of a total of 117 skin biopsies of non-neoplastic non-infectious skin lesions 56% were females. The age of presentation ranged from 8 months to 84 years. The age group of 31 to 40 years represented the majority of cases. Most common lesions were papulosquamous lesions followed by pigmented lesions. Lichen planus was the most common pathology.

**Conclusion:** A heterogenous histopathological spectrum of non-infectious and non neoplastic lesions was seen in a wide age distribution. Skin biopsy being a simple and inexpensive outpatient procedure provides adequate biopsy material for histopathological examination and confirmation of clinical diagnosis.

**Keywords:** Histopathology, Skin, Non-infectious

## INTRODUCTION

Skin is the largest sensory organ of the human body, a multifaceted, multilayered and incredibly complex organ, having a plethora of diverse functions, accounts for approximately 15% of the total dry body weight. Primarily it acts as a protective barrier against various harmful agents of the external as well as the internal environment.

Skin has 3 main histological components- the epidermis with adnexal structures, the dermis and melanocytic system, and the subcutis.<sup>[1]</sup> An imbalance in the functioning of these components can lead to different skin disorders affecting the people of all age groups. Dermatological disorders are common all over the world, with a highly variable spectrum of disease process, owing to different ecological factors. India has a very expansive and diverse heritage, so we can expect a broad range of skin diseases which includes dermatitis, eczema, infectious disorders, connective tissue diseases, bullous disorders, nevi, keratinizing disorders and many more.<sup>[2]</sup> The spectrum of diseases is largely affected by the socioeconomic status, the nutrition, the genetics and environmental conditions and the habits of hygiene amongst the population members.<sup>[3]</sup> The hilly areas of India are exposed to more ultraviolet (UV) rays because of the higher altitude and thin atmospheric layer, which allows more UV radiations to pass through, and an increased duration of outdoor activities also adds to the toll. Skin disorders are generally diagnosed by the clinical presentation and history but many diseases have overlapping clinical features, moreover, a single disease may have variable presentations. Therefore, skin biopsy and histopathological examination, which is the gold standard tool for confirming the diagnosis, also aids in patient management and guides the clinician towards appropriate clinical interventions.<sup>[4]</sup> In this series we are including non-infectious benign lesions of skin like papulosquamous lesion, vesicobullous lesion, connective tissue disorders, disorders of pigmentation, dermatitis and eczema, urticaria and erythema, skin adnexal diseases along with a few rare entities like Acrokeratoelastoidoses, Familial dyskeratotic comedons and Pseudoxanthoma elasticum and nevus lipomatosus superficialis. Our study explores the diversity of the histomorphological spectrum of non-infectious and non-neoplastic lesions of skin in a tertiary health care centre in Garhwal region of Uttarakhand and emphasises on the need for conducting more similar studies as there are great lacunae observed in the relevant literature as well as a profound paucity of the studies available in this field, especially for the hilly regions.

## MATERIAL AND METHODS

A cross sectional observational study of non-infectious benign skin lesions was conducted at

Department of Pathology of VCSGGIMS&R Srinagar Garhwal from August 2022 to September 2023. The hospital is a tertiary care hospital of Garhwal region and receives patients from all over Garhwal region. The skin biopsies were received in 10% formalin. After routine tissue processing and staining with hematoxylin and eosin, slides were examined and wherever needed special stains like Periodic Acid Schiff, Masson trichome, Verhoeff Van Giessen were applied. The clinical features including provisional diagnosis, age, gender, site, size and type of lesions were recorded from requisition form of patients. The main aim of study was to study the histomorphological spectrum of skin lesions in Garhwal region.

## RESULTS

During our study period of 14 months, we received 117 skin biopsies of non-neoplastic non-infectious skin lesions with female preponderance (56%). The age of presentation ranged from 8 months to 84 years. The age group of 31 to 40 years represented the majority of cases. The details of group of disorders, number of cases, gender distribution, common age group and most common disorder of each group are summarized in Table 1. The pie chart shows distribution of cases according to gender. Table 2 shows distribution of cases of non-infectious non-neoplastic skin lesions from each group of disorder. Table 3 shows rare entities with age and gender distribution.

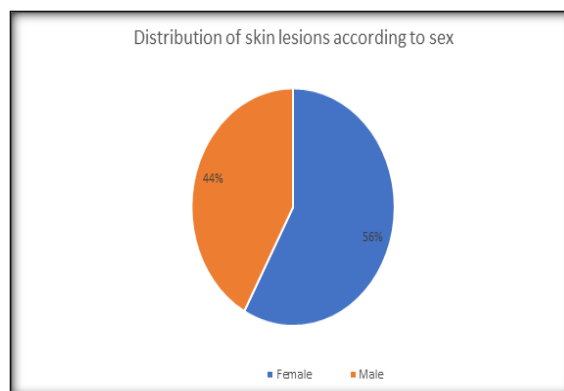


Figure 1: Distribution of skin lesions according to sex

The Histopathology Microscopy Results Are Shown as Follows



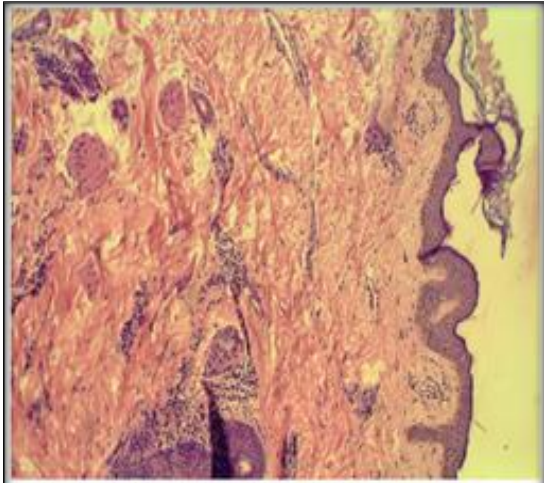


Fig 5: Pseudoxanthoma elasticum (10x, H&E)

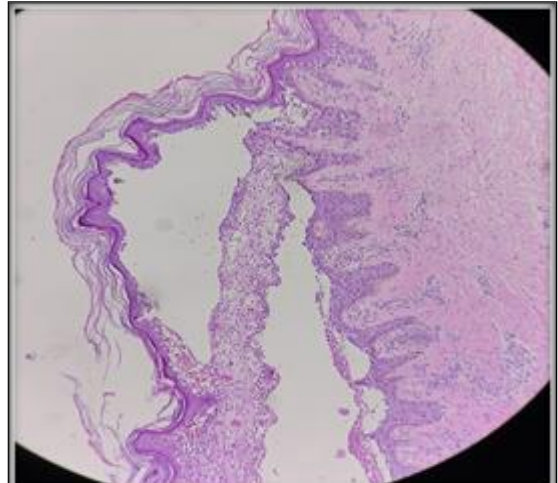


Fig 2: Pemphigus vulgaris (10x, H&E)

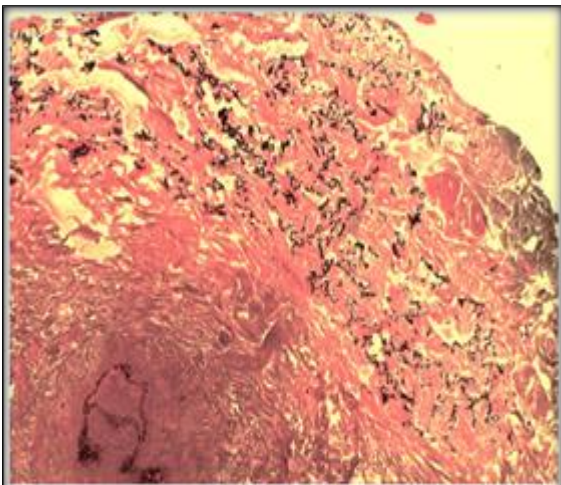


Fig 6: Von kossa stain in Pseudoxanthoma elasticum(10x)

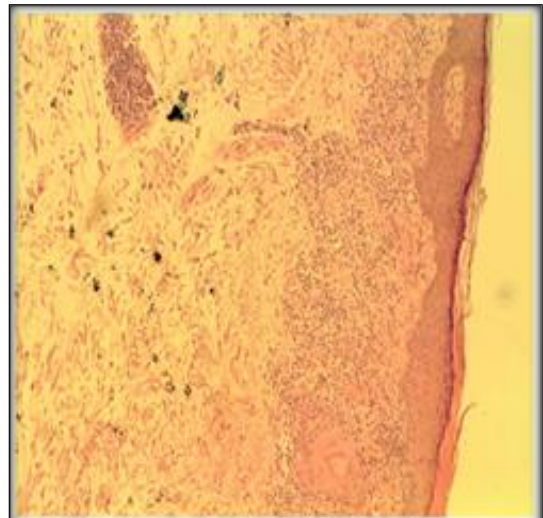


Fig 4: Discoid lupus erythematosus (10x, H&E)

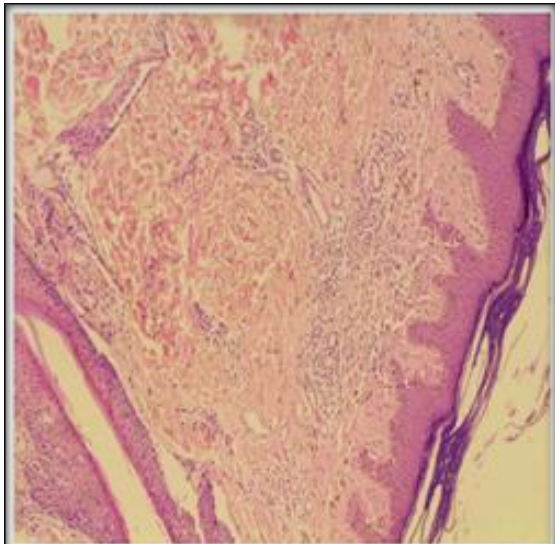


Fig 1: Lichen planus (10x, H&E)

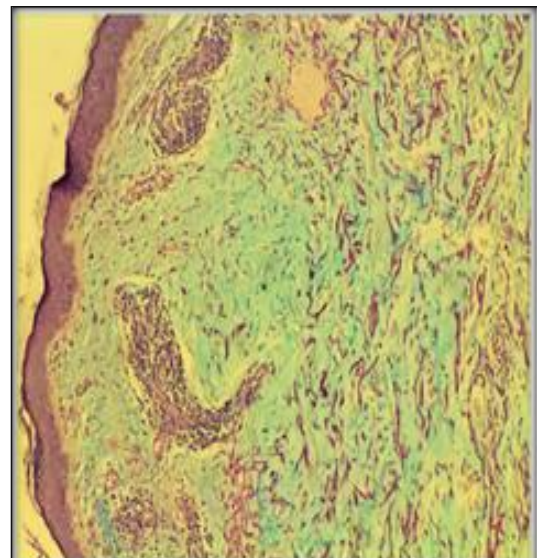
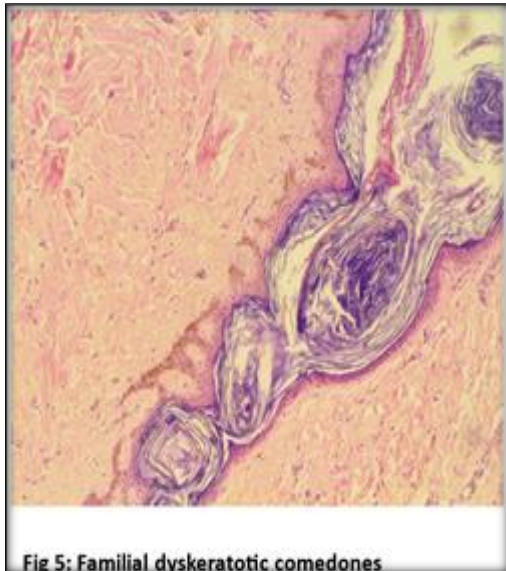


Fig 5: Alcian blue stain in DLE (10x)



**Table No-1 details of group of disorders, number of cases, gender distribution, most common age group and most common disorder of each group**

Group of disorder	No of cases	Male	female	Most common age group	Most common disease
Bullous disorder	11(9.4%)	04	07	30-40	Pyoderma gangrenosum
Dermatitis and eczema	04(3.4%)	00	04	40-50	
Papulosquamous lesion	42(37.6%)	18	24	30-40	Lichen planus
Connective tissue disorder	12(10.2%)	04	08	60-70	Discoid lupus erythematosus
Disorder of pigmentation	32(27.3%)	15	17	30-40	Post inflammatory hyperpigmentation
Urticaria and erythema	03(2.5%)	02	01	37&78	
Appendageal disorder	06(5.1%)	04	02	30-40	Epidermoid cyst
Disorder of keratinisation	02(1.7%)	02	00	15&79	

**Table no 2: distribution of non-infectious non neoplastic skin lesions**

Bullous disorders	n= 11
Bullous pemphigoid	1
Pemphigus vulgaris	1
Pemphigus foliaceus	2
Darier's disease	1
Dermatitis herpatiformis	2
Pyoderma gangrenosum	3
Fixed drug eruption	1
Dermatitis and eczema	n=4
Stasis dermatitis	1
Eczematous dermatitis	1
Actinic prurigo	1
Prurigo simplex	1

**Table no 2: distribution of non-infectious non neoplastic skin lesions**

<b>Bullous disorders</b>	<b>n= 11</b>
Bullous pemphigoid	1
Pemphigus vulgaris	1
Pemphigus foliaceus	2
Darier's disease	1
Dermatitis herpatiformis	2
Pyoderma gangrenosum	3
Fixed drug eruption	1

<b>Dermatitis and eczema</b>	<b>n=4</b>
Stasis dermatitis	1
Eczematous dermatitis	1
Actinic prurigo	1
Prurigo simplex	1

<b>Papulosquamous lesion</b>	<b>n= 42</b>
Lichen planus	14
Lichen planus pigmentosus	13
Lichen planus atrophicus	1
Lichen planus hypertrophicus	1
Lichen planus actinicus	1
Lichen striatus	3
Lichen planopilaris	1
Lichenoid keratosis	1
Psoriasis	1
Pustular psoriasis	1
Pityriasis rosea	4
Pityriasis versicolor	1

<b>Disorder of keratinisation</b>	<b>n=2</b>
Keratosis pilaris	1
Seborrheic keratosis	1

<b>Disorders of skin appendages</b>	<b>n=6</b>
Epidermoid cyst	3
Trichilemmal cyst	1
Steatocystoma multiplex	2

**Table no 3: rare entities with age and gender distribution**

<b>Rare entity</b>	<b>Age (years)</b>	<b>gender</b>	<b>No of cases</b>
Pseudopelade of Brocq	27	male	1
Nevus lipomatosus superficialis	15	male	1
Acrokeratoelastoidoses	23	female	1
Pseudoxanthoma elasticum	25	female	1
Familial dyskeratotic comedons	18	female	1



## DISCUSSION

The Garhwal region of Uttarakhand is a hilly area and very few studies about the histopathological spectrum of skin diseases have been undertaken in this region.

A total of 117 patients were included in this study who were diagnosed with non-infectious, non-neoplastic skin lesions. Out of these 117 patients, 66(56%) were female and 51(44%) were male, which shows female preponderance and was similar to the study of Chalise Sanat et al,<sup>[2]</sup> and Bezbaruah R et al.<sup>[6]</sup> In contrast to these findings, the studies of Singh Amar et al,<sup>[4]</sup> and Dayal S.G. et al,<sup>[7]</sup> showed male preponderance. The maximum number of cases were seen in the age group 31-40 years, similar to the study of Adhikari R C et al<sup>9</sup> and in contrast to the study of Dayal S G,<sup>[7]</sup> et al, whose maximum no of cases were in 16-30 years age group. In our study the commonest site involved was the upper and lower extremities whereas, study of Goswami P et al,<sup>[5]</sup> found upper extremities and back as commonest site for skin lesions. Our study, the most commonly encountered disease group were papulosquamous lesions (37.6%) and the most common disorder among them was Lichen planus and its spectrum. Mehar Rakesh et al,<sup>[10]</sup> also found Lichen planus as the most common disorder in skin lesions and Aggarwal et al,<sup>[11]</sup> along with Reddy et al,<sup>[12]</sup> showed psoriasis and lichen planus as the most common papulosquamous lesions.

Second most common group of disorder found in our study was disorders of pigmentation (27.3%). There are various studies which stated that there is strong correlation between UV radiation exposure and pigmented skin disorders such as Merin K. A. et al.<sup>[13]</sup> UV radiation exposure from the sun increases with elevation, and Garhwal region being a hilly area where most of the population resides at higher altitudes, is prone to receive more UV radiation exposure. A study done by Chalise Sanat et al,<sup>[2]</sup> found non-infectious vesicobullous and vesicopustular disease as most common skin disorder (46%), however in contrast to their study, only 9.4% bullous disorders were found in our study and the most common disorder encountered was pyoderma gangrenosum.

In our study, Connective tissue disorders were comprising of 10.2% of all the cases with discoid lupus erythematosus being the most common disorder. The study of Begum Thasleem N. et al,<sup>[14]</sup> found LE as most common connective tissue disorder. Other group of disorders like dermatitis and eczema (3.4%), Urticaria and erythema (2.5%), Disorder of keratinisation (1.7%) and disorders of skin appendages (5.1%) are also encountered during our study. A few rare entities were encountered in course of this study which included Acrokeratoelastoidoses, Familial dyskeratotic comedons and Pseudoxanthoma elasticum and nevus lipomatosus superficialis. Their study when

compared to other literature is restricted to case reports only.

## CONCLUSION

- A wide spectrum of non-infectious non neoplastic lesions was seen in the present study with a wide age distribution ranging from 8 months to 84 years, as VCSGGIMS&R is the main referral centre in Garhwal region and receives patients from all over Garhwal area of Uttarakhand. Skin biopsy, a simple outpatient procedure, for histopathological examination gave a confirmation of the clinical diagnosis of various skin lesions.
- Out of 117 cases, 66(56%) patients were females and 51(44%) were males, showing female preponderance, probably because females are more concerned about their aesthetics and consult the dermatologists more often as compared to the males. The middle and old aged females of Garhwal area who showed maximum preponderance, were commonly involved in outdoor activities like taking care of their livestock, cattle grazing and working in fields.
- Most common skin diseases observed in this study were the papulosquamous lesion followed by disorders of pigmentation, possibly due to Garhwal region being a hilly area with increased exposure to UV radiations and most people are more involved in the outdoor activity.

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