A CROSS SECTIONAL STUDY OF CLINICAL MANIFESTATIONS AND DERMOSCOPIC FINDINGS IN PALMOPLANTAR KERATODERMA

By

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Dissertation submitted to the
Sri Devaraj Urs Academy of Higher Education and Research,
Tamaka, Kolar, Karnataka,
IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF
DOCTOR OF MEDICINE (M.D.)
IN
DEPARTMENT
OF
DERMATOLOGY, VENEREOLOGY AND LEPROSY
Under The Guidance Of
Dr. RAJASHEKAR T S

Professor & Head Of Department

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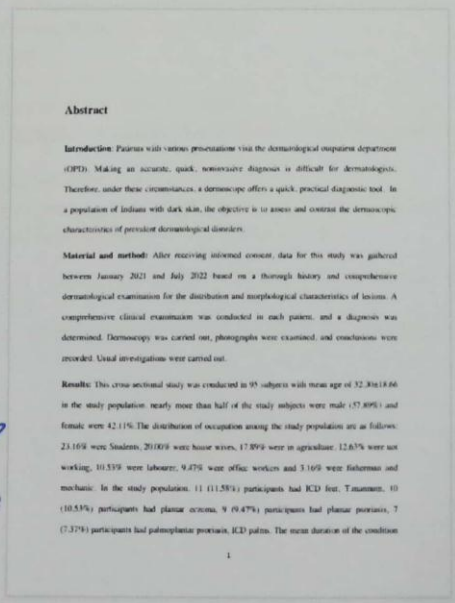

Abstract

Introduction: Patients with various presentations visit the dermatological outpatient department (OPD). Making an accurate, quick, noninvasive diagnosis is difficult for dermatologists. Therefore, under these circumstances, a dermoscope offers a quick, practical diagnostic tool. In a population of Indians with dark skin, the objective is to assess and contrast the dermoscopic characteristics of prevalent dermatological disorders.

Material and method: After receiving informed consent, data for this study was gathered between January 2021 and July 2022 based on a thorough history and comprehensive dermatological examination for the distribution and morphological characteristics of lesions. A comprehensive clinical examination was conducted in each patient, and a diagnosis was determined. Dermoscopy was carried out, photographs were examined, and conclusions were recorded. Usual investigations were carried out.

Results: This cross-sectional study was conducted in 95 subjects with mean age of 32.30±18.66 in the study population. nearly more than half of the study subjects were male (57.89%) and female were 42.11%.The distribution of occupation among the study population are as follows: 23.16% were Students, 20.00% were house wives, 17.89% were in agriculture, 12.63% were not working, 10.53% were labourer, 9.47% were office workers and 3.16% were fisherman and mechanic. In the study population, 11 (11.58%) participants had ICD feet, Tmanment, 10 (10.53%) participants had plantar eczema, 9 (9.47%) participants had plaque psoriasis, 7 (7.37%) participants had palmoplantar psoriasis, ICD palms. The mean duration of the condition

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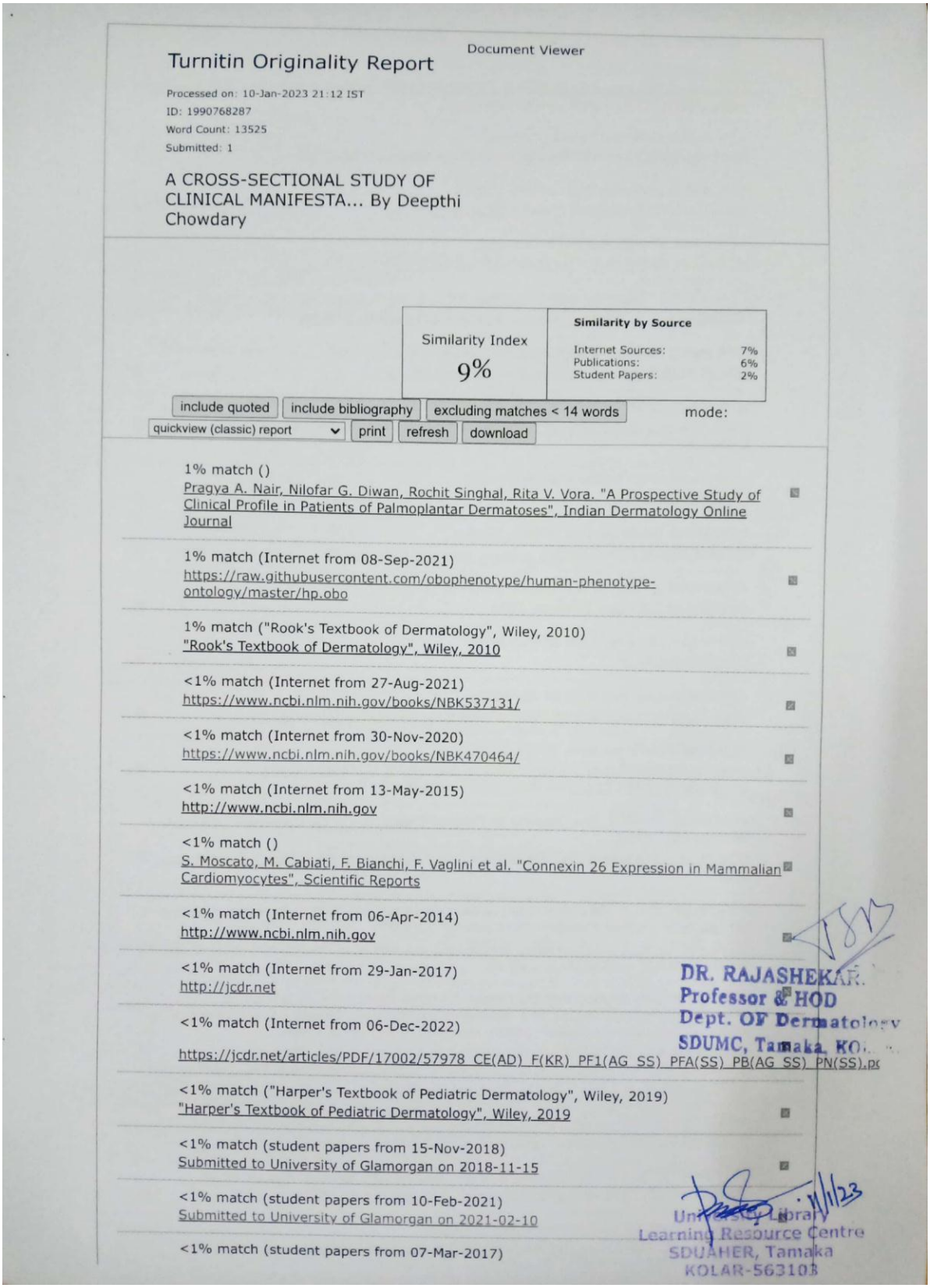

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ACKNOWLEDGEMENT

I thank the almighty for showering his blessings on me.

I sincerely thank my respected teacher, **Dr. RAJASHEKAR T S** for there step-by-step guidance and constant extended support with the timely advices which helped me for this study.

I thank **Dr HANUMANTHAYYA K** Professor, **Dr. SURESH KUMAR K** Associate Professor, Department of Dermatology, Venereology and Leprosy, for their constant guidance and advices.

To all my teachers throughout my life for having made me what I am today.

My deep felt gratitude to my dear parents, and my sister whose countless sacrifices and blessings have made me who I am today.

I thank my friend **Dr. Hruday Mohan, Dr. Bhavyadeep K** for always understanding, supporting and guiding me.

I am also thankful to **Dr. Jahnavi Reddy, Dr. Nandini B, Dr. Pavithra T R, Dr. Harish Prasanna, Dr. Meghana Reddy, Dr. Madhu Kiran C, Dr. Amulya Y S, Dr. NAveena G, Dr. Anjana G, Dr. Saadhvi, Dr. Savana W**, fellow postgraduate colleagues, seniors, juniors for their constant motivation and countless help.

Last but not least, I thank all my patients involved in this study, without whose co-operation, this study would not have been possible.

Dr. Y. Deepthi Chowdary

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Glossary	Abbreviations
EI	Epidermolytic Ichthyosis
EPPK	Epidermolytic Palmoplantar Keratoderma
GJB2	Gap Junction Beta 2
K+	Potassium
KRT1	Keratin-Type 1
KRT9	Keratin-Type Cytoskeletal 9
LK	Loricrin Keratoderma
NEPPK	Non-Epidermolytic Palmoplantar Keratoderma
NEPPK	Non-Epidermolytic Palmoplantar Keratoderma
OPD	Outpatient Department
PPK	Palmoplantar Keratoderma
PPKD	Palmoplantar Keratodermas
SPPK	Striate Palmoplantar Keratoderma

ABSTRACT

Introduction: Palmoplantar keratodermas refer to a diverse set of conditions that share the common symptom of raised areas of the skin on the palms of the hand and soles of the feet. They can be hereditary or acquired and are classified into three major types: diffuse, focal, or punctate. The differentiation between different types depends on the presence or absence of transgrediens, erythematous borders, hyperhidrosis and systemic involvement. Acquired PPK occurs later in life, and attributable to an underlying etiology like inflammatory and reactive dermatoses, infections, drugs, systemic diseases and internal malignancy.

Dermoscopy is a tool used to diagnose skin disorders like palmoplantar keratoderma, disorders of hair, nails, infections, and infestations.

Objective:

To document the clinical and dermoscopic findings in palmoplantar keratoderma.

Materials and methods: In this study, data was collected from JANUARY 2021 to JULY 2022 based on detailed history and meticulous dermatological examination for morphological attribute and distribution of lesions after taking informed consent. In every case thorough clinical examination was carried out and diagnosis was made. Dermoscopy was performed and images were studied and findings were documented.

Results: This cross-sectional study was conducted in 95 subjects with mean age of 32.30±18.66 in the study population. nearly more than half of the study subjects were male (57.89%) and female were 42.11%. The distribution of occupation among the study population are as follows: 23.16% were Students, 20.00% were house wives, 17.89% were in agriculture, 12.63% were not working, 10.53% were labourer, 9.47% were office workers and 3.16% were fisherman and mechanic. In the study population, 11 (11.58%) participants had ICD feet, T.mannum, 10 (10.53%) participants had plantar eczema, 9 (9.47%)

participants had plantar psoriasis, 7 (7.37%) participants had palmoplantar psoriasis, ICD palms. The mean duration of the condition was 28.09±43.66 in the study population.

The common symptom among the study population was itching in 66.32%, burning in 64.21%, pain in 45.26% and with no symptoms were only 1.05%. Majority (43.16%) of the subjects had no aggravating factors, followed by 23.16% participants had aggravation in the winter season, 15.79% of them had aggravation during work, 11.58% had aggravation during rainy season and 6.32% had aggravation while eating food. Most of them had plaques (89.47%) followed by scalings in 62.11%, fissuring in 33.68%, bleeding in 17.89% and papules in 1.05%. Majority of (96.84%) participants had localized ppk, 48.42% had bilateral, 40.00% participants had the disease in unilateral site. In the study population, majority of (41.05%) participants had diffuse white scales on dermoscopy, followed by 30.53% had yellow scales, 15.79% had few dotted vessels as dermoscopic findings.

Conclusion: Palmoplantar Keratodermas affects day to day activities of patients and also affects them psychologically. It is difficult to arrive at a clinical diagnosis due to overlap of clinical diagnosis. Histopathology is confirmatory. However dermoscopic signs can clinch to a clinical diagnosis thereby avoiding need for biopsy

INTRODUCTION

Introduction

Palmoplantar keratodermas refer to a diverse set of conditions that share the common symptom of raised areas of the skin on the palms of the hand and soles of the feet. They can be hereditary or acquired and are classified into three major types: diffuse, focal, or punctate. The distinction between these types is based on the existence or non-existence of transgrediens (pigmented streaks), erythema marginatum (reddish edges), hypohidrosis (absence of sweating), hyperhidrosis (excessive sweating) and systemic involvement (spread to other parts of the body). Hereditary palmoplantar keratoderma (PPK) can arise as a standalone disorder, as a component of another hereditary skin disease (e.g., ichthyosis, epidermolysis bullosa, ectodermal dysplasia), or as part of a multisystem syndrome (e.g., with deafness or cardiomyopathy). [1] Keratin, a fibrous structural protein, are the major structural ingredient of an epithelial cell to protect it from mechanical stress. These keratins and their families are regulated by functional genes, and the activation of particular keratin genes is controlled by the division of epithelial cells within the stratifying squamous epithelium. Most of these gene mutations are now linked to tissue fragility diseases, which can appear in both relying on the expression profile, skin and mucosa. Keratins and keratin-associated proteins serve as cell differentiation indicators since they are expressed varies by location and differentiation. [2,3]

Palmoplantar keratoderma is more descriptively classified from a molecular genetic perspective that takes gene activities into account. Gene activity disrupted in "structural proteins (keratins), cornified envelope (loricrin, transglutaminase), cohesion (plakophilin, desmoplakin, desmoglein1), cell-to-cell communication/ gap-junction protein (connexins), and transmembrane signal transduction (cathepsin C)". [4]

They can be passed down in an autosomal dominant or autosomal recessive form. Every generation of a family is prone to have autosomal dominant keratodermas. If one parent is

impacted, each kid has a 50% probability of being impacted. Inside an afflicted family, autosomal recessive keratodermas occur less often. This is due to the fact that for the kid to be impacted, both parents must transmit on a defective gene. People who possess only one defective gene will not suffer the disorder, but they do carry the aberrant gene and are known as the "carriers" of the disorder. They may transmit the defective gene to their offspring, but the offspring will only be afflicted if their other parent also possesses an aberrant gene and the offspring are born with it and passes it on to the same child. [1]

“Hereditary palmoplantar keratodermas” manifests as erythema of the palms and soles in the first stages. The palms and soles thicken and reach a yellowish, waxy look over time. There is a distinct line between harmed and unaffected skin, and the thickened margin is frequently red. The description Transgradient keratodermas- spreads further than palms and soles into the back of the hands and feet, and in certain cases up the wrists and ankles- is used to characterise the degree of the skin swelling. The skin around the lips, eyes, nose, elbows and knees may be harmed as well. Progrediens keratodermas affect the knuckle pads and nails but do not damage the delicate skin on the top of the feet or hands. [5]

“Acquired palmoplantar keratoderma” It's not largely acquired as a hereditary defect. It can arise as a component of a larger skin disorder (some of which may be hereditary) or as an outcome of another sickness. “Acquired palmoplantar keratoderma is more likely to present with the raised areas of the epidermis layer of the skin of the palms and/or soles which may be “diffuse or focal or punctate”. There are multiple potential underlying causes of acquired palmoplantar keratoderma (PPK), including inflammatory disorders, infectious causes, drug-induced, systemic causes, idiopathic, aquagenic keratoderma, cancer-related and keratoderma climacterium. The underlying conditions should be examined and appropriately treated. [6] The Clinical differentiation between keratoderma types is often difficult, necessitating histopathological confirmation. [7] These underlying conditions’ characteristics enable clinical

diagnosis in many subjects. However, palmoplantar appearances do occur on occasion, which can make distinguishing between these conditions challenging. In many circumstances, histology plays an important role in determining the right diagnosis and when relevant findings are not found following the subject's history and clinical examination then laboratory and radiological investigations must be carried out rationally. [8,6]

Diagnosis of skin disease is common but not always based on visual examination. However, dermatologists frequently meet instances in which the potential of many differentials confuses the diagnosis and necessitates further testing for confirmation. Dermoscopy is now recognised as a solid supplementary technique to the daily definitive procedure of general dermatology. "The morphology and distribution of vascular systems, background colours, follicular abnormalities, and the presence of lesions" are all crucial factors to consider. Clinical examination is still the undisputed gold standard for diagnosing inflammatory and infectious illnesses. In fact, examination of the skin using skin surface microscopy is a quick procedure involving no breaks on the skin surface method that may assess pigmented and vascular structures that are not clinically evident. This must-have approach for dermatologists gives extra information at the sub-macroscopic level that can assist the dermatologist in distinguishing between two or more conditions that are barely visible to the naked eye. [9,10]

When employing a dermoscopy test, can be used in two methods using either a non-contact or a contact method. During the contact technique, the instrument's glass plate contacts the lesion via the medium. The cross-polarized lens absorbs all dispersed light in the non-contact approach, allowing only light in a single plane to flow through it without touching the skin. The contact method improves lighting and resolution. The non-contact method has the advantage of preventing inter-patient infections. In order to avoid cross-infection during contact dermoscopy, a barrier such as a cling film or adhesive tape is placed over the skin lesion. [11]

While using the dermoscopy in accordance with the normal approach of gathering information from the previous subjects medical records and clinical analysis, the most significant criteria to be assessed which include the "morphology/arrangement of vascular structures, scaling patterns, colours, follicular abnormalities", and particular characteristics supporting the disease (clues). [7,12] It should be emphasised that dermoscopic results should always be interpreted in the context of the subjects' general clinical situation, in connection with existing records and the naked eye examination. Examination of the skin using skin surface microscopy is a vital diagnostic technique in dermatology, and it is predicted to evolve over time. [10]

Need of study

Thorough history recording, particularly familial history, is required in the examination of Palmoplantar keratoderma in order to determine a definitive detection, estimate outcome, and make treatment recommendations. Dermoscopy, being a non-invasive method, is almost risk-free. It has been shown to be useful in the diagnosis of palmoplantar keratoderma. More research is needed, however, to characterise the distinctive dermoscopic features of the palmoplantar topography of the various disorders and to better discriminate diagnosis using a dermoscopy. Also, be used in conjunction with the macro clinical picture and histology to be decisive.

Though advancement has been made in determining the genetic basis of palmoplantar keratoderma, resulting in the introduction of novel illnesses and syndromes. Given the considerable variability of clinical characteristics, genetic abnormalities, and disease processes, palmoplantar keratoderma is classified using a variety of criteria. These include severity, morphology, inheritance patterns, and genetic aetiology. Clinical differentiation of diverse palmoplantar keratoderma skin diseases is predicted on cues, which is not always possible. Evidently, the diverse diseases and syndromes have revealed variations in the gene

by mutations, in contrast, the same clinical symptoms may be caused by mutations in distinct genes. Because of the intricacy genetic alteration analysis is essential to establish the particular kind of palmoplantar keratoderma.

Because they are uncommon illnesses, the study is mainly on individual family information. There have been few investigations on the epidemiology of palmoplantar keratoderma in the Indian population. Clinical description and histological specifications of palmoplantar keratoderma have been established whereas there is a gross deficiency in dermatoscopic findings of palmoplantar keratoderma and documenting dermoscopic findings with that of clinical manifestations. Hence, the current study aimed to analyse about definitive and examination of the skin under surface microscope findings of Palmoplantar keratoderma.

OBJECTIVES

Objectives of the Study:

To document the clinical and dermoscopic findings in palmoplantar keratoderma.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

Physiology of epidermis:

The epidermis, as the skin's outer layer, serves as a barrier against external impacts such as physical, chemical, or thermal stress, as well as dehydration. “The interfollicular epidermis and going with hair follicles, sebaceous glands, and eccrine sweat glands make up the epidermis”, which is a multi-layered epithelium. Although keratinocytes constitute 95% of all epidermal cells, additional cells such as “melanocytes and Merkel and Langerhans cells” can also be found in the epidermis.

The epidermis is constantly exposed to environmental dangers and undergoes cell regeneration. The preservation of the epidermal balance between proliferation and differentiation is important for skin homeostasis. Terminal differentiation and proliferation are segregated in the basal and suprabasal layers, respectively.[13] However, the skin sheds and desquamates continually and ranges considerably based on the bodily area. In thicker bald skin, there are additional rows of cells, as well as an extra layer called the stratum lucidum. Overall, the cell division, desquamation, and shedding phase are as follows:

1. Cell division occurs in “stratum basale/germinativum. One cell stay, and another cell is pushed toward the surface. Basal cells begin the synthesis of tonofilaments (composed of keratin) which are grouped into bundles (tonofibrils)”.
2. Cells are pushed into the “stratum spinosum. In the upper part of the spinous layer, cells begin to produce keratohyalin granules having intermediate-associated proteins, filaggrin, and trichohyalin; helps aggregate keratin filaments and conversion of granular cells to cornified cells, i.e., keratinization. Cells also produce lamellar bodies”.
3. Cells are pushed into “stratum granulosum and become flattened and diamond-shaped. The cells accumulate keratohyalin granules mixed between tonofibrils”.

4. Cells continue to the “stratum corneum where they flatten and lose organelles and nuclei. The keratohyalin granules turn tonofibrils into a homogenous keratin matrix”.
5. Finally, “cornified cells reach the surface and are desquamated via a breakdown of desmosomes. The proteinase activity of KLK (kallikrein-related serine peptidase) is triggered by lowered pH near the surface”. [13–15]

Types of keratodermas:

Keratoderma can be defined by its clinical significance although there is often an overlap. There are inherited (hereditary) or, more commonly, acquired. Below are the lists of types of hereditary palmoplantar keratoderma

1)Diffuse palmoplantar keratoderma:

- “Unna-Thost – NEPPK”
- “Vorner EPPK”
- “Meleda – Mal de Meleda”
- “Greither–transgrediens&progrediens”
- “Gamborg Nielsen”
- “(Norbotten) Sybert”
- “Diffuse Vohwinkel syndrome -Sensorineural deafness Knuckle pads”,
- “Bart-Pumphrey syndrome -Leukonychia, sensorineural deafness”
- “Huriez syndrome- Scleroatrophy”
- “Clouston syndrome- Hidrotic ectodermal dysplasia”
- “Olmsted syndrome- Mutilation, periorificial plaques”
- “Papillon-Lefevre syndrome -Periodontitis, recurrent pyogenic infections”
- “Haim-Munk syndrome- Periodontitis, arachnodactyly &acro osteolysis”
- “Naxos disease -Woolly hair, Right Ventricular Cardio Myopathy”

- “Focal Striate – NEPPK, Watchers,Brunauer-Fuhs-Siemens,Nummular-EPPK, Hereditary painful callosities”.

2) Focal palmoplantar keratoderma:

- “Howel-Evans syndrome- Oesophageal carcinoma”,
- “Richner-Hanhart syndrome- Oculocutaneous tyrosinemia, Pachyonychia congenital”
- “Type1-Jadasson-Lewandowsky syndrome-Hypertrophic nail dystrophy,oraleucokeratosis and epidermal inclusion cyst”.
- “Type2-Jackson Lawler Syndrome-Natal teeth, steatocystoma &pili torti”
- “Carvajal syndrome Woollyhair& Biventricular cardiomyopathy”
- “Punctate Buschke-Fisher-Brauer type”
- “Acrokeratoelastoidalis”

3) Punctate palmoplantar keratoderma:

- “Buschke-Fisher-Brauer type”
- “Acrokeratoelastoidalis”
- “Punctuate porokeratosis”

Acquired types of keratoderma:

1) “Haxthausen’s disease”

2) “Keratoderma associated with internal malignancy”

3) “Keratoderma due to inflammatory disorders”

4) “Aquagenic keratoderma”

5) “Keratoderma due to circulatory disorders”

6) “Keratoderma due to infectious causes”

7) “Drug-related keratoderma”

8) “Keratoderma due to systemic diseases”

“Palmoplantar keratoderma”:

Definition:

“Palmoplantar keratodermas” are a category of acquired and inherited disease cornification characterised by raised areas of the outer layer of the skin of the palms and soles. The sudden occurrence and a favorable familial history suggest a gene mutation. While inherited “palmoplantar keratoderma” (PPK) may be the only or major definitive characteristic, it is possible that it is coupled with additional ectodermal abnormalities or extracutaneous symptoms such as cardiomyopathy and deafness. Likewise, acquired PPK can be drug-induced or associated with cancer. Much progress has been made in recent years in determining the gene mutation of “palmoplantar keratoderma” (PPK), which has resulted in the formation of novel diseases and syndromes. The understanding of disease processes has opened new paths for specialised therapeutics, driving increased attention to this topic. [16]

Classification according to the clinical pattern:

Based on the clinical pattern of involvement, a basic working categorization divides palmoplantar keratoderma (PPKs) into three primary kinds:

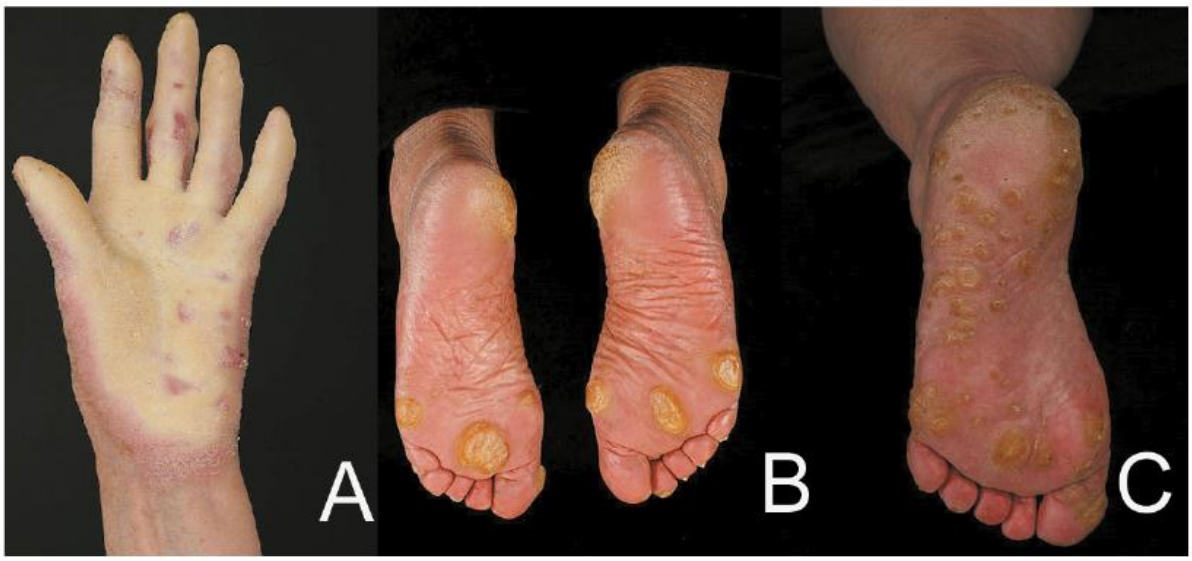
- Diffuse palmoplantar keratoderma (PPK) – affects the entire surface of the palms and soles, including the central section of the outer layer of the skin of the palms and soles, although not always.
- Focal palmoplantar keratoderma (PPK) – irregular rise of the palms and soles occurs in the regional areas with two major patterns:

  (1) the areata/nummular type – oval lesions, located mainly over pressure points

(2) the striate type – linear abnormal thickening of palms and soles lesions, most commonly extending from the palms to the volar surface of the fingers, overlaying flexor tendons.

- Punctate PPK – multiple small keratotic papules or pits (usually from the removal of a keratotic plug) that are scattered or aggregated on the palmoplantar.

Figure 1: "Patterns of palmoplantar keratodermas. A) diffuse, B) focal and C) punctate".[1]



Furthermore, palmoplantar keratoderma (PPK) may be a part of various hereditary skin diseases such as ichthyoses, erythrokeratodermas, epidermolysis bullosa, and ectodermal dysplasias. [1]

Palmoplantar keratoderma (PPKs) is continue to classify histologically as epidermolytic or nonepidermolytic based on the existence of cytolysis in the top spinous and granular layers.

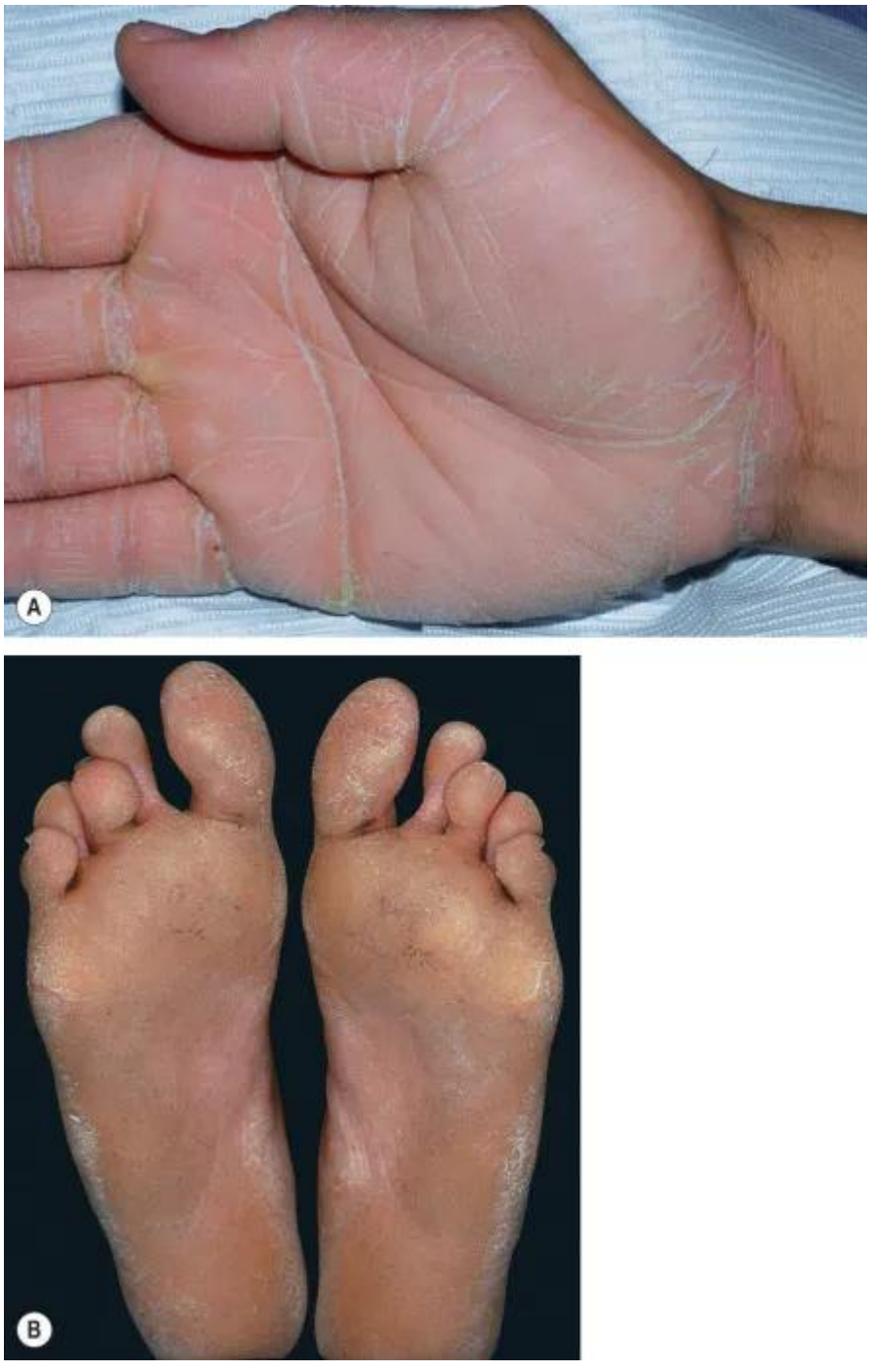
Diffuse Epidermolytic Palmoplantar Keratoderma (EPPK)/ Unna–Thost disease/ Vörner disease:

The most prevalent diffuse palmoplantar keratoderma (PPK) is diffuse epidermolytic palmoplantar keratoderma (EPPK), which is characterised by epidermolytic alterations in the layer above the innermost layer of the chief cell type of the epidermis on histology. It is the dominant inheritance pattern of the gene manner due to keratin-type cytoskeletal 9 (KRT9)

and occasionally keratin-type 1 (KRT1) mutations, which act in a "dominant-negative manner". The dominant abnormalities encode the proteins which disrupt the keratin-type filament cytoskeleton, resulting in cells that are less recovered and the formation of a fluid-filled sac under the epidermis when exposed to moderate physical damage. [17] The keratin-type cytoskeletal 9 (KRT9) gene encode keratin 9 and type-I keratin that is mostly expressed in the layer above the innermost layer of the epidermis of the skin of palms and soles. "Type I keratins form heterodimers with type II keratins", likely keratin 1, throughout the epidermis, especially the palms and soles, to produce intermediate filaments that enhance the skin structure. [1,18]

Rare and unexpected abnormalities in keratin-type 1 cytoskeleton found a deletion of 66-bp (base pair) which was isolated from the skin lesion, which was projected to result in the translation of a mutant keratin-type 1 cytoskeleton (KRT1) missing 22 amino acids. As a result, this diagnostic value of keratin gene noncoding region sequence study is emphasised. [19] Whereas keratin 1 mutations have been discovered in some Greither type epidermolytic palmoplantar keratoderma (EPPK) families.

Figure 2: "Diffuse palmoplantar keratoderma". "Hyperkeratosis of the entire palmar (A) and plantar (B) surface with sharp demarcation". [16]



Camisa disease [20]

Vohwinkel's syndrome is a uncommon form of keratoderma of the palms and soles with a distinctive hexagonal pattern that is dominantly inherited. It is also characterized by “linear and/or starfish keratoses on the extensor surfaces of the elbows, knees, knuckles, and hands, as well as flexion contractures and constricting bands (pseudoainhum) of the digits”, which can lead to autoamputation.

A rare form of Vohwinkel's syndrome called Camisa illness has extensive ichthyosis but not deafness. It is now known, thanks to recent molecular investigations, that the loricrin gene's mutations are what cause Vohwinkel's syndrome and ichthyosis. A version of Vohwinkel's syndrome with all the traditional clinical symptoms but no unusual correlations, such as “ichthyosis and sensorineural deafness, as well as negative gene mapping for loricrin mutation”, however, just been identified.[21]

Epidemiology:

Inherited keratoderma is a rather prevalent cutaneous condition in numerous countries. The prevalence of “epidermolytic PPK” in Northern Ireland was reported to be 1:23'000. The prevalence rate in South India was 5.2 per 10,000. “Unna-Thost syndrome” was the most prevalent, accounting for 38.7% of cases, with an incidence of 1:6000, after “Greither's condition” (22.9%). [22]

Pathophysiology:

A forementioned mutations are extremely disruptive to keratin filament formation, resulting in tonofilament clumping and cytolysis- disruption of cells, which causes fluid-filled sacs within the upper layer of the skin and thickening of the epidermis layer of the skin. [23]

Keratin 9 is considered to collaborate with keratin 1 in the palmoplantar skin. Mutations in keratin 1 and 10 are linked to epidermolytic ichthyosis, which is characterised by epidermolytic hyperkeratosis. Palmoplantar keratoderma (PPK) in epidermolytic ichthyosis (EI) is associated with a keratin 1 mutation, which is the only type II keratin expressed in

palmoplantar skin. In contrast, epidermolytic ichthyosis (EI) caused by keratin 10 mutations seldom involves palmoplantar skin, which is likely owing to compensation by keratin 9, another type I keratin. Most mutations in epidermolytic ichthyosis (EI) patients occur in the keratin molecules significantly at 1A and 2B domains. When keratin 1 abnormalities alone cause widespread epidermolytic palmoplantar keratoderma (EPPK), including the "tonotubular" subtype, the mutations are often near the beginning of the 1B domain. [24–26]

Clinical presentation:

Clinically, generalised abnormal yellow thickening of palms and soles, present with a sharp demarcation and erythematous boundaries on the sides of the feet and back of the hands. [27]

In the Greither type, the palms and soles are affected by diffuse thickening of the horn layer of the epidermis that extends to the back aspects (transgrediens) and involves the skin around the Achilles tendon. Patchy thickening of the outer skin layer can also appear on the “shins, knees, and elbows, and localized to the skin folds and genitals”. [5,28]

Figure 3: “Clinical features of palmoplantar keratoderma with abnormal thickening of the skin on both palms with red sharp margins”. [27]

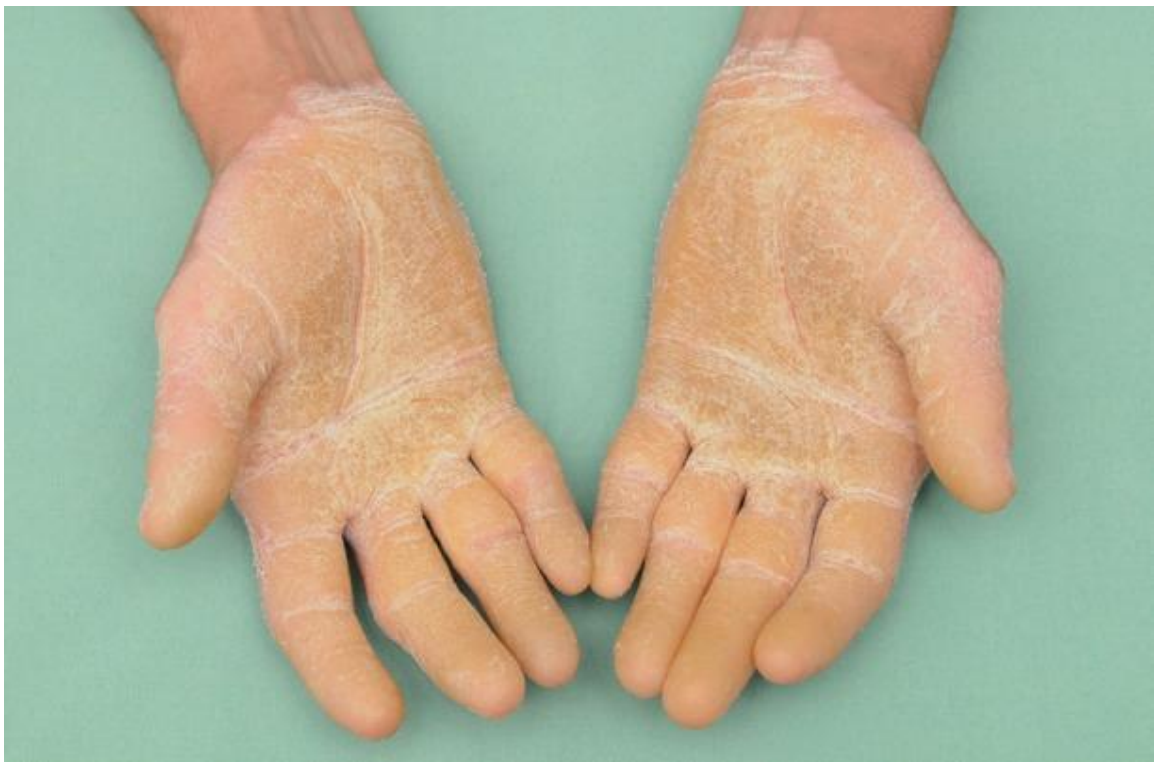
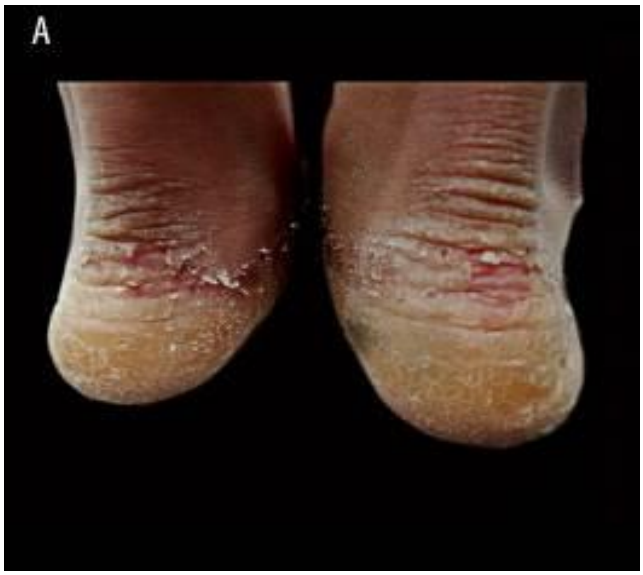


Figure 4: Diffuse thickening of the epidermis's horn layer extends to the Achilles tendon, mimicking the clinical feature of Greither syndrome. [29]



Management:

Factors to consider when selecting treatment for diffuse PPK include the severity of symptoms, degree of hyperkeratosis, and age of the patient. Mechanical debridement with a blade or dental drill is useful for troublesome areas, followed by the application of a keratolytic agent such as urea, salicylic acid, and lactic acid in emollients, occasionally during blockages, to help avoid fissure formation. Oral retinoids can help, although even little doses might induce pain due to increased fragility in epidermolysis palmoplantar keratoderma, thus limiting its use. [30]

Diffuse Non-epidermolytic Palmoplantar Keratoderma (NEPPK)

Diffuse non-epidermolytic palmoplantar keratoderma (Unna-Thost disease) is a hereditary autosomal dominant, with the underlying gene deficiency located on 12q11-q13 or Desmoglein-1. It is distinguished by impacted regions turning on a white, spongy look when exposed to water and it is attributable to AQP5 heterozygous missense variants where Aquaporin-5, a water-channel protein, is encoded by this gene. This mutated gene is released

onto the gland of external secretion and at the plasma membrane of the granular layer of the epidermis in an appropriate manner. The AQP5 mutated gene allows transporting the water across the cell membrane independently through the open water channel. [1,31]

Epidemiology:

Non-epidermolytic PPK has been discovered in 3-5.5:1000 inhabitants in Sweden's northernmost county (Norrbotten).

Clinical features:

During childhood, it appears as a widespread, even thickening with a yellow shade all over the palms and soles, occasionally extending over the dorsal fingers. The observable traits vary, and milder instances are scarcely noticeable clinically, although affected regions show a distinctive white spongy look when exposed to water. Fungal infection, most likely caused by a rise in perspiration, is a common concern, and nails are bent with irregular cuticles. [31] The white sponge appearance characteristics of non-epidermolytic palmoplantar keratoderma slightly make confusions with aquagenic keratoderma, which is characterised by the formation of transparent swelling of the skin in response to water exposure and has been linked to a heterozygous mutation in the cystic fibrosis. [32]

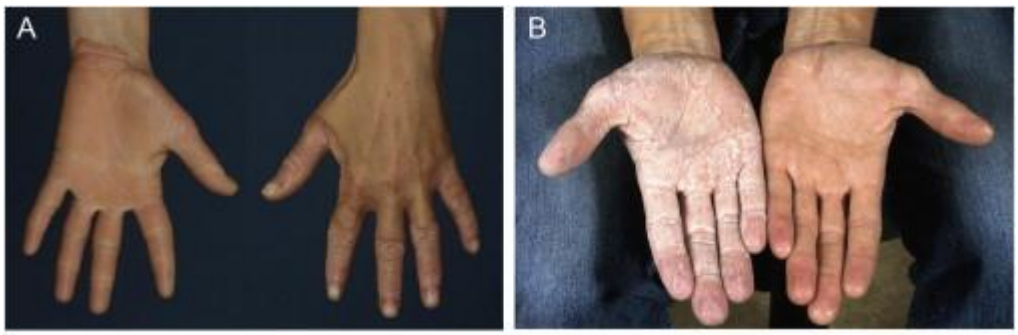


Figure 5: a) Diffuse Non-epidermolytic palmoplantar keratoderma (NEPPK) shows “”some transgradiens onto the dorsal surface of the fingers and a livid, red edge.

b.)"Palmar skin with mild diffuse thickening prior to water exposure. The hand on the left shows the white, spongy appearance of the palmar skin after 15 min of water exposure". [31]

DIFFUSE PALMOPLANTAR KERATODERMAS WITH ASSOCIATED FEATURES/SYNDROMIC

"Vohwinkel syndrome"

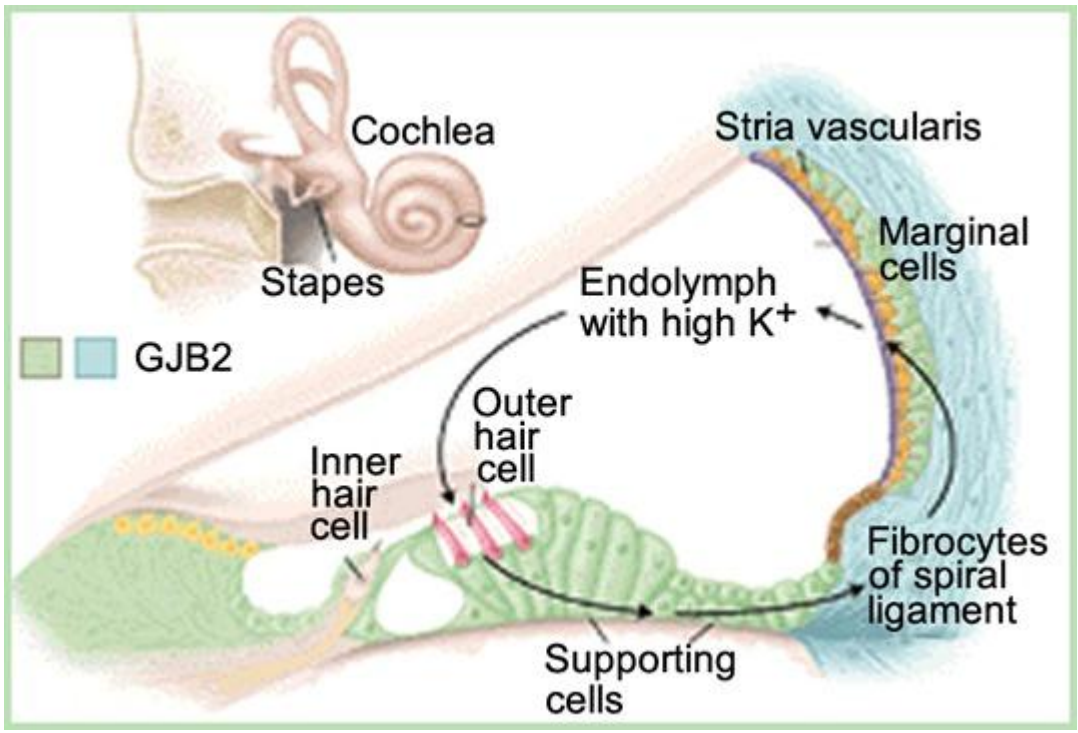
"Vohwinkel syndrome also known as keratoderma hereditarian mutilans" is characterised as "palmoplantar keratoderma (PPK)" with deafness and is caused by mutations in gap-junction protein (connexin) 26. [33] The palmoplantar keratoderma skin disease occurs either in an inherited or acquired manner and it involves the outside of the skin. The frequency of acquired palmoplantar keratoderma skin condition is also caused by provoked medicines, as well as signs and symptoms that are consequences of tumours in the body. [34] A typical "vohwinkel syndrome" is a dominant inheritance pattern of the gene type of "palmoplantar keratoderma" which evidently thicken the skin of the palm and soles by generating a honeycomb pattern and starfish appearance on the knuckles pad of the hands and feet back side. Due to the thickening, the blood vessels to the digits might constrict which results in a gradual tightening of the distal part of the fingers and the spontaneous detachment of a digit(s) is appropriate.

Aetiology:

Vohwinkel syndrome (VS) is a process of cytodifferentiation inherited rare condition characterised by palmoplantar keratoderma, abnormal differences in body structure, and various range of sensorineural deafness. It is an autosomal dominant, gap-junction beta 2 gene mutation that encode gap-junction protein 26. Mutations in gap junction proteins cause numerous human connexin diseases, including deafness. Gap-junction protein 26 (connexin-

gap junction beta 2 (GJB2) is a protein that plays an important role in "potassium (K+) homeostasis in the cochlea of the inner ear". It is present in "supporting cells, spiral ligament fibrocytes, and spiral limbus cells". [35]

Figure 6: "Connexin 26 (GJB2) is one of the main proteins involved in potassium (K+) homeostasis in the cochlea of the inner ear. It is found in the supporting cells, fibrocytes of the spiral ligament and cells of the spiral limbus". [36]



Epidemiology:

Vohwinkel syndrome is exceedingly uncommon, with just around 50 reported cases described in the literature. Both men and women are impacted equally. [37]

Clinical features:

- **Amniotic constriction ring (Pseudoainhum)- "**Annular constrictions around the digits, limbs, or trunk, occurring congenitally (sometimes causing intrauterine autoamputation) and associated with a wide variety of disorders".

- **Honeycomb palmoplantar keratoderma- "**Abnormal thickening of the skin on the palms and soles with a honeycomb pattern".
- **Hyperkeratosis- "**Hyperkeratosis is a thickening of the outer layer of the skin, the stratum corneum, which is composed of large, polyhedral, plate-like envelopes filled with keratin which are the dead cells that have migrated up from the stratum granulosum".

Sensorineural hearing impairment- "A type of hearing impairment in one or both ears related to an abnormal functionality of the cochlear nerve". [37]

- **Alopecia-** (less likely to occur) A non-congenital process of hair loss, which may progress to partial or complete baldness.

Pathophysiology:

The involvement of "connexin proteins" in producing the constructing blocks for gap junctions helps to understand the pathophysiology of typical Vohwinkel syndrome. Connexin proteins, which make up gap junctions, are essential for transporting "nutrients, ions, and neurotransmitters from cell to cell". Connexin 26 is present specifically in the "epidermis of palmoplantar skin, sweat glands, and the cochlea".

Individually, they may be implicated in the regulation of cell proliferation and tumour growth by interacting with intracellular proteins such as oncogene products, protein kinases, or cytoskeleton components. Connexins are now recognised as multifunctional proteins at the centre of numerous multiprotein complexes that connect to structural junctional complexes and cytoskeletal components, as well as the cellular machinery that supports their transit, formation, activity, and endocytosis. [38]

Histological findings:

Histologic findings are nonspecific, with papillomatosis and significant thickening of the first layer of the epidermis with increased proliferation with normal differentiation of the keratinocytes.

Management:

- Palmoplantar keratoderma can be treated with long-term oral retinoids.
- Constricted digits require a spontaneous detachment surgical option to revert them to routine life.
- Sensorineural deafness can be reverted by a surgically implanted neuroprosthesis-cochlear implant. [37]

Huriez syndrome:

A rare inherited disorder with multisystem involvement, autosomal dominant skin disease. It is related to atrophic fibrosis of the skin of hands and feet, incomplete development of nails (thinning, longitudinal ridging, fissuring), and skin cancer. Eventually occur development of The tightening of the skin on the hand leads the fingers to bend inward and take on a claw-like form, as well as decreased mobility, sweating and non-existence of ridges on the skin on the pads of the fingers and toes, as well as on the palms of the hands and soles of the feet. Mutations occur in only one allele and are often masked by the normal allele disrupting SMARCAD 1 gene affecting its expression and causing the non-existence of ridges on the skin. Findings supported the concept that Mendelian illnesses are allelic, based on phenotypic and genotypic convergence with Adermatoglyphia and ectodermal dysplasia. Therefore, Huriez syndrome is recommended to be added to the previously proposed SMARCAD syndrome label, which was first used to represent the range of single-gene syndrome of the absence of ridges on the skin (Adermatoglyphia) and ectodermal dysplasia. [39] Histological features were non-specific and included a rise in the units of cells in the granular layer of the skin, diffused epidermal hyperplasia, mild hyperplasia, and enlargement of contiguous

dermal papillae. A characteristic finding is an almost complete absence of Langerhans cells in the affected skin. [40,41]

Figure 7: "Clinical features of Huriez syndrome: Incomplete development of nails, hardening of the fingers, stiffness, and tightness of the skin of the fingers". [40]

Figure 8: "Clinical features of Huriez syndrome: Plantar thick keratoderma". [40]

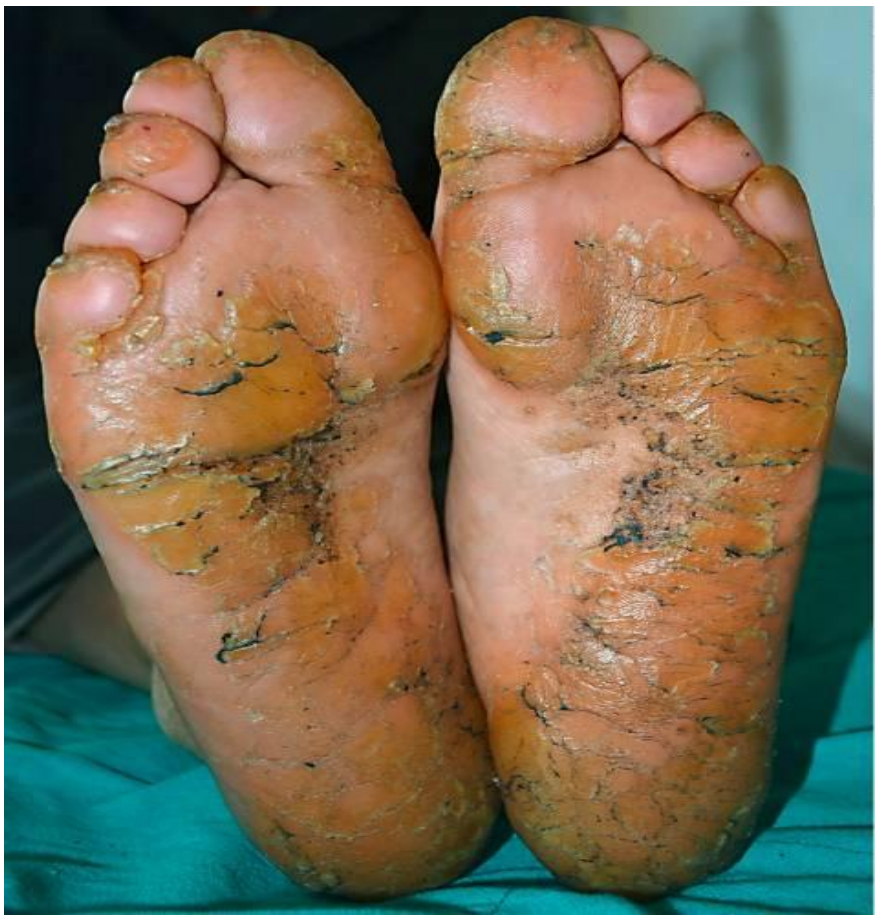
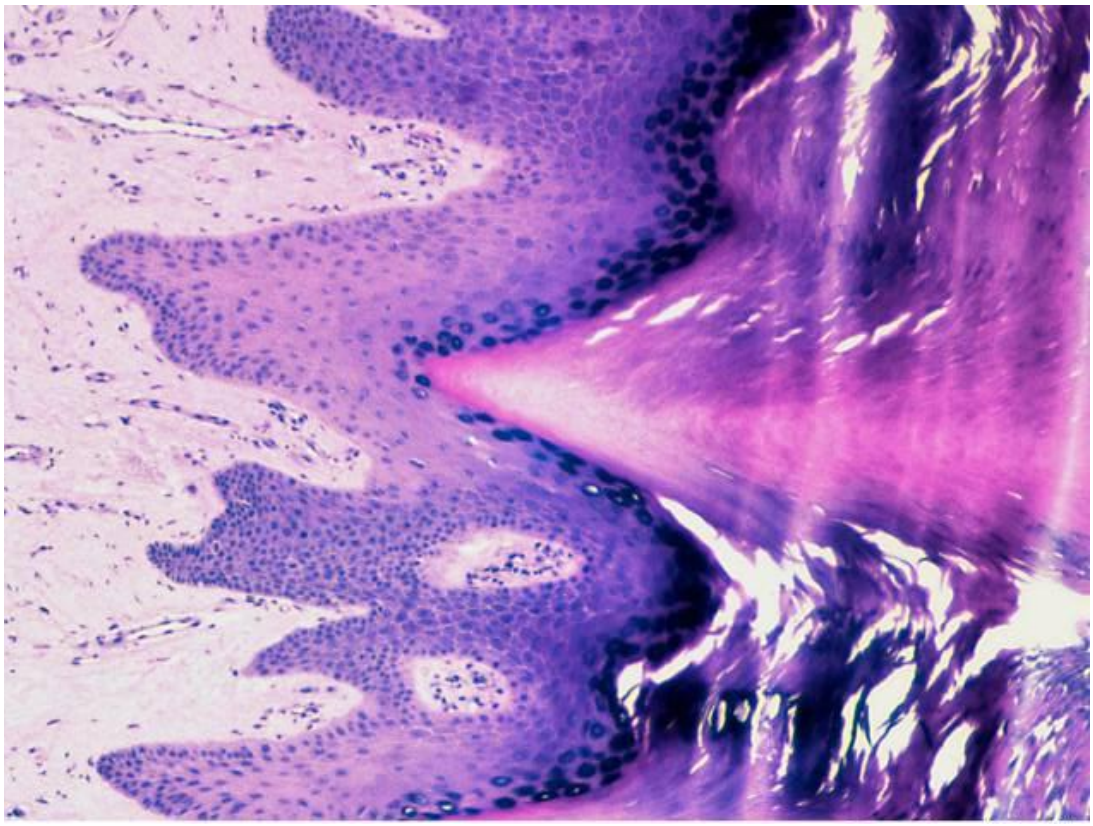


Figure 9: "Histological features of Hureiz syndrome: Hypergranulosis, irregular acanthosis, and mild papillomatosis". [40]



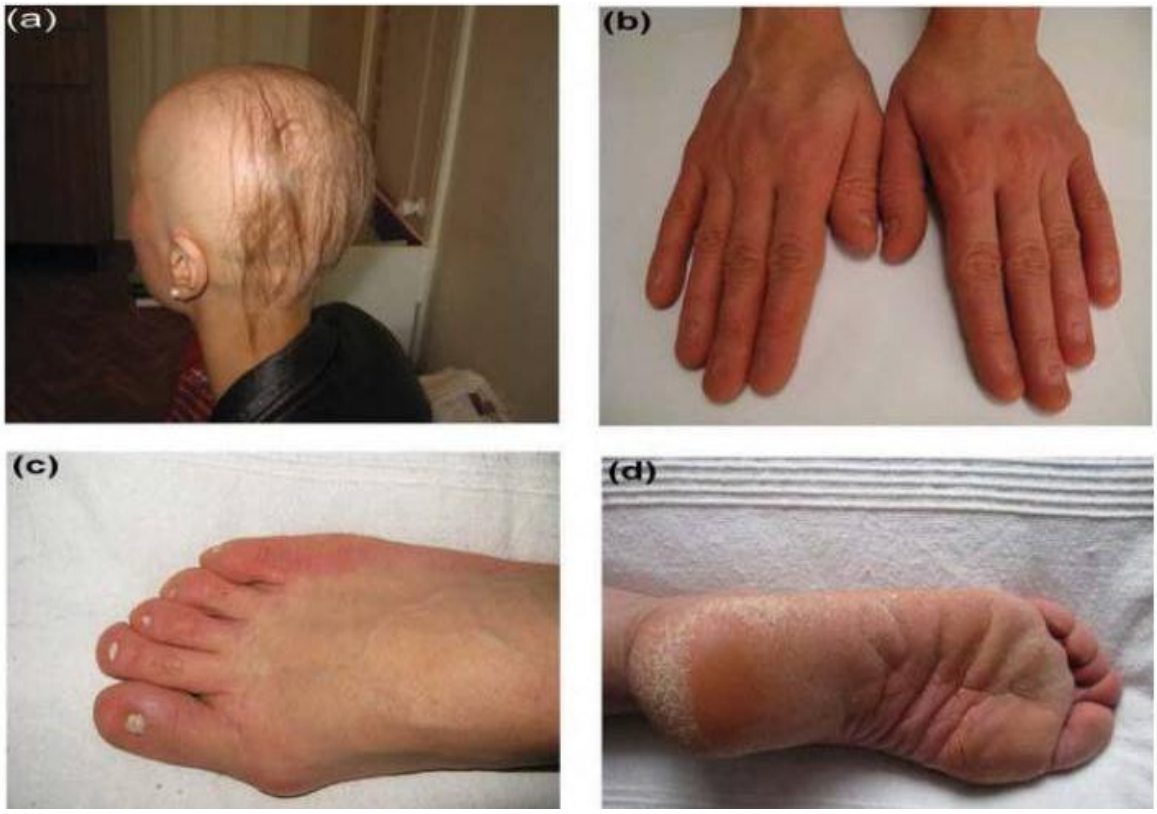
Clouston syndrome

Clouston syndrome is an autosomal dominant condition caused by missense mutations in the "gap-junction beta 6 gene (GJB6 gene)", which codes for a "gap-junction protein 30 (connexin)". [42] Hidrotic ectodermal dysplasia impacts skin and its variants and is distinguished by a group of main components: nail disease, abnormal hair pattern, and rise of the skin of palms and soles. The gap-junction protein 30 deficiency disrupts cell-cell communication in epithelial cells. Clouston syndrome was initially documented in a Russian family, although it has since been described in a few different ethnic groups as it has been revealed that at least four mutation sites in gap-junction beta 6 genes p.Gly11Arg, p.Ala88Val, p.Val37Glu, and p.Asp50Asn (GJB6- p.G11R, p.A88V, p.V37E, and p.D50N) can cause this condition either jointly or separately. [43,44,45,46,47] The palmoplantar keratoderma

(PPK) first appears over pressure sites and subsequently spreads, becoming more severe with age. Furthermore,

- "A noncongenital process of hair loss, which may progress to partial or complete baldness".
- "Onychodystrophy (nail dystrophy) refers to nail changes apart from colour changes (nail dyschromia) and involves partial or complete disruption of the various keratinous layers of the nail plate". [48]
- "Abnormal thickening of the skin localized to the palm and the sole".
- "Abnormal thickening of the skin of the palms and the soles"
- "Terminal broadening of the fingers and reduced or lacking hair growth in a generalized"
- "Abnormal thickening of the skin of the palms and the soles. Terminal broadening of the fingers and reduced or lacking hair growth in a generalized distribution".

Figure 10: Clinical presentation of Clouston syndrome: (a) Generalized hypotrichosis; (b) nail dystrophy on the hand; (c) nail dystrophy on the foot; (d) plantar hyperkeratosis. [45]



FOCAL PALMOPLANTAR KERATODERMA WITH ASSOCIATED FEATURES/SYNDROMIC

"Pachyonychia congenita/ type 1 (Jadassohn– Lewandowsky)/ Pachyonychia congenita type 2 (Jackson– Lawler)"

"Pachyonychia congenita (PC)" is a set of autosomal dominant genodermatoses caused by keratin 6A, 6B, 16, and 17 mutations; impacted ectodermal structures include the nail bed, rise of the outer layer of the skin of the palms and soles, oral leucokeratosis, and cystic lesions. PC was categorised as type 1 (Jadassohn-Lewandowsky) because of keratin 6a/16 deficiencies, which resulted in more severe and painful focal palmoplantar keratoderma (PPK) and white plaque-like lesion in the oral cavity, and type 2 (Jackson-Lawler) because of 6b/17 flaws, which resulted in pilosebaceous cysts and neonatal teeth. Elevation, thickening, and darkening of the nail plate have more prominent involvement distally than proximally. [49–51]

Figures 11: Clinical features of Pachyonychia congenita: Thickened, discoloured increased curvature of fingernails. [52]

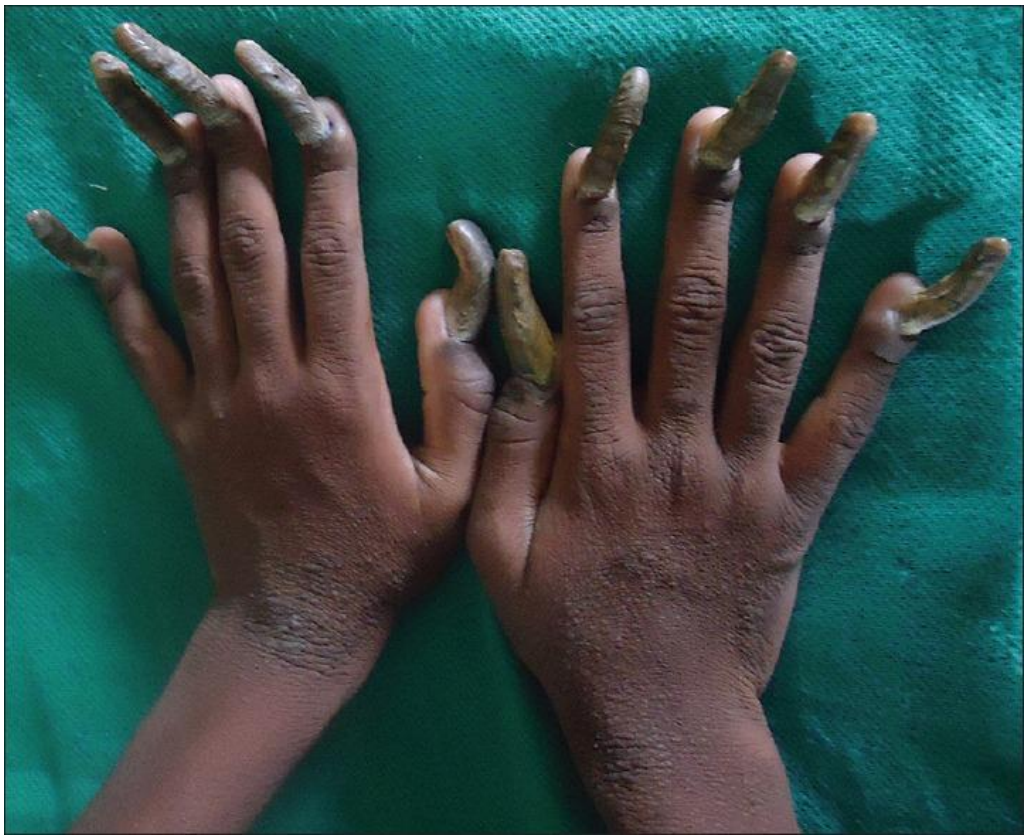
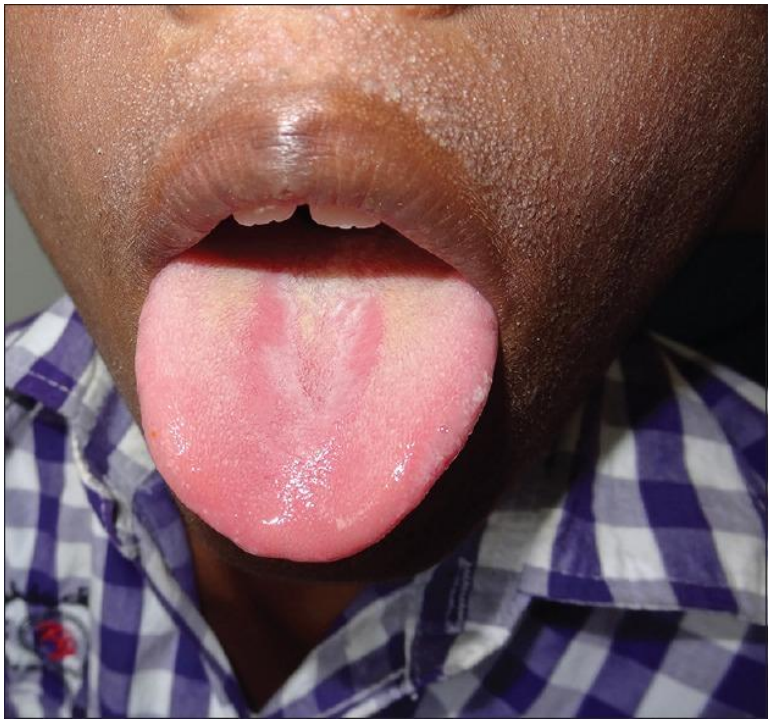


Figure 12: Clinical features of Pachyonychia congenita: Oral leucokeratosis over the tongue. [52]



Striate/Focal Palmoplantar Keratoderma

Striate palmoplantar keratoderma (SPPK) is an autosomal semi-dominant disorder caused by genetic alteration in at least three separate genes that encode proteins with desmosomal function roles. [53] Type 1 - desmoglein 1 (DSG1), type 2 - desmoplakin (DSP), and type 3 - keratin 1 (KRT1), V2 tail domain. Furthermore, heterozygous DSG1 mutations might result in diffuse PPK. SAM syndrome, which includes severe dermatitis, numerous allergies, and metabolic wasting, has focal PPK and can be caused by biallelic DSG1 mutations; afflicted individuals' parents with heterozygous DSG1 mutations have lesser focal PPK alone. [54–57] Focal areata non-epidermolytic palmoplantar keratoderma (NEPPK) with absent or moderate concomitant nail degeneration is occasionally caused by keratin 6a or 16 mutations. All three kinds of SPPK have linear keratotic bands on the palms and flexor aspects of the fingers, as well as island-like patches of hyperkeratosis over pressure sites on the soles (see Fig. 58.2). Lesions often appear in youth or early adulthood and are aggravated by mechanical stress. Growth of keratin on sole skin or mucous membranes that are larger is frequently uncomfortable. [58]

Punctate palmoplantar keratoderma

"Punctate palmoplantar keratoderma type I" is a skin ailment that is extremely uncommon. It is classified as a variant of punctate palmoplantar keratoderma. Firm, circular lumps of thickened skin on the palms of the hands and soles of the feet are a common clinical manifestation that appears in early adolescence or afterwards. Some people may experience pain because of these pimples. The disorder is often a dominant inheritance pattern of the gene way. The clinical features include an abnormality in the morphology of the epidermis. "A circumscribed, solid elevation of skin with no visible fluid, varying in size" that is composed of localized hyperkeratosis. Irregular rise of the skin localized to the palm and the sole. [59]

Figure 13: "Clinical features of punctate palmoplantar keratoderma: Palms with clinical features of multiple tiny brownish keratotic pits". [60]

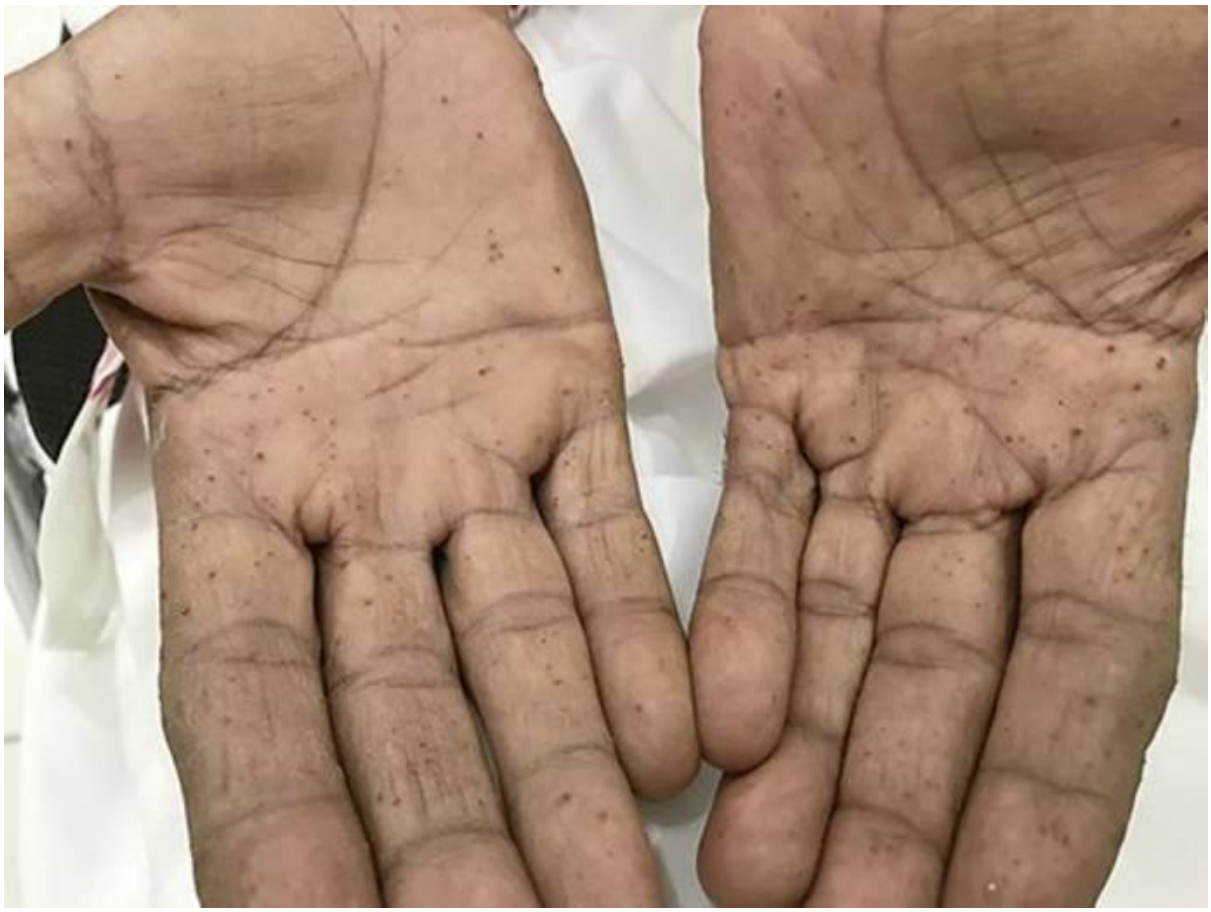


Figure 14: "Histopathology of punctate palmoplantar keratoderma: the lesion showing cup-shaped epidermal depression with an overlying column of compact orthohyperkeratosis". [60]

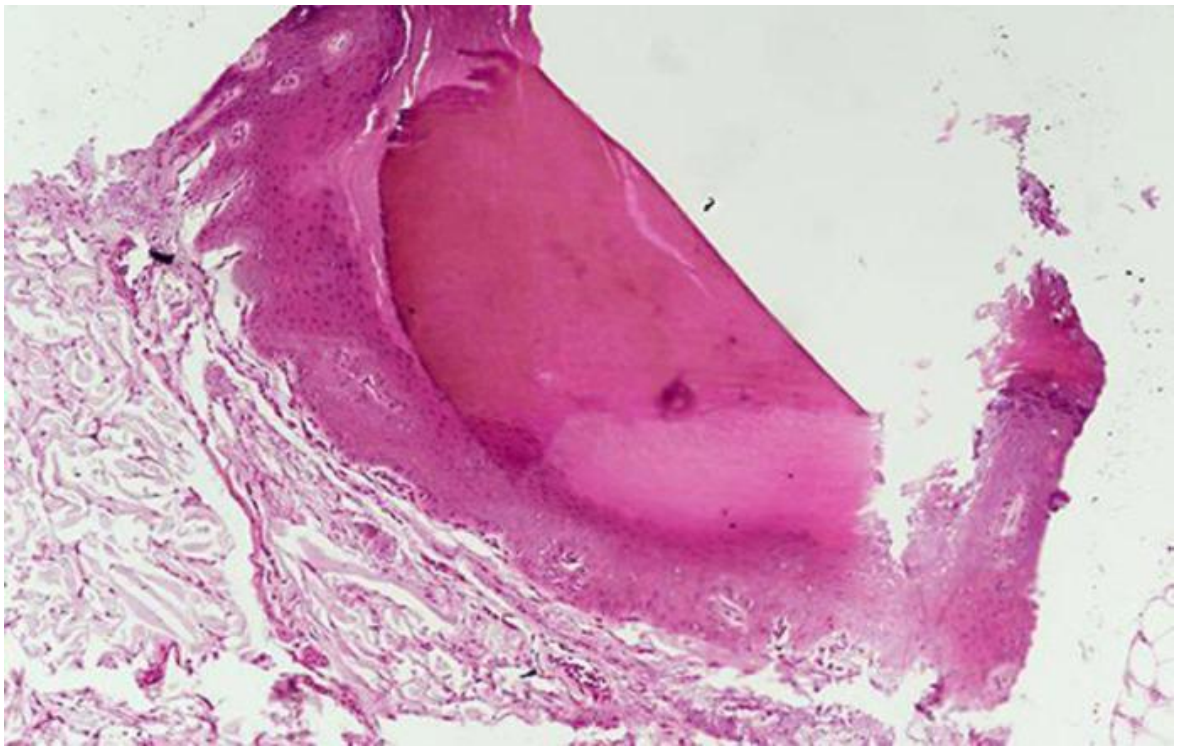


Table 1: Difference between the three types of "punctate palmoplantar keratoderma":

Name	"Punctate PPK type 1 (Buschke-Fischer-Brauer disease)"	"Punctate PPK type 2 (spiny keratoderma)"	"Punctate PPK type 3 (acrokeratoelastoidosis)"
Inheritance	"Autosomal dominant"	"Autosomal dominant"	"Autosomal dominant"
Onset	"Late childhood to adulthood"	"Puberty to early adulthood"	"Adolescence to adulthood"
Morphology of the PPK	"Multiple hyperkeratotic papules with central indentation; worsening of papules upon exposure to water"	"Early onset: multiple spiny keratoses Late onset: pits with keratotic plugs"	"Translucent hyperkeratotic papules, sometimes umbilicated, on lateral aspects of palms and sole"
Other skin/cutaneous involvement	"Nail dystrophy (uncommon)"	Nil	"Nail dystrophy (extremely rare)"
Associated systemic involvement	"Association with malignancies (rare)"	"Facial sebaceous hypoplasia in males"	Nil
Histologic features	"Epidermal depression with an overlying column of compact orthokeratosis"	"Epidermal depression with an overlying column of para keratosis, in contrast to porokeratosis, the granular layer is preserved"	"Hyperkeratosis and hypergranulosis; decreased number of fragmented elastic fibres (elastorrhexis)"

"Acquired palmoplantar keratoderma"

Acquired keratoderma is defined as an inherited, frictional thickening epidermis layer of the skin of the palms and/or soles involving the surface of implicated limbs' extremities and may or may not be accompanied by clinical and histologic inflammation. Given the multiple potential underlying causes of acquired PPKs, evaluating subjects with acquired palmoplantar keratoderma (PPK) can be a difficult undertaking. Medication-related, malnutrition-linked, chemically-induced, systemic illness-related, cancer-related, dermatoses-related, infectious, and unknown causes are the examination to assist the acquired palmoplantar keratoderma. A thorough history and physical examination, which should

include a thorough skin examination is a strategy for screening acquired palmoplantar keratoderma (PPK) to reduce the chance of neglecting an underlying cause and to avoid unnecessary investigations. A genetics evaluation should be undertaken if the results are associated with hereditary keratoderma. Any results that point to underlying disorders should be addressed and managed as soon as possible. If no relevant findings are found during a history and physical examination, laboratory and radiological examinations should be performed comprehensively and logically. [6]

Diagnosis

"Palmoplantar keratoderma" is a diverse group of skin diseases caused by inheritance or acquired due to underlying diseases. The diagnosis of inherited palmoplantar keratoderma is made by a genetic mutation that encodes the keratins which are present in the outer layer of the epidermis-stratum corneum as a barrier between the body and the environment. "The keratins generally manage the physiological process's balance, as well as stress-triggered mechanical and nonmechanical tasks such as cellular integrity maintenance, cell growth and migration regulation, and protection against programmed cell death". These keratins are encoded by 54 evolutionarily conserved genes (28 type I, 26 type II) and are controlled pairwise as well as tissue type, differentiation, and environment dependent. The gene-encoding mutation causes to produce the clinical manifestations of the various kind of palmoplantar keratoderma skin conditions. [61]

Dermoscopy

"Dermoscopy, also known as dermatoscopy, epiluminescence microscopy, or skin surface microscopy", is a quick approach that uses a portable instrument with in-built light and magnification system. It is a non-invasive, in-vivo method used to evaluate the surface and

underlying structures of the skin layers. It was formerly used just to detect and eliminate melanoma in a specific coloured lesion or non-melanoma skin cancers such as basal cell carcinoma and squamous cell carcinoma. Its uses have been expanded to include the detection of “inflammatory, infectious, pigmentary skin conditions, disorders of the hair, scalp, and nails and chronic granulomatous disease” in recent years. The purpose of examination of the skin under a surface microscope viewing of skin lesions is to examine the framework in the various strata of the skin and to capture photographs. [62,63]

History of dermoscopy

Johann Saphier (1920) used a binocular microscope with an integrated light source to achieve the first skin surface microscopy in the early twentieth century. Leon Goldman (1951), often known as the "Father of Dermatoscopy," practised the method to assess pigmented lesions. Mackie (1971) employed the procedure to evaluate pigmented lesions before surgery. Dermatoscopy is indeed regarded as a non-invasive tool for picturing subsurface elements such as the “epidermis, dermo-epidermal junction, and superficial dermis” that are not apparent to the naked eye since its inception. Since then, scientists around the globe have begun to work on dermoscopy. This novel method for the identification of pigmented lesions revealed many structures enabling us to look deeper into the skin to picture the pigment and vascular patterns that were previously unknown. Dermoscopy is now primarily used as a routine skin examination and acknowledged by numerous other nations. [64]

Types of dermatoscope

Chiefly, there are two main types of dermatoscopy which are portable and video-dermatoscopy. The commencement of dermatoscopy was first with the use of a portable dermatoscopy expanding processes up to 10x to 20x.[11] Most of the clinical examination work

at earlier times was employed by dermatoscopy devices. This first portable device used a non-polarised light technique in the viewing of features and structures of the papillary dermis but this would limit the passage of light to view the features. To resolve this concern, immersion fluids were utilised to improve the passage of light with the introduction of polarised light devices, which has the advantage of visualizing the vascular structure and the uses and acceptance of dermatoscopes expanded dramatically. [65]

Video dermatoscopy is a device where no break is created in the skin or mucosa that enables dermatologists to see the deeper structure of skin layers in a higher resolution. It is highly effective in evaluating the reasons for hair loss including identifying one or more diseases with similar clinical features and predicting the course of the condition. It enables quick, and thorough examination of the scalp skin and hair without involving puncturing the skin, as well as high-resolution images. [66] Utilising nonpolarized or polarised light, captured images will be obtained on a screen though the image quality of these devices is not normally greater than that of portable devices, they are fitted with lenses that allow for immediately enlarged visuals.

Since portable dermatoscopy is a simple and cost-effective device, it is most often employed in a dermatological clinic as a routine examination. As it lacks an inbuilt camera like videodermatoscopy, it is a broader version of the otoscope, it has an expanding process which allows visualizing the complex structures of various layers of skin. Regardless of the composition and depth, the complex microscopic structures exhibit different shades as they are overlaid. [67]

Figure 15: Portable (hand-held) dermatoscope to visualize skin lesions. [11]

Indications of dermatoscopy

The use of dermatoscopy is constantly growing and covers the assessment of "pigmented lesions, non-pigmented lesions, skin cancers, trichoscopy, onychoscopy and inflammatory conditions such as psoriasis and lichen planus and before and after analysis of treatment". Therefore, nowadays in the present scenario, there is a transition of making diagnoses from clinicopathologic to clinical-dermoscopic-pathological relationships respectively. Aside from diagnostic purposes, this minimally invasive method is becoming ever more significant in the selection and evaluation of several therapeutic interventions used for skin cancer, including basal cell carcinoma, senile keratoses, squamous cell carcinoma, and rare tumours such as Merkel cell carcinoma, angiosarcoma, or dermatofibrosarcoma protuberans. Therefore, dermatoscopy is an employed technique not just for assessing tumour margins in basal cell

carcinoma before surgery, but also for monitoring senile keratoses following topical therapy.[68] Dermatoscopy has also been proven to be beneficial in determining the autoimmune condition affecting hair follicles causing hair loss, the phase of development and the level of clinical outcomes of leucoderma, which is a necessary criterion for surgical intervention. As a result, dermatoscopy may accurately indicate the progression of the disease.[69] In addition to providing treatment, the captured image from the dermatoscopy gadget reassures the subjects about the effectiveness of their therapy and encourages their consent, this makes it simpler to describe the characteristics of the condition. Particularly in subjects who require a skin biopsy but resist can be encouraged to get one after viewing dermoscopic image, a notion known as 'dermoscopy-induced biopsy' also assists in the determination of the most suitable biopsy location**.** [70]

Dermoscopic findings in detail in "Palmoplantar keratoderma"

"Palmoplantar keratodermas" are a wide array of keratinization diseases that develop moderately throughout infancy, which makes it challenging to make a diagnosis and select a gene for sequence analysis. An examination of the skin using skin surface microscopy with palmoplantar skin colouration with a whiteboard marker, known as the "furrow ink test," might be a valuable method for evaluating the structural aspects of "palmoplantar keratoderma". One of the most noticeable characteristics in the dominant inheritance pattern of the gene of loricrin keratoderma is diffuse "palmoplantar keratoderma" with a hexagonal model. For a better understanding of the dermoscopic findings in palmoplantar keratoderma, a dermoscopic furrow ink test research was conducted on a Japanese family of loricrin keratoderma (LK) with the most common mutation in the loricrin gene. The severe lesion displayed uneven round bulging of the epidermis aggregated and typical furrow and ridge structures disturbed. To explain the nature of this dermoscopically patterned skin surface more correctly, it has been proposed to call it an "irregular cobblestone appearance" rather

than a "honeycomb pattern." In early or moderate hyperkeratotic lesions, a regular cobblestone appearance was shown to preserve parallel furrow structure. The absence of sweating was caused by the eccrine sweat glands that open on the surface of ridges vanishing**.** [71]

Dermatoscopy has been discovered to be an efficient adjunctive technique in the detection of complex biological response-caused skin disorders. Psoriasis is the most prevalent skin condition, with “palmoplantar plaque psoriasis”, a manifestation of “plaque psoriasis”, affecting the skin of the palms of the hand and soles of the feet. “Palmoplantar plaque psoriasis” has a distinctive trend of scattered equally and appearances of white scales, evenly scattered dotted vessels on a pale or surrounded by dull red features are seen under dermatoscopy. **“**The colour of the lesion, scale, and distribution pattern” can help distinguish inflammatory skin disease. A diffuse white scale is the most typical scale spread type in both trunk and “palmoplantar psoriasis lesions”. Whereas in chronic hand eczema, the appearance of yellowish scales, brownish-orange dots/globules, and yellowish-orange crusts was notable. [7,8]

Figure 16: “Palmar psoriasis vulgaris”& Figure 17 “Regular dotted vessels surrounded by background of eryhthema”. [72]

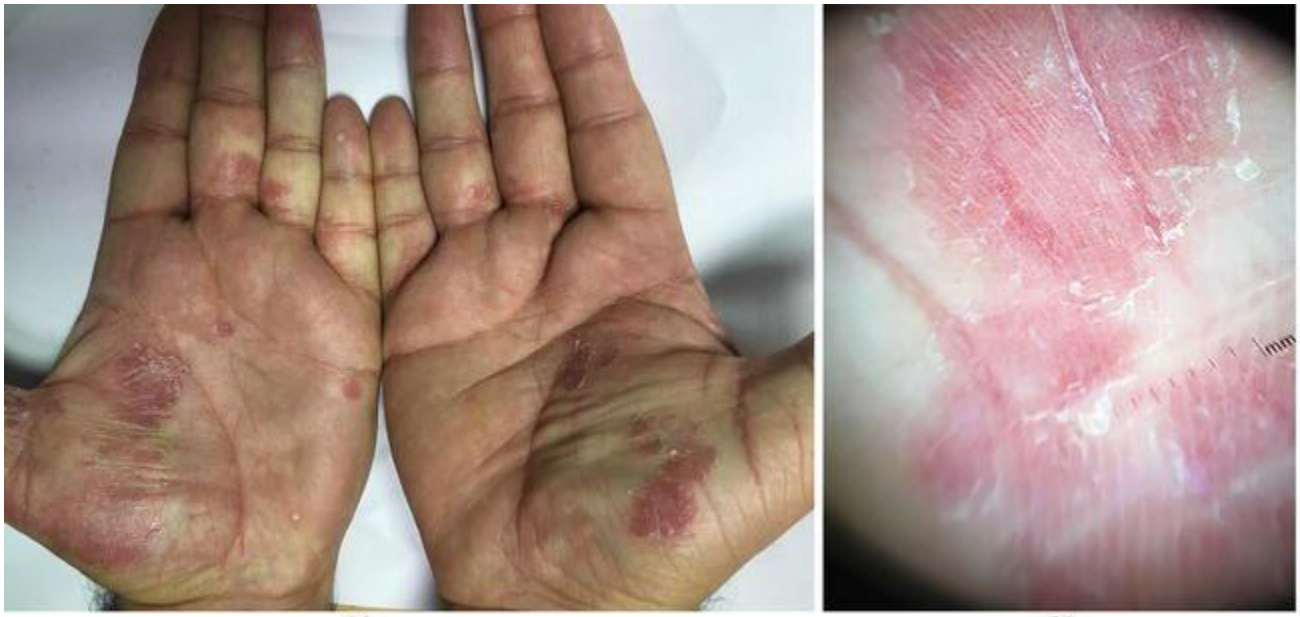


Figure 16: (a) "Palmar psoriasis vulgaris". (b) "Diffuse white scales along with the skin furrows". [72]

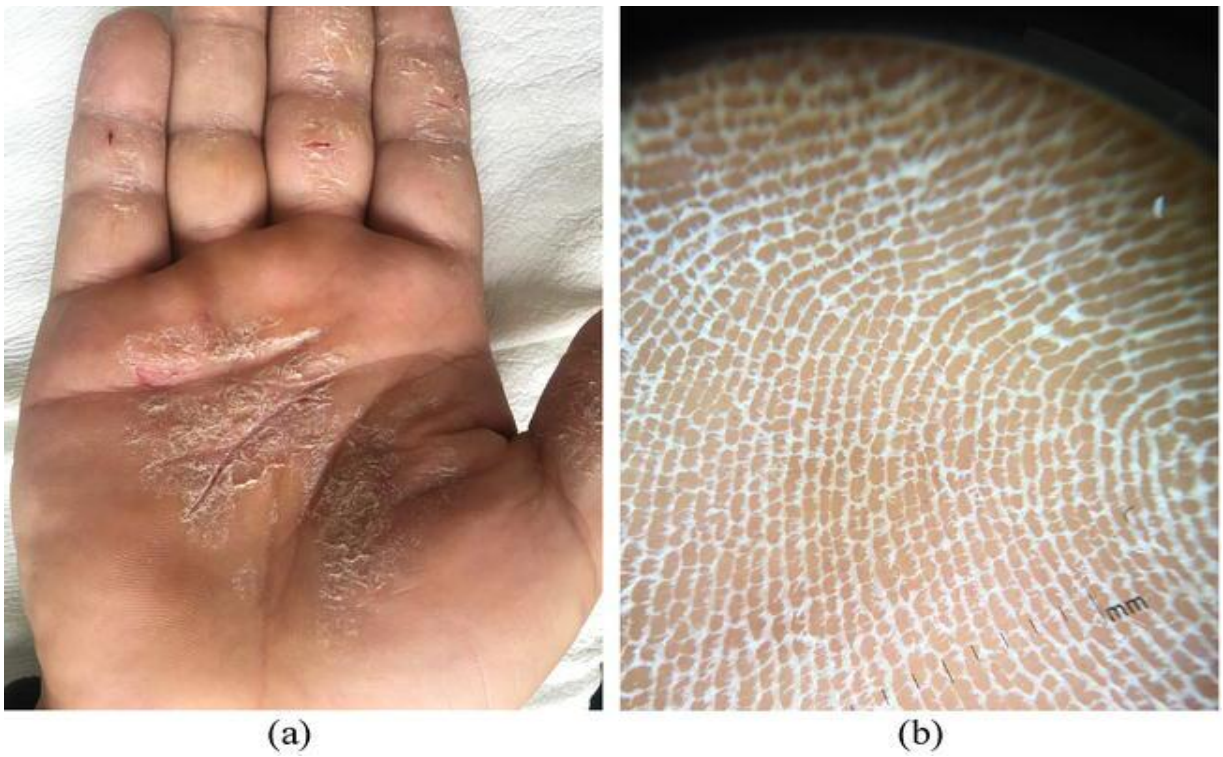


Figure 18: (a) "Diffuse white scales in palmar psoriasis". (b) "Yellowish background and patchy yellow scales in eczema". [72]

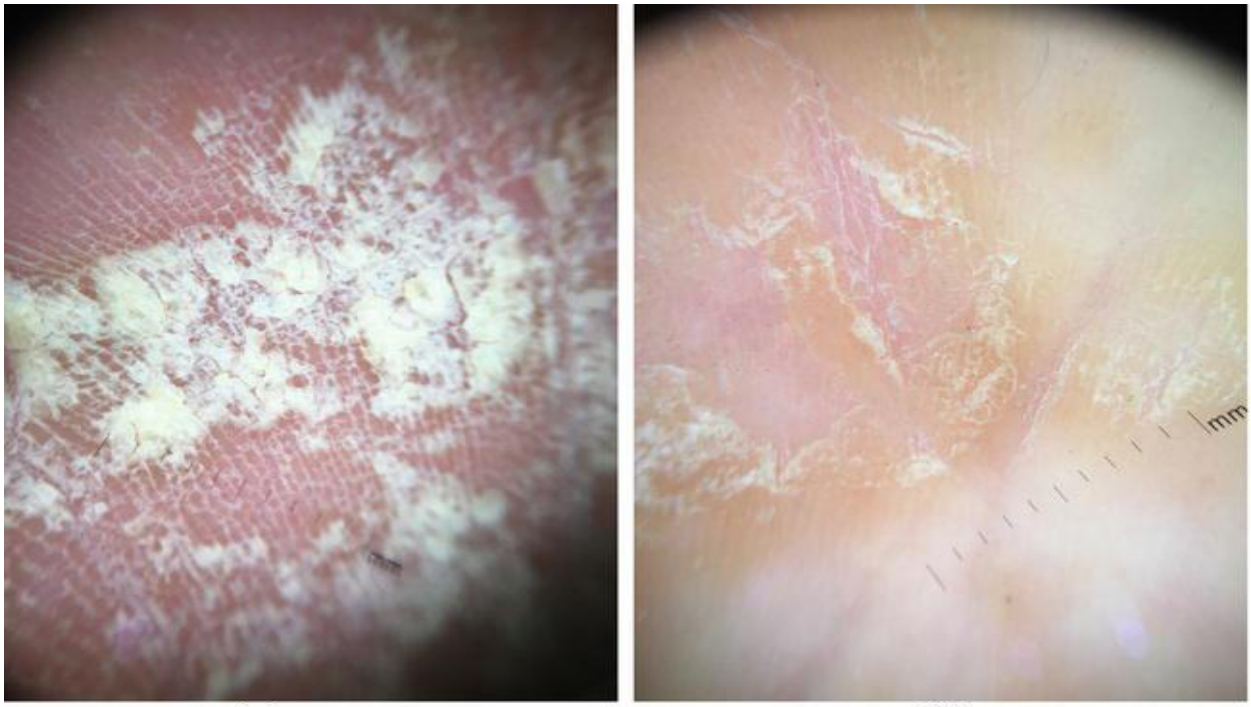
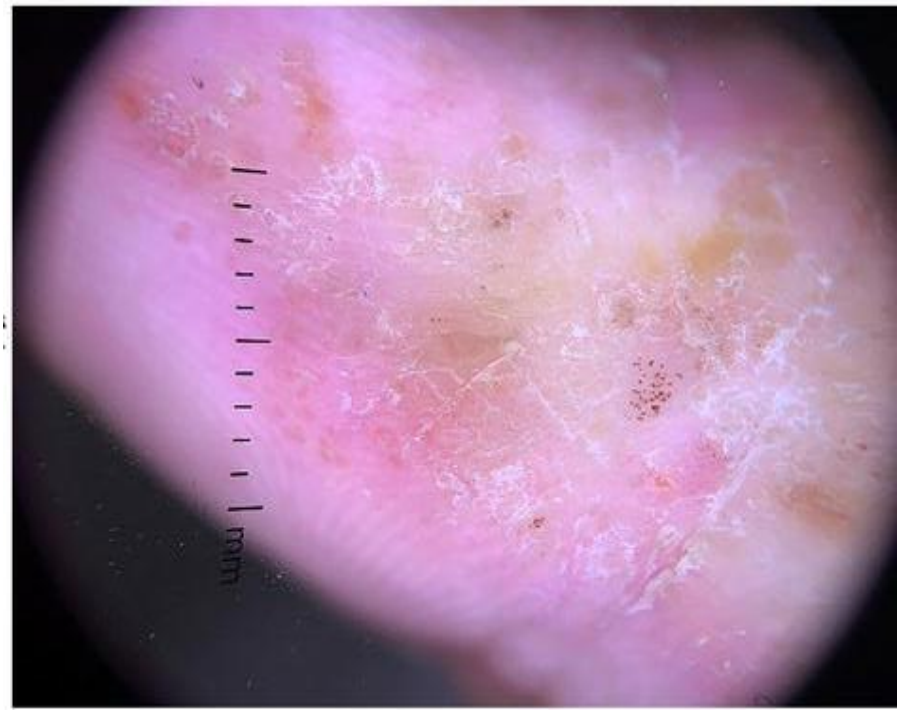


Figure 19: "Yellowish background, brownish-orange globules, and yellow scales of chronic hand eczema". [72]



Recent studies

The analysis method by Ryme Dassouli et al 2022, aimed to assess the pictures of thickened skin of palms and soles by epiluminescent microscopy which allows for inspecting the skin

lesions. Though it is tough, this medical procedure helps to identify the right illness without break in the skin and no contact with the mucosa. The epiluminoscopy indicators of thickening skin of palms and soles were studied that are often seen in dermatologist consultations, as in the literary text, there is currently a scarcity of information on the epiluminoscopic characteristics of palms and soles conditions. The goal is to provide a complete epiluminoscent microscopy guide to the dermatologist in assisting with the diagnosis of bulging of the skin of palms and soles. Therefore, exhibited the pictures acquired from subjects who were followed in consultation and evaluated to maintain vessel architecture and immersion in a clear, thick, colourless gel to improve vision with little pressure. [73]

A descriptive cross-sectional study by Vijay Sekhar P et al 2021, aimed to assess the appearance and observable signs of skin disease which involves palms and soles. The study considered 80 subjects with appeared conditions. The study population found that the length of skin diseases involving palms and soles is about three years, with males being affected 55% more than women (45%). Pruritis and painful cracks were the most prevalent complaints. Psoriasis is a typical medical condition preceded by eczema and fungal infections. The study results found that skin diseases involving palms and soles refer to a diverse group of dermatological problems, therefore doctors must be well thorough with the clinical aspects and diagnosis with appropriate care to enhance the subjects' lives. [74]

Tubanur Çetinarslan et al 2021, To identify the nature of the different skin conditions, epiluminenscence microscopy is used to examine the skin using surface microscopy without breaks on the skin and no contact of the mucosa. A paler skin caused by dysfunction of melanin and melanocytes can be viewed by an epiluminenscent microscope, which reveals further characteristics such as "cutaneous vascular pattern, scale colour and distribution

pattern, and background colour". Epiluminenscent microscope can aid in the variance detection of skin conditions comprising palms and soles with the most distinctive dermoscopic characteristics. The desquamation distribution pattern colour is also essential in the differential diagnosis. Therefore, in different skin conditions comprising thickening epidermis of palms and soles, epiluminenscent microscope aid in the right diagnosis. [72]

Balachandra S et al 2020, aimed to assess and comprehend the fundamental concepts of dermatoscopy and the many forms of dermatoscopy. Dermatoscopy- Examination of the skin using skin surface microscopy without breaking the skin and with no contact with the mucosa helps to identify the features of different skin diseases involving palms and soles. Basic components, vascular architecture, and pigment networks must all be addressed in order to comprehend dermatoscopy. The fundamental approach such as changes in the sequence of dermatoscopy, prevailing colour, and any unique hints present in the lesion are the specifics to conclude appropriate findings to diagnose. The study found that a dermatoscopy is a quick approach that uses a man-portable instrument with in-built light and magnification. It is a method for observing the surface and underlying architecture of the skin layers in real-time. It was formerly used just to detect and eliminate melanoma in a specific pigmented lesion. Its proven usefulness in reactive and infectious skin conditions has increased its use as a skin physician instrument. [75]

A cross-sectional study by Yashodha Hassan Vasanthkumar et al 2020, aimed to assess the epidemiological features and observable signs of the thickened epidermis of palms and sole skin condition. The study considered 200 subjects aged 5-70 years old and of both sexes who presented to the dermatology department with problems mostly require the palms and soles with or without the association of other body parts. Complete history and physical

examination were tracked and all the relevant dermatological investigations were measured. The study population found that 63% of men were between the ages of 21 and 40. Pruritis was the most prevalent symptom, and palmoplantar psoriasis was the most prevalent skin disease. The study results found that skin conditions comprising palms and soles are the commonest dermatological condition. Timely identification of clinical features helps in diagnosis and aid in appropriate therapy.[76]

A prospective study by R Singh et al 2020, aimed to assess the frequency of acquired thickening of the skin of palms and soles and to identify the aetiology and aggravating variables for this skin condition. The study considered 26 subjects who attended a skin clinic. All the relevant dermatological investigative tests were measured for the raised areas of the skin of palms and soles skin condition. The study population found that the raised areas of the skin of palms and soles was present between the ages of 51 and 60, with the commencement of the condition occurring between the ages of 41 and 50. To confirm the condition, histopathology and patch test were useful and the most prevalent cause was psoriasis accompanied by eczema. The study results found that the thickening of the skin of palms and soles of the acquired condition is most prevalent in advancing years and the most common aetiology remains psoriasis of palms and soles. Most of the cases are clinical and histopathological, and patch tests are potentially effective investigations. [77]

A clinical cross-sectional study by Dinesh Kumar, N et al 2019, aimed to assess the observable signs and occurrence of different skin diseases which involve palms and soles of the hand and feet particularly in relation to age, gender distribution and profession. The study considered 200 subjects, with all pertinent information collected. All the subject's complaints and their severity were documented, as were the thorough general and dermatological

examinations. Microscopic inspection of scrapings in 10% potassium hydroxide (KOH) was performed on scaly lesions, gram staining was performed on pustular lesions, and removal of a skin lesion by biopsy technique was performed in selected cases. The study population found that men outnumbered women by 53.46%, with an average age ranging from 17 to 40 years. Seasonal fluctuations caused the disease to affect 45.5% of the subjects. The most common complaint was itching. Eczema, fungal infections, and psoriasis were the most common skin illnesses demanding the "palms and soles", with the palms being the most involved site. The study results found that several investigations in skin diseases involving palms and soles have been oriented on disorders, nevertheless, this study emphasises the necessity for extensive research in skin diseases involving palms and soles. [78]

Bhaskara Narayana et al 2018, aimed to assess the observable signs and symptoms and their influence on the quality of life of subjects. The study considered 106 subjects with thickened skin of palms and soles, as well as a thorough medical history, were taken. The quality of life was assessed using a grading system based on the subjects' input. The study population found that 65% of the cases occurred between the age of 20 to 40 years. Acquired thickening skin of palms and soles were more prevalent in 30.1% of homemakers and 24.5% of daily wage labourers. Psoriasis is the most prevalent complaint, after Eczema, Pityriasis rubra pilaris, and Erythroderma dermatitis. Thickening of the skin of palms and soles greatly influenced patients' standard of living in 57.4% of instances. The study results found that because acquired PPK is not genetic, it is invariably misdiagnosed. Homemakers and day labourers are frequently impacted as a result of repeated exposure to detergents, chemicals, and different sorts of stress. Thickening of the skin of palms and soles has greatly influenced patients' standard of living. [79]

A descriptive study by Sunita S Nayak et al 2017, aimed to assess and contrast the examination of skin lesions aspects of prevalent skin diseases in a brown-skinned Indian community. The study considered 475 subjects with skin conditions such as inflammatory, infectious, vesiculobullous, vascular, benign facial tumours, hypo pigmentary, medication responses, and other disorders who visited the outpatient department for about 3 years and were recruited. Dermlite II PRO dermoscopy was used to investigate and to achieve a confirmed diagnosis appropriate dermatological investigations were conducted. The study population found that the major characteristics of different skin conditions were significant and consistent with the condition under examination of skin lesions. The study results found that examination of skin lesions aid in the identification of prevalent skin condition, as well as the signs and symptoms assessment and surveillance of therapy progress. [20]

A prospective observational study by Pragya A. Nair et al 2017, aimed to assess the observable signs of thickened skin of palms and soles skin conditions. The study considered 202 subjects and included evaluation and statistical tests. The study population found that 53.46% of men aged 17 to 40 years were more significant. The length of the condition was < 30 days and 29.7% appeared seasonally. The itching was the most prevalent symptom while the most frequently occurring skin condition is palmoplantar psoriasis which affected 69.30% of soles, 66.34% of palms, and 37.12% of both palms and soles. The study results found that after palmoplantar keratoderma, palmoplantar psoriasis was the most frequent condition that impacts the palms and soles. [80]

Tomo SAKIYAMA et al 2016, Inherited palmoplantar keratoderma is a diverse collection of diseases defined by the thickening of the skin of palms and soles. As per the clinical features of skin thickness, it is classified into 4 categories such as diffuse, striate, focal and punctuate.

To classify them into associated features and not associated characteristics of the involvement of nails, teeth, and other organs, the clinically descriptive method is used. The old categorization is now replaced with a newly found gene mutation; therefore, it must be diagnosed using a mix of standard morphological categorization and genetic analysis. [81]

A cross-sectional study by Amrita A Hongal et al 2016, aimed to assess demographic aspects and the prevalence of skin disorders comprising palms and soles in the palm and sole thickening condition. The study considered 300 subjects with skin conditions involving palms and soles symptoms. All relevant dermatological examinations were reviewed, and where the diagnosis proved challenging, skin biopsies were performed. The study population found that the frequency was substantially greater in 25.7% of men aged 21 to 30 whereas homemakers are typically impacted by 30% of the skin condition. "Palmoplantar psoriasis (20.7%), moniliasis (19%), palmoplantar hyperhidrosis (7%), keratolysis exfoliativa (6%), and pitted keratolysis (6%)",were the five most prevalent in palms and soles thickening condition. Palmoplantar psoriasis affecting both the palms and soles was frequent among the other conditions involving one palm or one sole. The study results found that dermatological conditions comprising palms of the hand and soles of the feet are a common occurrence in skin department. Further research with a bigger and more diverse community is required to comprehend the study of disease, which will allow for precise diagnosis and therapy. [82]

Cristina Has et al 2016, excess rise of the skin of the palms of the hand and soles of the feet is categorized into acquired and inherited diseases. Despite thickened skin of palms and soles condition may be the primary or prominent observable sign, it is possible that it is coupled with an additional outermost layer of skin abnormalities or symptoms significant outside the skin. Substantial advancement has occurred in recent years in determining the genetic marker

of thickening skin of palms and soles, which has resulted in the formation of novel illnesses and abnormalities. Various criteria are used to differentiate such as illness manifestation magnitude, palmoplantar skin involvement shape, inheritance patterns, and molecular aetiology. In comparison with a mutation in distinct genes, the same symptoms may be caused. [16]

Stina Schiller et al 2014, bulging of the skin of the palms of the hand and soles of the feet is acquired and inherited, the distinction between these two forms is critical for effective therapy and patient counselling. There are several reasons for the acquired thickening of the skin of palms and soles whereas. inherited can be caused by a variety of gene mutations. Several novel causal genes have been discovered in recent years. Individual PPK might vary greatly in terms of presentation and related symptoms. Because the numerous hereditary PPKs, like many other monogenic disorders, have a relatively low incidence, making an accurate diagnosis is difficult and frequently necessitates a molecular genetic investigation. [83]

A clinic-histopathological study by Sandeep Kodali et al 2014, aimed to assess the demographics, observable signs, and microscopic examination of thickened skin of palms and soles. The study considered 100 subjects aged 10 and above who had gotten thickening of the skin of their palms and soles of the hand and soles. The study population assessed that the most prevalent age category was between 41 to 50 years in which men working as farmers and productive workers were the majority, while the most typically impacted ones are the homemakers. Palmoplantar “psoriasis, eczema, lichen planus, and warts” were the skin condition that provoked the bulging of the skin of palms and soles of the hand and soles. The microscopic examination was not able to evaluate several instances, as the review of major systems and other procedures were good, they were categorized as an idiopathic

(unknown) thickening of the skin of palms and soles. The unusual instance was noticed due to lichenoid drug eruption causing secondary bulging of the skin of palms and soles of the hand and soles. The study results found that “palmoplantar psoriasis, eczema, lichen planus, and warts” were the skin conditions that induced palm and sole thickening. Also, unusual instances were found due to drug-induced lichen planus which in the papers was not adequately recorded. [84]

Aimilios Lallas et al 2013, Inspection of skin lesions by epiluminenscence microscopy used to view the lesions unhindered. In addition to its conventional usage for evaluating skin malignancies, is gaining popularity in other branches of dermatology. Epiluminenscence microscopy has been found to enhance the investigations for confirming clinically and is currently used in routine check-ups of skin conditions comprising palms and soles epidermis thickening. The introduction of a new-generation hand-held epiluminescent microscope that is small enough to fit in every dermatologist's clinic and does not demand the usage of immersion media has significantly boosted the use of epiluminescent microscopes in skin conditions. [85]

J M Martín et al 2012, Epiluminenscence microscopy permits us to see the vascular aspects of various skin conditions without a break in the skin and the mucosa beneath the proper settings. The observation and detection of vessels with distinct morphology can be crucial in the detection of hypopigmented lesions where normal pigmented structures are not apparent. Crown vessels in “sebaceous hyperplasia, arborizing telangiectasias in basal cell carcinoma, comma-shaped vessels in intradermal and compound nevi, dotted vessels in Spitz nevi and melanoma, and hairpin vessels in seborrheic keratoses” are few more of the significant associations. Recognizing distinguishing vascular structures may be extremely helpful in the

detection of several forms of skin lesions, and in other cases, such trends represent the sole link to the detection of skin malignancies. [86]

Pramod Kumar et al 2008, “Olmsted syndrome, also known as mutilating palmoplantar keratoderma (PPK) with periorificial keratotic plaques”, is an extremely uncommon birth defect (existing at birth) condition that causes irregular skin development and thickness. The study considered a subject of Olmsted syndrome in a six-year-old Indian girl who presented with abnormal thickening on her soles from birth and on her palms since the age of two years, as well as perioral and perinasal bulging of the first layer of skin. Whereas the child's psychomotor development was normal until the age of 18 months, the keratoderma lesions limited the child's movement after the 18-month mark. [87]

Iris Zalaudek et al 2006, Epiluminenscence microscopy enhances the symptomatic accuracy within the definitive assessment of pigmented skin lesions, but it is additionally valuable for the evaluation of circulatory arrangement and organisations that are not obvious to the bare eyes. As a result, epiluminenscence microscopy has been utilized increasingly for the differential diagnosis of non-pigmented skin conditions, comprising tumours and infections. The study results found that the Epiluminenscence microscope highlights viwed in different “nonpigmented tumoral and non-tumoral” skin conditions as well as the epiluminenscent microscopic class utilized for checking skin responses to different medicines. [88]

Peter H Itin et al 2005, the skin of palms and soles are complex tissue that can withstand mechanical damage and other forms of physical tension. The categorization of generalized thickening of the epidermis has been replaced by an accurate functional genomic perspective that takes gene activities into account. The purpose of this study is to highlight the common

clinical characteristics and symptom complexes associated with thickened skin of palms and soles allowing the attentive skin physician to lay out definitive detection. Furthermore, the problem is resolved using molecular genetic information, which is essential to validate the definitive detection. [22]

Lacunae of literature:

In order to establish a clinical diagnosis, assess prognosis, and offer treatment recommendations, a clear history, including family history, is essential in the evaluation of palmoplantar keratoderma. Because most occurrences of palmoplantar keratoderma are genetic, rather than acquired, the underlying reasons must be addressed first. Although there are rare syndromes causing the palmoplantar keratoderma but there are very few cases and studies available, particulary in India. The clinical description and histological characteristics of palmoplantar keratoderma have been established, although there is a significant gap in dermatoscopic results and documentation of dermatoscopic findings with clinical symptoms. More “high-quality, prospective, blinded, controlled studies” are required to accurately evaluate dermoscopy application. Dermoscopy also has limits, such as the similarity of some dermoscopic characteristics present in several dermatoses. It should be noted that dermoscopic images analysed in other nations do not exactly match those performed in the Indian population because to differences in complexity, since erythema may readily be displayed in the western fair-skinned population. As a result, further similar research on the Indian population is yet to be conducted and also to correlate histopathologically, as it is insufficient.

METHODOLOGY

Materials and Methods:

Source: This study was conducted in department of DERMATOLOGY, VENEROLOGY& LEPROSY in R L JALAPPA Hospital and Research centre attached to Sri Devaraj URS Medical College, Tamaka, Kolar.

Study duration: Data collection for the study was done between JANUARY 2021 to JULY 2022.

Study Population: All patients diagnosed with hyperkeratotic dermatosis, attended to the department of DERMATOLOGY,VENEROLOGY&LEPROSY in R L JALAPPA Hospital and Research were considered as study population.

Study Design: Cross sectional study

Sample size calculation:

Sample size for the descriptive study shows the average prevalence of 44.3% based on a clinical study in India with 95% confidence interval with an α-error of 10% [82] Therefore estimated sample size will be 95.

$$\text{Sample size} = \frac{Z_{1-\alpha/2}{}^2 p(1-p)}{d^2}$$

Here

$Z_{1-\alpha/2}$ = Is standard normal variate (at 5% type 1 error ($P<0.05$) it is 1.96 and at 1% type 1 error ($P<0.01$) it is 2.58). As in majority of studies P values are considered significant below 0.05 hence 1.96 is used in formula.

p = Expected proportion in population based on previous studies or pilot studies.

d = Absolute error or precision – Has to be decided by researcher.

SELECTION CRITERIA :

Inclusion criteria:

All patients with palmoplantar keratoderma.

Exclusion criteria:

Patients who are not willing to give consent will be excluded.

Method of collection of data:

In this study, data was collected from JANUARY 2021 to JULY 2022 based on detailed history and meticulous dermatological examination for morphological attribute and distribution of lesions after taking informed consent. In every case thorough clinical examination was carried out and Diagnosis was made. Dermoscopy was performed and images were studied and findings were documented. The study was approved by the institution ethical Comittee. Relevant laboratory investigations were done wherever necessary. 2ml of blood was collected from vein of arm under aseptic conditions and sent to laboratory for investigations if necessary and results were documented. This is a non funded study. The data thus collected was entered in to a specially designed case record form and subjected to statistical analysis like proportion and chi-square test.

The following investigations were carried out if necessary,under the supervision of the guide.

- Routine investigations were done.
- All relevant investigations were done whenever necessary.
- Histopathology as and when required.

Statistical Methods

Dermoscopic findings, associated symptoms etc., were thought to be major result factors. Age, gender, etc. were thought to be as the study relevant factors. Descriptive analysis was performed on quantitative data using mean and standard deviation, and categorical variables using frequency and percentage. Data was also depicted using relevant diagrams such as bar graphs and circle charts.

Data analysis is done by coGuide Statistics software, Version 1.0

RESULTS

RESULTS:

Table 2: Descriptive analysis of Age (in years) in the study population (N=95)

Name	Mean ± S.D	Median	Minimum	Maximum	95% CI	
					Lower CI	Upper CI
Age	32.30±18.66	33.00	0.25	75.00	28.55	36.05

The mean age was 32.30±18.66 in the research subjects, lowest level was 0.25 and highest level was 75 in the research subjects (95% confidence interval 28.55 to 36.05). (Table 2)

Table 3: Review illustration of Gender in the research subjects (N=95)

Gender	Frequency	Percentage
Male	55	57.89%
Female	40	42.11%

The research population included 55 (57.89%) men subjects and 40 (42.11%) women subjects. (Table 3 & figure 20)

Image 20: Circle chart of Gender in the research subjects (N=95)

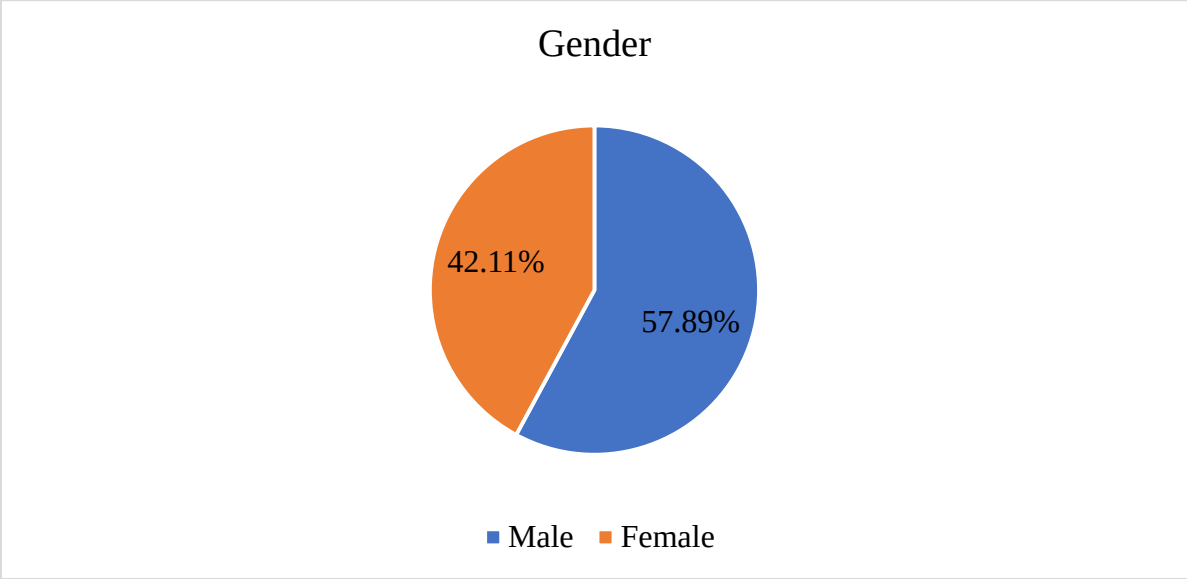


Table 4: Descriptive analysis of Diagnosis in the study population (N=95)

Diagnosis	Frequency	Percentage
ICD feet	11	11.58%
T. mannum	11	11.58%
plantar eczema	10	10.53%
Plantar psoriasis	9	9.47%
Palmoplantar psoriasis	7	7.37%
ICD palms	7	7.37%
Hand Eczema	6	6.32%
T. pedis	5	5.26%
Palmar psoriasis	5	5.26%
Atopic eczema	5	5.26%
Eczema	3	3.16%
PRP	3	3.16%
Palmoplantar Psoriasis	3	3.16%
Plantar Keratoderma	2	2.11%
Plantar dermatitis	2	2.11%
Hand Foot eczema	2	2.11%
Hand eczema, Fissure feet	1	1.05%
ACD	1	1.05%
Punctate keratoderma	1	1.05%
Palmar verruca	1	1.05%

In the study population, 11 (11.58%) participants had ICD feet, T.mannum, 10 (10.53%) participants had plantar eczema, 9 (9.47%) participants had plantar psoriasis, 7 (7.37%) participants had palmoplantar psoriasis, ICD palms. (Table 4)

Table 5: Review illustration of Occupation in the research subjects (N=95)

Occupation	Incidence	Percentage
Student	22	23.16%
House Wife	19	20.00%
Agriculture	17	17.89%
No Work	12	12.63%
Laborer	10	10.53%
Office	9	9.47%
Fisherman	3	3.16%
Mechanic	3	3.16%

Among the study population, majority of 22 (23.16%) participants were Students, followed by 19 (20.00%) participants were house wives, 17 (17.89%) participants were in agriculture, 12 (12.63%) participants were not working, 10 (10.53%) participants were labourer, 9 (9.47%) participants does office work and 3 (3.16%) participants were fisherman and mechanic. (Table 5 & Figure 21)

Image 21: Bar graph of Occupation in the research subjects (N=95)

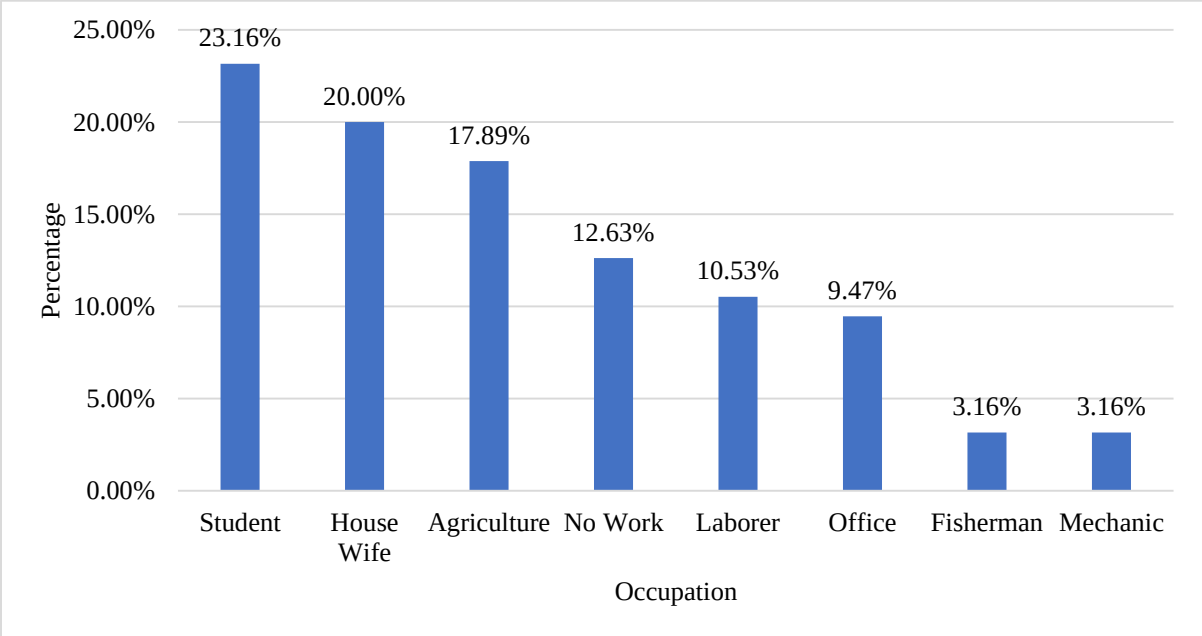


Table 6: Review illustration of Duration (in months) in the research subjects (N=95)

Name	Average ± SD	Median	Lowest	Highest	95% CI	
					Lower CI	Upper CI
Duration (in months)	28.09±43.66	12.00	0.25	300.00	19.30	36.87

The mean duration was 28.09±43.66 in the research subjects, lowest level was 0.25 and highest level was 300 in the research subjects (95% confidence interval 19.30 to 36.87). (Table 6)

Table 7: Review illustration of Associated symptoms in the research subjects (N=95)

Associated symptoms	Incidence	Percentage
Itching	63	66.32%
Burning	61	64.21%
Pain	43	45.26%
Nil	1	1.05%

Among the study population, majority of 63 (66.32%) participants had itching as symptom, followed by 61 (64.21%) participants had burning, 43 (45.26%) participants had pain and 1 (1.05%) participants had no symptom. (Table 7 & Figure 22)

Figure 22: Bar graph of Associated symptoms in the research subjects (N=95)

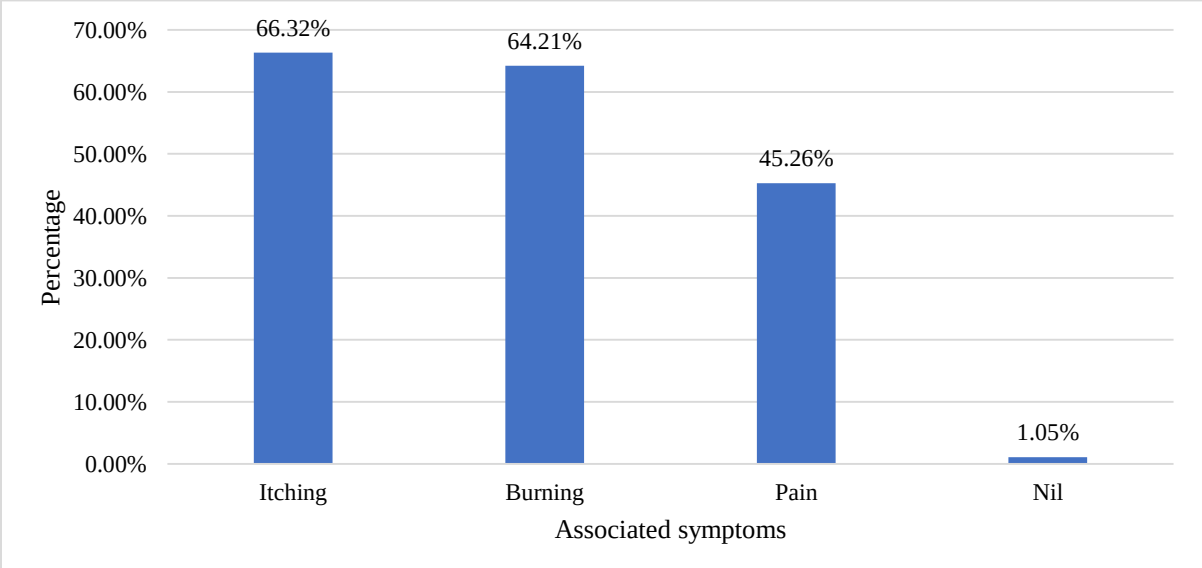


Table 8: Descriptive analysis of Aggravating factors in the study population (N=95)

Aggravating factors	Frequency	Percentage
None	41	43.16%
Winter Season	22	23.16%
Work	15	15.79%
Rainy Season	11	11.58%
Eating Food	6	6.32%

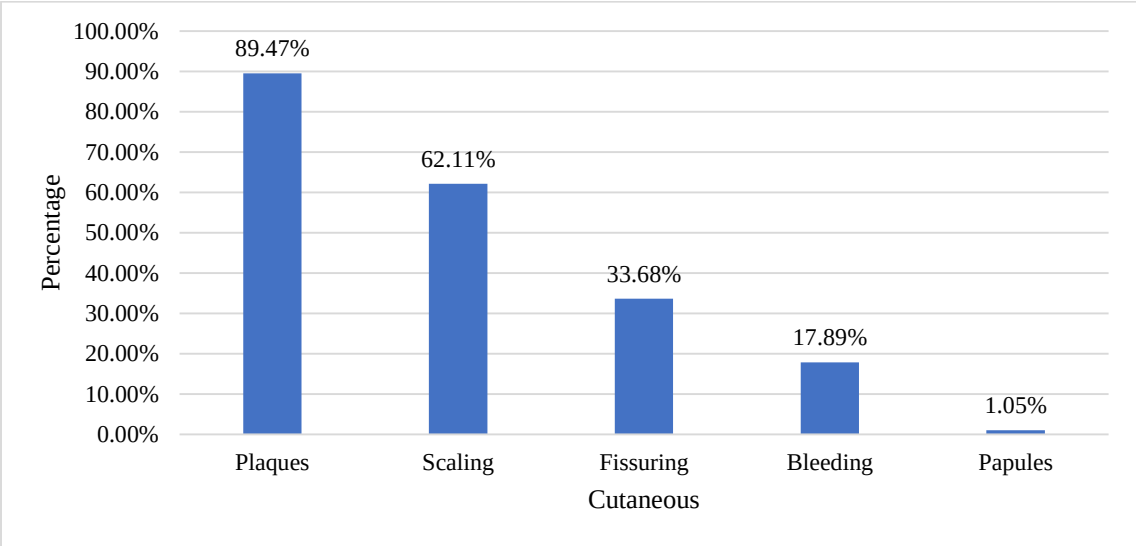
Among the study population, majority of 41 (43.16%) participants had no aggravating factors, followed by 22 (23.16%) participants had aggravation in the winter season, 15 (15.79%) participants had aggravation during work, 11 (11.58%) participants had aggravation during rainy season and 6 (6.32%) participants had aggravation while eating food. (Table 8)

Table 9: Descriptive analysis of Cutaneous in the study population (N=95)

Cutaneous manifestations	Frequency	Percentage
Plaques	85	89.47%
Scaling	59	62.11%
Fissuring	32	33.68%
Bleeding	17	17.89%
Papules	1	1.05%

Among the study population, majority of 85 (89.47%) participants had plaques, 59 (62.11%) participants had scaling, 32 (33.68%) participants had fissuring, 17 (17.89%) participants had bleeding, 1 (1.05%) participants had papules. (Table 9 & Figure 23)

Figure 23: Bar graph of Cutaneous in the research subjects (N=95)



Board 10: Review illustration of Site in the research subjects (N=95)

Site	Frequency	Percentage
Localized	92	96.84%
Bilateral	46	48.42%
Unilateral	38	40.00%

Among the study population, majority of 92 (96.84%) participants had localized ppk, 46 (48.42%) participants had bilateral, 38 (40.00%) participants had the disease in unilateral site. (Table10 & Figure 24)

Image 24: Bar graph of Site in the research subjects(N=95)

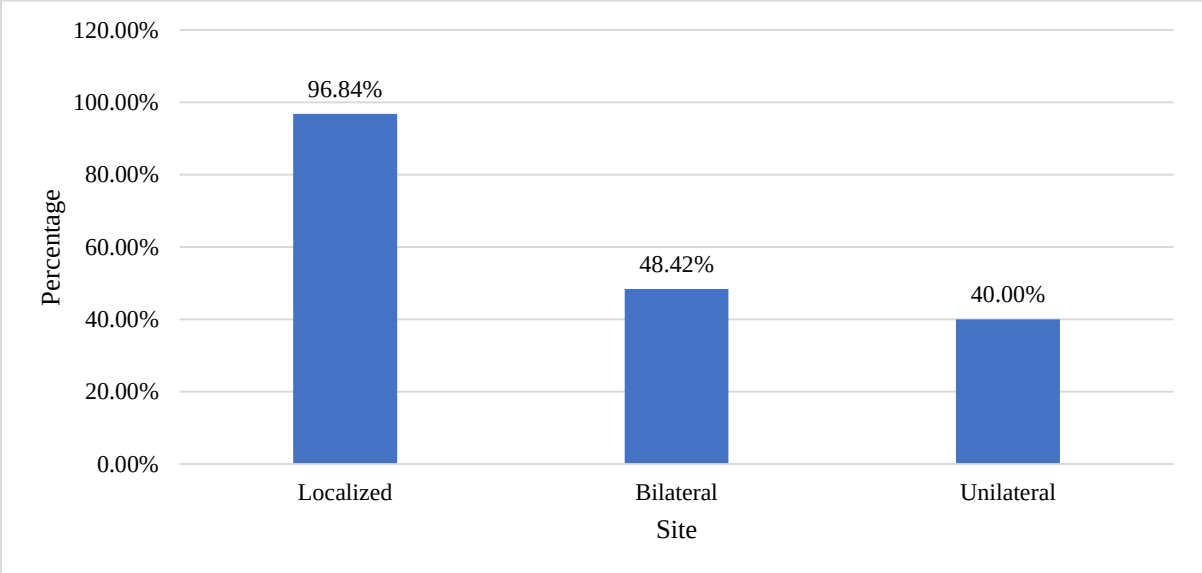


Table 11: Review illustrated Dermoscopic Findings in the research subjects (N=95)

Dermoscopic Findings	Incidence	Percentage
Diffuse white scales	39	41.05%
Yellow scales	29	30.53%
Few dotted vessels	15	15.79%
Dotted and globular vessels	11	11.58%
Salmon colored dots/globules	7	7.37%
Yellow crusts with punctate hemorrhages	6	6.32%
Structure less orange areas	3	3.16%
Yellow scales with brown orange dots	3	3.16%
Yellow crusts, few dotted vessels	2	2.11%
Yellow scales with brown to orange globules	2	2.11%

In the study population, majority of 39 (41.05%) participants had diffuse white scales on dermoscopy, followed by 29 (30.53%) participants had yellow scales, 15 (15.79%) participants had few dotted vessels as dermoscopic findings. (Table 11)

DISCUSSION

DISCUSSION:

The cutaneous condition known as palmoplantar keratodermas (PPKD) is marked by a bulging of the skin across the palms and soles that is unnatural and severe. Traditional classifications of palmoplantar keratodermas include hereditary and acquired types. These types are distinguished from one another by their hereditary pattern, the presence of transgradiens, their comorbidity with additional indication, and their degree of outermost layer of the skin involvement, which can be diffuse, focal, or punctate.[84] Both benign and malignant tumors can develop on the palms and soles. "The cutaneous horn, dermatofibroma, eccrine poroma, epidermal cyst, granuloma pyogenicum, and various nevi" are examples of common benign tumors. "Malignant melanoma, squamous cell carcinoma, and Kaposi's sarcoma" are a few examples of common malignant tumors.[82]

Some palmoplantar dermatoses solely affect the palms and soles, while others have a propensity to affect other body areas as well. Due, to the modification of conventional skin lesions, palmoplantar dermatoses may provide diagnostic problems. This group of illnesses may be occupationally debilitating in people whose livelihood depends on jobs that require manual labor and walking. [76]

A helpful, non-invasive tool for identifying numerous dermatological problems is dermatoscopy. During dermatoscopy of non-pigmented skin lesions, further morphologic properties such as cutaneous vascular pattern, scale colour and distributed sequence, and background colour can be detected. Dermatoscopy may be useful in the variance detection of palmoplantar dermatoses. "Yellowish-orange globules, yellowish scales, and yellowish crusts" are the most distinctive dermatoscopic characteristics of hand eczema. Previous

investigations have described the dermatoscopic characteristics of palmoplantar psoriasis as having a white scale color, a regular vascular distribution pattern, a light red background color, and dotted vessels. Numerous dermatoses, including “psoriasis, eczema, lichen planus, porokeratosis, and keratodermas,” are characterized by the presence of dotted vessels. [72]

There was paucity of literature in palmoplantar dermatoses; in order to better understand the signs and symptoms of palmoplantar dermatoses, this research was undertaken.

The study's goal was to assess the prevalence features of patients with palmoplantar dermatoses who were chosen randomly among those who visited out patient departments, such as age demographics, gender distribution, dermatoses involving the palms and soles, and the occurrence of participation of either or both of the palms and soles.

This cross-sectional study was conducted in 95 subjects with mean age of 32.30±18.66 yrs in the study population. Nearly more than half of the study subjects were male (57.89%) and female were 42.11%. The distribution of occupation among the study population are as follows: 23.16% were Students, 20.00% were house wives, 17.89% were in agriculture, 12.63% were not working, 10.53% were labourer, 9.47% were office workers and 3.16% were fisherman and mechanic. A similar study by Hongal, A et al[82] involved 300 subjects with females in majority (M/F- 45.3%/ 54.7%) and most of them belonged to age group 21-30 years (25.30%) and the average age was 34.32 years, Housewives made up the majority of the occupational group (30%), followed by students (22.3%), agriculturists (17.3%), skilled laborers (10.3%), unskilled laborers (5.7%), elderly retired workers (5.3%), professional workers (5%), business personnel (3%), kids (0.7%), and the unemployed (0.3%). This illustrates how crucial the palms and soles are for one's occupation. In addition to their functional roles in temperature regulation and tactile perception, the palms and soles of our

hands and feet serve a wide range of purposes, such as grasping, handling or control, performing precise movements of the palms, and moving around the soles. Dermatosis on the palms of the handand soles of the feet limits people's activities, especially manual laborers. While in a retrospective study by Kang et al.[89], involving 237 subjects the mean age was 37.5 years with male preponderance (ratio M:F- 1.01:1). In another study Kodali, Set al. [84] involved 100 subjects, with mean age was 43.72yrs and 54.00 % were men and 46.00 % were women patients. The incidence of palmoplantar keratosis of was majorly among farmers (45.00 %), followed by home-maker, physical workers and weavers (7.00 %). [84] The men predominance of palmoplantar keratoderma is most likely attributable to a variety of outdoor jobs and hobbies that lead to a proclivity for damage induced by physical workers and labouring or moving in a bare foot. This illustrates how crucial the palms and soles are for one's occupation. In addition to their functional roles in temperature regulation and tactile perception, the palms of the hand and soles of the feet serve a wide range of purposes, such as grasping, handling or control, performing precise movements of the palms, and moving around the soles. “Dermatosis” affecting the palms of the hand and soles of the feet limits people's ability to function, especially manual labourers.[82]

In Nair, P et al[80] study the most often impacted age range was the middle age group, which was 17–40 years (42.57%), with an average age of 35.14 years. This was comparable to our study and the common age groups for Bong Seon Kang et al.[89] and Kodali et al.[84] which were 40–59 years (36.2%) and 41–50 years (26%) and had an average age of 37.5 years and 43.72 years, individually.

Table 12: Comparing the occupation among the study population across various studies to present study

	Hongal, A et al[82]	Kodali, S et al. [84]	Nair, P et al [80]	Present study
Student	22.3%	8%	25.2%	23.16%
House Wife	30%	20%	30.2%	20.00%
Agriculture	17.3%	45%	-	17.89%
No Work	0.3%	5%	-	12.63%
Skilled Laborer	10.3%	8%	26.2%	10.53%
Office	5.7%	2%	11.9%	9.47%
Fisherman	-	Shephard-5%	-	3.16%
Mechanic	-	Weaver-7%	-	3.16%

Clinical presentation

The mean duration of PPK was 28.09±43.66 in the study population. Kang, B et al[89] found mean duration of PPK to be 35.9 months.

In the present study population, 11 (11.58%) participants had ICD feet, T.mannum, 10 (10.53%) participants had plantar eczema, 9 (9.47%) participants had plantar psoriasis, 7 (7.37%) participants had palmoplantar psoriasis, ICD palms. “Palmoplantar psoriasis (20.7%), moniliasis (19%), palmoplantar hyperhidrosis (7%), keratolysis exfoliativa (6%) and pitted keratolysis (6%)”, were the five diseases in Hongal, A et al[82] study. But according to Kang et al [89] study, .'s the five most prevalent palmoplantar dermatoses were “contact dermatitis (8.0%), verruca (11.4%), pompholyx (10.1%), palmoplantar keratoderma (8.9%), and palmoplantar pustulosis (23.2%)”. In Nair, P etal[80] study, “palmoplantar psoriasis” was the most prevalent dermatoses found in 28.22% cases after keratinizing disorders in 26.72%, 13.36% cases with eczema, 9.90% cases with viral infections, 7.92% cases with fungal infections and 4.45% cases with drug reactions. In Vasantkumar et al [76] study, Palmoplantar psoriasis (23.5%) was found in the majority followed by Palmoplantar keratoderma in 12.5%, Moniliasis in 11.5%, “Dyshydrodic eczema” in 8.5%, “Hyperkeratotic eczema” in 7.5%

The common symptom among the current study population was itching in 66.32%, burning in 64.21%, pain in 45.26% and with no symptoms were only 1.05%. Itching was reported in several studies [89, 76] to be the main symptom of palmoplantar dermatoses, despite the fact that the length of complaints varied greatly and there was no clear pattern. The majority of patients in Nair, P et al [80] study (31.7%) had complaints that had persisted for less than a month, in contrast to the research by "Bong Seon Kang et al",[89] where the time span varied between 48 hours and fifty years. In contrast, Vasanthkumar, Y et al [76] study, found majority of the patients (41.5%) having pruritis as their primary complaint, which was followed by complaints of scaling (18.5%), erythema (17.5%), pain (14%), and burning (8.5%) sensations.

In our study majority (43.16%) of the subjects had no aggravating factors, followed by 23.16% participants had aggravation in the winter season, 15.79% of them had aggravation during work, 11.58% had aggravation during rainy season and 6.32% had aggravation while eating food. In Nair P et al[80] study only 29.7% subjects exhibited seasonality fluctuation on the other hand 48.5% of subjects there was no identified additional circumstance. The same findings were found in numerous studies: psoriasis and eczema are typically worsened in the cold season whereas fungal infections are common in the hottest season.

In the current study, most of them had plaques (89.47%) followed by scalings in 62.11%, fissuring in 33.68%, bleeding in 17.89% and papules in 1.05%.

In our study, majority of (96.84%) participants had localized ppk, 48.42% had bilateral, 40.00% participants had the disease in unilateral site. In Nair, P et al[80] study, of the 134 cases with palmar involvement, 9.4% had unilateral whereas 56.9% had bilateral involvement. A

single lesion was seen in 16.34% of subjects and 50% had multiple lesions. Of the 140 patients with sole involvement, 14.9% had unilateral whereas 54.5% had bilateral involvement.[80]

Dermascopic findings

In the study population, majority of (41.05%) participants had diffuse white scales on dermoscopy, followed by 30.53% had yellow scales, 15.79% had few dotted vessels as dermoscopic findings. Nayak, S et al [20] study aimed to study the dermoscopic features of various dermatologic diseases and found that all inflammatory conditions showed the presence of scales, which were brilliantly white and thick in peripheral psoriasis, yellow in dermatitis and scarce and irregular in the other diseases. Lallas et al.[90] observed dotted vessels and diffuse white scales in majority (90%) of their cases of PPK. A case study by Errichetti, E et al, on dermascopy found scalings which were white with farrows present.[7] In addition the dermascopic findings of PPK from Tubanur Ç et al[72] study observed white and yellowish scales, dotted vessels, patchy orange areas and amber white scales The present study findings were in accordance these studies. [7, 72]

SUMMARY

Summary:

The body parts most obviously affected by various dermatoses are the palms and soles. The patient might be very concerned about this, and it might create a diagnostic conundrum. Additionally, palmoplantar dermatoses restrict our daily activities and have a big result on our standard of living. Studying the clinical characteristics of subjects with palmoplantar dermatoses at a specialized consultative healthcare facility is the goal.

This “cross-sectional” investigation was carried out on 95 subjects with mean age of 32.30±18.66 in the study population. nearly more than half of the study subjects were male (57.89%) and female were 42.11%. The distribution of occupation among the study population are as follows: 23.16% were Students, 20.00% were house wives, 17.89% were in agriculture, 12.63% were not working, 10.53% were labourer, 9.47% were office workers and 3.16% were fisherman and mechanic. In the study population, 11 (11.58%) participants had ICD feet, T.mannum, 10 (10.53%) participants had plantar eczema, 9 (9.47%) participants had plantar psoriasis, 7 (7.37%) participants had palmoplantar psoriasis, ICD palms. The mean duration of the condition was 28.09±43.66 in the study population.The common symptom among the study population was itching in 66.32%, burning in 64.21%, pain in 45.26% and with no symptoms were only 1.05%.Majority (43.16%) of the subjects had no aggravating factors, followed by 23.16% participants had aggravation in the winter season, 15.79% of them had aggravation during work, 11.58% had aggravation during rainy season and 6.32% had aggravation while eating food. Most of them had plaques (89.47%) followed by scalings in 62.11%, fissuring in 33.68%, bleeding in 17.89% and papules in 1.05%.Majority of (96.84%) participants had localized ppk, 48.42% had bilateral, 40.00% participants had the disease in unilateral site. In the study population, majority of (41.05%) participants had diffuse white scales on dermoscopy, followed by 30.53% had yellow scales, 15.79% had few dotted vessels as dermoscopic findings.

Limitations and recommendations:

- To understand the determinants of palmoplantar dermatoses, larger populations need to be studied.
- To confirm the detection, skin lesion removal by biopsy technique must always be performed and subjected to a histopathological examination using specific stains.

CONCLUSION

Conclusion:

- The body parts most obviously affected by various dermatoses are the palms and soles. The patient might be very concerned about this, and it might create a diagnostic conundrum.
- Additionally, palmoplantar dermatoses restrict our daily activities and have a big result on our standard of living. Studying the clinical characteristics of patients with palmoplantar dermatoses at a specialized consultative health care facility was the goal.
- Dermoscopy results offer an additional hint for the identification of palmoplantar dermatoses and are useful for prognostic assessment and tracking therapy response. Hence from the present study findings we found dermoscopy to be a useful tool in identifying palmoplantar dermatoses among the subjects visiting the dermatology department.

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ANNEXURES

PROFORMA

Patient particulars **Case number**

NAME:	**OP/IP NUMBER**
AGE& GENDER:	**DATE:**
ADDRESS:	**Occupation:**

CHIEF COMPLAINTS:

HISTORY OF PRESENT ILLNESS:

1. Age of Onset:
2. Site of onset:
3. Duration:
4. Any Associated Symptoms: itching/ burning/ pain
5. Mode of spread: static/ growing/ receding
6. Use of any drugs before onset of illness
7. Aggravating factors: Occupational/ hobbies/ trauma/ drug/ work/ sunlight/ emotional factors/ menstruation/ pregnancy/ food/ cosmetics/ chemicals/ any other:
8. Recovery: Some/ good/ poor/ no response

PAST HISTORY:

Associated systemic diseases: DM/ HTN/ Thyroid disease

Associated cutaneous diseases:

FAMILY HISTORY:

A. Similar complaints:

B. Other skin problems:

PERSONAL HISTORY:

Diet: veg/ nonveg/ mixed

Bowel/ Bladder habits: regular/ altered.

Sleep- adequate/ disturbed

Appetite-

Habits: smoking/ tobacco chewing/ alcoholism

TREATMENT HISTORY:

ON EXAMINATION:

1)General physical examination:

Built and Nourishment:

Pallor/ Icterus/ Clubbing/ Cyanosis/ Significant lymph node enlargement/ Edema

Vitals: Temperature-

Pulse -

Blood pressure-

Respiratory rate-

2)Systemic examination:

1. CVS
2. RS
3. PER ABDOMEN
4. CNS

3)Cutaneous examination:

Types of Palmo Plantar Keratoderma

a. Generalized/ Localized
b. Unilateral/ Bilateral
c. Symmetrical/ Asymmetrical

Sites of involvement –

Hands- palms, dorsum

Feet- soles, dorsum

Other cutaneous findings if any:

4)Hair examination-

5)Nail examination-

6)Oral / mucosal examination –

INVESTIGATIONS:

1. Complete haemogram,
2. RBS
3. Thyroid function tests
4. Skin biopsy wherever required
5. Other tests if required

FINAL DIAGNOSIS:

TREATMENT:

REMARKS OF THE GUIDE:

PATIENT INFORMATION SHEET

STUDY TITLE: A CROSS SECTIONAL STUDY OF CLINICAL MANIFESTATIONS AND DERMOSCOPIC FINDINGS IN PALMOPLANTAR KERATODERMA

Study site: R.L Jalappa Hospital,Tamaka, Kolar.

Aim:

To document the clinical and dermoscopic findings in palmoplantar keratoderma.

Palmoplantar keratodermas are a heterogenous group of disorders characterized by hyperkeratosis of palms and soles. They may be inherited or acquired. Clinically there are three major patterns of involvement. They are diffuse, focal and punctate typesaffecting both gender, which gives psychological distress affecting quality of life of the patient, and it is also associated with other diseases. It is not contagious and not transmitted from one person to another by touching, eating together, sharing clothes.

Palmoplantar keratodermas can be diagnosed by clinical examination ,dermoscopy and biopsy in doubtful cases. Other associated diseases can be diagnosed by clinical history, examination and blood test.

Please read the following information and discuss with your family members. You can ask any question regarding the study. If you agree to participate in this study we will collect information(as per proforma) from you. Relevant blood investigations will be carried out if required. 2ml of blood will be collected from vein of arm under aseptic conditions and sent to laboratory for investigations if necessary and results will be documented.This is a non funded study. The information collected will be used for dissertation and publication only.

All information collected from you will be kept confidential and will not be disclosed to any outsider. Your identity will not be revealed. The expenses required for the above investigations will be funded by the study investigator. This study has been reviewed by the Institutional Ethics Committee and you are free to contact the member of the Institutional Ethics Committee. There is no compulsion to agree to this study. The care you will get will not change if you don't wish to participate. You are required to sign/ provide thumb impression only if you voluntarily agree to participate in this study.

For any further clarification you can contact the study investigator:

DR.YERRAGANGU DEEPTHI CHOWDARY
Mobile no: 7382756654
E-mail id: yerragangudeepthi@gmail.com

CONSENT FORM

Study title:

A CROSS SECTIONAL STUDY OF CLINICAL MANIFESTATIONS AND DERMOSCOPIC FINDINGS IN PALMOPLANTAR KERATODERMA

Chief researcher/ PG guide's name: DR. YERRAGANGU DEEPTHI CHOWDARY

Under the guidance of: DR. RAJASEKHAR T.S.

Name of the subject:

Age :

Address :

I have been informed in my own vernacular language the purpose of the study, the necessity of relevant investigations to be carried out and photographs to be taken.

a. I understand that the medical information produced by this study will become part of institutional record and will be kept confidential by the said institute.
b. I understand that my participation is voluntary and may refuse to participate or may withdraw my consent and discontinue participation at any time without prejudice to my present or future care at this institution.
c. I agree not to restrict the use of any data or results that arise from this study provided such a use is only for scientific purpose(s).
d. I confirm that _____ (chief researcher/ name of PG guide) has explained to me the purpose of research and the study procedure that I will undergo and the possible risks and discomforts that I may experience, in my own language. I hereby agree to give valid consent to participate as a subject in this research project.

Participant's signature

Signature of the witness: Date:

I have explained to _____ (subject) the purpose of the research, the possible risk and benefits to the best of my ability.

Chief Researcher/ Guide signature Date:

ಒಪ್ಪಿಗೆ ಪತ್ರ

ಅಧ್ಯಯನದ ಶೀರ್ಷಿಕೆ:

ಪಾಮೋಪ್ಲಾಂಟರ್ ಕೆರಾಟೊ ಡರ್ಮದಲ್ಲಿನ ಕ್ಲಿನಿಕಲ್ ಅಭಿವ್ಯಕ್ತಿಗಳು ಮತ್ತು ಡರ್ಮಸ್ಕೋಪಿಕ್ ಸಂಶೋಧನೆಗಳ ಅಡ್ಡ ವಿಭಾಗೀಯ ಅಧ್ಯಯನ.

ಮುಖ್ಯ ಸಂಶೋಧಕ / ಪಿಜಿ ಮಾರ್ಗದರ್ಶಿ ಹೆಸರು : ಡಾ.ಯಿರಗಂಗು ದೀಪ್ತಿ ಚೌದರಿ

ಮಾರ್ಗದರ್ಶನದಲ್ಲಿ : ಡಾ. ರಾಜಶೇಖರ್ ಟಿ.ಎಸ್.

ವಿಷಯದ ಹೆಸರು:

ವಯಸ್ಸು:

ವಿಳಾಸ:

ಎ. ಅಧ್ಯಯನದ ಉದ್ದೇಶ, ಸಂಬಂಧಿತ ತನಿಖೆಗಳ ಅವಶ್ಯಕತೆ ಮತ್ತು ತೆಗೆದುಕೊಳ್ಳಬೇಕಾದ ಛಾಯಾಚಿತ್ರಗಳನ್ನು ನನ್ನ ಸ್ವಂತ ಭಾಷೆಯಲ್ಲಿ ನನಗೆ ತಿಳಿಸಲಾಗಿದೆ.

ಬಿ. ಈ ಅಧ್ಯಯನದಿಂದ ಉತ್ಪತ್ತಿಯಾಗುವ ವೈದ್ಯಕೀಯ ಮಾಹಿತಿಯು ಸಾಂಸ್ಥಿಕ ದಾಖಲೆಯ ಭಾಗವಾಗಲಿದೆ ಮತ್ತು ಈ ಸಂಸ್ಥೆಯು ಗೌಪ್ಯವಾಗಿಡುತ್ತದೆ ಎಂದು ನಾನು ಅರ್ಥಮಾಡಿಕೊಂಡಿದ್ದೇನೆ.

ಸಿ. ನನ್ನ ಭಾಗವಹಿಸುವಿಕೆಯು ಸ್ವಯಂಪ್ರೇರಿತವಾಗಿದೆ ಎಂದು ನಾನು ಅರ್ಥಮಾಡಿಕೊಂಡಿದ್ದೇನೆ ಮತ್ತು ಭಾಗವಹಿಸಲು ನಿರಾಕರಿಸಬಹುದು ಅಥವಾ ನನ್ನ ಒಪ್ಪಿಗೆಯನ್ನು ಹಿಂತೆಗೆದುಕೊಳ್ಳಬಹುದು ಮತ್ತು ಈ ಸಂಸ್ಥೆಯಲ್ಲಿ ನನ್ನ ಪ್ರಸ್ತುತ ಅಥವಾ ಭವಿಷ್ಯದ ಆರೈಕೆಗೆ ಯಾವುದೇ ಪೂರ್ವಾಗ್ರಹವಿಲ್ಲದೆ ಯಾವುದೇ ಸಮಯದಲ್ಲಿ ಭಾಗವಹಿಸುವುದನ್ನು ನಿಲ್ಲಿಸಬಹುದು.

ಡಿ. ಈ ಅಧ್ಯಯನವು ಉದ್ಭವಿಸುವ ಯಾವುದೇ ಡೇಟಾ ಅಥವಾ ಫಲಿತಾಂಶಗಳ ಬಳಕೆಯನ್ನು ನಿರ್ಬಂಧಿಸದಿರಲು ನಾನು ಒಪ್ಪುತ್ತೇನೆ, ಅಂತಹ ಬಳಕೆಯು ವೈಜ್ಞಾನಿಕ ಉದ್ದೇಶಕ್ಕಾಗಿ ಮಾತ್ರ.

ಇ. _____ (ಪಿಜಿ ಮಾರ್ಗದರ್ಶಿಯ ಮುಖ್ಯ ಸಂಶೋಧಕ / ಹೆಸರು) ರವರು, ನನಗೆ ಸಂಶೋಧನೆಯ ಉದ್ದೇಶ ಮತ್ತು ನಾನು ಅನುಭವಿಸಲಿರುವ ಅಧ್ಯಯನ ವಿಧಾನ ಮತ್ತು ಅನುಭವಿಸಬಹುದಾದ ಸಂಭವನೀಯ ಅಪಾಯಗಳು ಮತ್ತು ಅಸ್ವಸ್ಥತೆಗಳನ್ನು ವಿವರಿಸಲಾಗಿದೆ ಎಂದು ನಾನು ಖಚಿತಪಡಿಸುತ್ತೇನೆ. ಈ ಸಂಶೋಧನಾ ಯೋಜನೆಯಲ್ಲಿ ವಿಷಯವಾಗಿ ಭಾಗವಹಿಸಲು ಮಾನ್ಯ ಒಪ್ಪಿಗೆ ನೀಡಲು ನಾನು ಈ ಮೂಲಕ ಒಪ್ಪುತ್ತೇನೆ.

ಭಾಗವಹಿಸುವವರ ಸಹಿ

ಸಾಕ್ಷಿಯ ಸಹಿ: ದಿನಾಂಕ:

ರೋಗಿಯ ಮಾಹಿತಿ ಹಾಳೆ

ಅಧ್ಯಯನ ಶೀರ್ಷಿಕೆ: ಪಾಮೋಪ್ಲಾಂಟರ್ ಕೆರಾಟೊ ಡರ್ಮದಲ್ಲಿನ ಕ್ಲಿನಿಕಲ್ ಅಭಿವ್ಯಕ್ತಿಗಳು ಮತ್ತು ಡರ್ಮಸ್ಕೋಪಿಕ್ ಸಂಶೋಧನೆಗಳ ಅಡ್ಡ ವಿಭಾಗೀಯ ಅಧ್ಯಯನ .

ಅಧ್ಯಯನ ಸ್ಥಳ: ಆರ್.ಎಲ್ ಜಲಪ್ಪ ಆಸ್ಪತ್ರೆ, ತಮಾಕಾ, ಕೋಲಾರ.

ಗುರಿ: -ಪಾಮೋಪ್ಲಾಂಟರ್ ಕೆರಟೋಡರ್ಮಾದಲ್ಲಿ ಕ್ಲಿನಿಕಲ್ ಮತ್ತು ಡರ್ಮೋಸ್ಕೋಪಿಕ್ ಸಂಶೋಧನೆಗಳನ್ನು ದಾಖಲಿಸಲು.

ಪಾಮೋಪ್ಲಾಂಟರ್ ಕೆರಾಟೋಡರ್ಮಾಸ್ ಅಂಗೈ ಮತ್ತು ಅಡಿಭಾಗದ ಹೈಪರ್‌ಕೆರಾಟೋಸಿಸ್ನಿಂದ ನಿರೂಪಿಸಲ್ಪಟ್ಟ ಅಸ್ವಸ್ಥತೆಗಳ ಒಂದು ಭಿನ್ನಜಾತಿಯ ಗುಂಪು. ಅವುಗಳನ್ನು ಆನುವಂಶಿಕವಾಗಿ ಅಥವಾ ಸ್ವಾಧೀನಪಡಿಸಿಕೊಳ್ಳಬಹುದು. ಪ್ರಾಯೋಗಿಕವಾಗಿ ಒಳಗೊಳ್ಳುವಿಕೆಯ ಮೂರು ಪ್ರಮುಖ ಮಾದರಿಗಳಿವೆ. ಅವು ಪ್ರಸರಣ, ಫೋಕಲ್ ಮತ್ತು ಪಂಕ್ಟೇಟ್ ವಿಧಗಳಾಗಿವೆ, ಇದು ಎರಡೂ ಲಿಂಗಗಳ ಮೇಲೆ ಪರಿಣಾಮ ಬೀರುತ್ತದೆ, ಇದು ರೋಗಿಯ ಜೀವನದ ಗುಣಮಟ್ಟದ ಮೇಲೆ ಪರಿಣಾಮ ಬೀರುವ ಮಾನಸಿಕ ತೊಂದರೆಗಳನ್ನು ನೀಡುತ್ತದೆ ಮತ್ತು ಇದು ಇತರ ಕಾಯಿಲೆಗಳಿಗೆ ಸಹ ಸಂಬಂಧಿಸಿದೆ. ಇದು ಸಾಂಕ್ರಾಮಿಕವಲ್ಲ ಮತ್ತು ಸ್ಪರ್ಶಿಸುವ ಮೂಲಕ, ಒಟ್ಟಿಗೆ ತಿನ್ನುವ ಮೂಲಕ, ಬಟ್ಟೆಗಳನ್ನು ಹಂಚಿಕೊಳ್ಳುವ ಮೂಲಕ ಒಬ್ಬ ವ್ಯಕ್ತಿಯಿಂದ ಇನ್ನೊಬ್ಬರಿಗೆ ಹರಡುವುದಿಲ್ಲ.

ಪಾಮೋಪ್ಲಾಂಟರ್ ಕೆರಟೋಡರ್ಮಾಸ್ ಅನ್ನು ಕ್ಲಿನಿಕಲ್ ಪರೀಕ್ಷೆ, ಡರ್ಮೋಸ್ಕೋಪಿ ಮತ್ತು ಅನುಮಾನಾಸ್ಪದ ಸಂದರ್ಭಗಳಲ್ಲಿ ಬಯಾಪ್ಸಿ ಮೂಲಕ ರೋಗನಿರ್ಣಯ ಮಾಡಬಹುದು. ಕ್ಲಿನಿಕಲ್ ಇತಿಹಾಸ, ಪರೀಕ್ಷೆ ಮತ್ತು ರಕ್ತ ಪರೀಕ್ಷೆಯಿಂದ ಇತರ ಸಂಬಂಧಿತ ಕಾಯಿಲೆಗಳನ್ನು ಕಂಡುಹಿಡಿಯಬಹುದು.

ದಯವಿಟ್ಟು ಈ ಕೆಳಗಿನ ಮಾಹಿತಿಯನ್ನು ಓದಿ ಮತ್ತು ನಿಮ್ಮ ಕುಟುಂಬ ಸದಸ್ಯರೊಂದಿಗೆ ಚರ್ಚಿಸಿ. ಅಧ್ಯಯನಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ ನೀವು ಯಾವುದೇ ಪ್ರಶ್ನೆಯನ್ನು ಕೇಳಬಹುದು. ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ನೀವು ಒಪ್ಪಿದರೆ ನಾವು ನಿಮ್ಮಿಂದ ಮಾಹಿತಿಯನ್ನು ಸಂಗ್ರಹಿಸುತ್ತೇವೆ (ಪ್ರೊಫಾರ್ಮಾದ ಪ್ರಕಾರ). ಅಗತ್ಯವಿದ್ದರೆ ಸಂಬಂಧಿತ ರಕ್ತ ತನಿಖೆ ನಡೆಸಲಾಗುವುದು. ಅಸೆಪ್ಟಿಕ್ ಪರಿಸ್ಥಿತಿಗಳಲ್ಲಿ 2 ಎಂಎಲ್ ರಕ್ತವನ್ನು ತೋಳಿನ ರಕ್ತನಾಳದಿಂದ ಸಂಗ್ರಹಿಸಲಾಗುತ್ತದೆ ಮತ್ತು ಅಗತ್ಯವಿದ್ದರೆ ತನಿಖೆಗಾಗಿ ಪ್ರಯೋಗಾಲಯಕ್ಕೆ ಕಳುಹಿಸಲಾಗುತ್ತದೆ ಮತ್ತು ಫಲಿತಾಂಶಗಳನ್ನು ದಾಖಲಿಸಲಾಗುತ್ತದೆ.ಇದು ಧನಸಹಾಯವಿಲ್ಲದ ಅಧ್ಯಯನವಾಗಿದೆ. ಸಂಗ್ರಹಿಸಿದ ಈ ಮಾಹಿತಿಯನ್ನು ಪ್ರಬಂಧ ಮತ್ತು ಪ್ರಕಟಣೆಗೆ ಮಾತ್ರ ಬಳಸಲಾಗುತ್ತದೆ.

ನಿಮ್ಮಿಂದ ಸಂಗ್ರಹಿಸಲಾದ ಎಲ್ಲಾ ಮಾಹಿತಿಯನ್ನು ಗೌಪ್ಯವಾಗಿಡಲಾಗುತ್ತದೆ ಮತ್ತು ಯಾವುದೇ ಹೊರಗಿನವರಿಗೆ ಬಹಿರಂಗಪಡಿಸುವುದಿಲ್ಲ. ನಿಮ್ಮ ಗುರುತು ಬಹಿರಂಗಗೊಳ್ಳುವುದಿಲ್ಲ. ಮೇಲಿನ ತನಿಖೆಗೆ ಅಗತ್ಯವಾದ ಖರ್ಚುಗಳನ್ನು ಅಧ್ಯಯನ ತನಿಖಾಧಿಕಾರಿಗಳು ನೀಡುತ್ತಾರೆ. ಈ ಅಧ್ಯಯನವನ್ನು ಸಾಂಸ್ಥಿಕ ನೈತಿಕ ಸಮಿತಿಯು ಪರಿಶೀಲಿಸಿದೆ ಮತ್ತು ಸಾಂಸ್ಥಿಕ ನೈತಿಕ ಸಮಿತಿಯ ಸದಸ್ಯರನ್ನು ಸಂಪರ್ಕಿಸಲು ನೀವು ಮುಕ್ತರಾಗಿದ್ದೀರಿ. ಈ ಅಧ್ಯಯನವನ್ನು ಒಪ್ಪಿಕೊಳ್ಳಲು ಯಾವುದೇ ಬಲವಂತವಿಲ್ಲ. ನೀವು ಭಾಗವಹಿಸಲು ಇಚ್ಛಿಸದಿದ್ದರೆ ನೀವು ಪಡೆಯುವ ಕಾಳಜಿ ಬದಲಾಗುವುದಿಲ್ಲ. ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ನೀವು ಸ್ವಯಂಪ್ರೇರಣೆಯಿಂದ ಒಪ್ಪಿಕೊಂಡರೆ ಮಾತ್ರ ನೀವು ಹೆಬ್ಬೆರಳು ಅನಿಸಿಕೆ ಸಹಿ / ಒದಗಿಸುವ ಅಗತ್ಯವಿದೆ.

ಯಾವುದೇ ಹೆಚ್ಚಿನ ಸ್ಪಷ್ಟೀಕರಣಕ್ಕಾಗಿ ನೀವು ಅಧ್ಯಯನ ತನಿಖಾಧಿಕಾರಿಯನ್ನು ಸಂಪರ್ಕಿಸಬಹುದು:

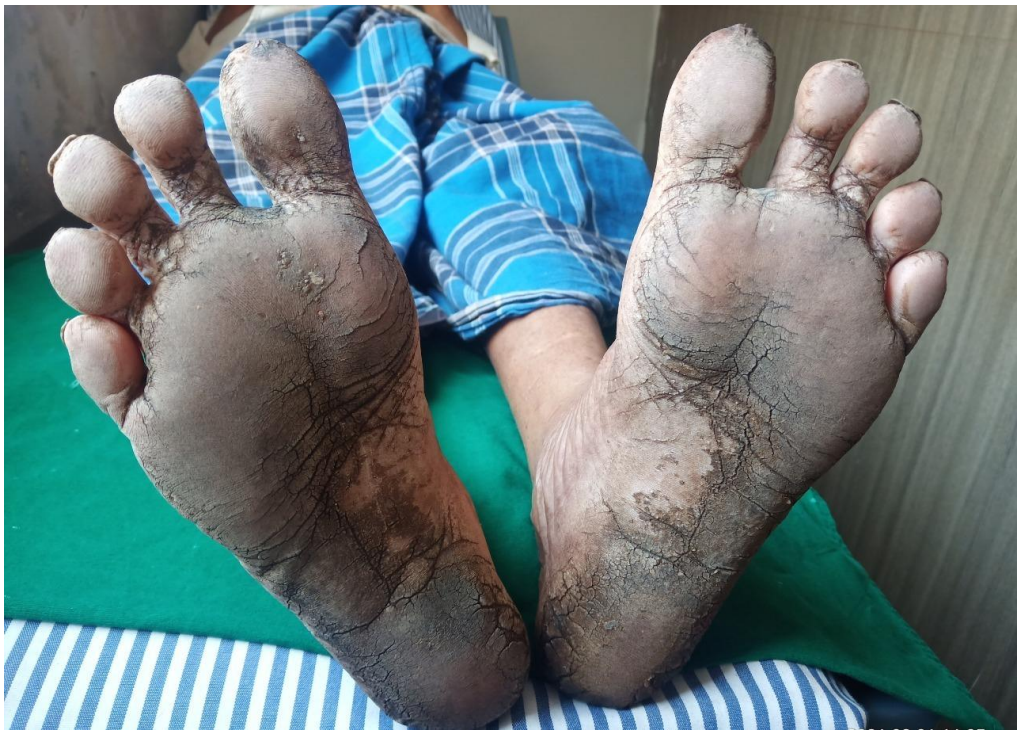
ಡಿ.ಆರ್. ಯೆರಗಂಗು ದೀಪ್ತಿ ಚೌದರಿ

ಮೊಬೈಲ್ ಸಂಖ್ಯೆ: 7382756654

ಇ-ಮೇಲ್ ಐಡಿ: yerragangudeepthi@gmail.com

Clinical images

Figure 1: Diffuse hyperpigmentation with fissuring seen on both soles = Pityriasis Rubra Pilaris



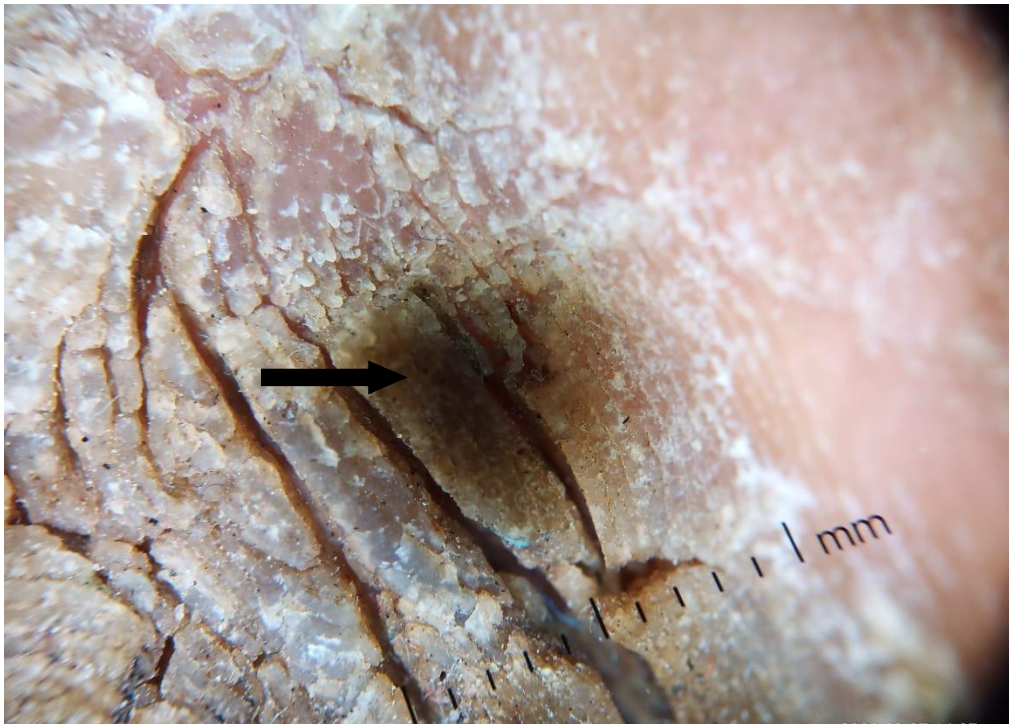


Figure 2: Amber areas with fissuring seen on dermoscopy = Pityriasisrubra pilaris

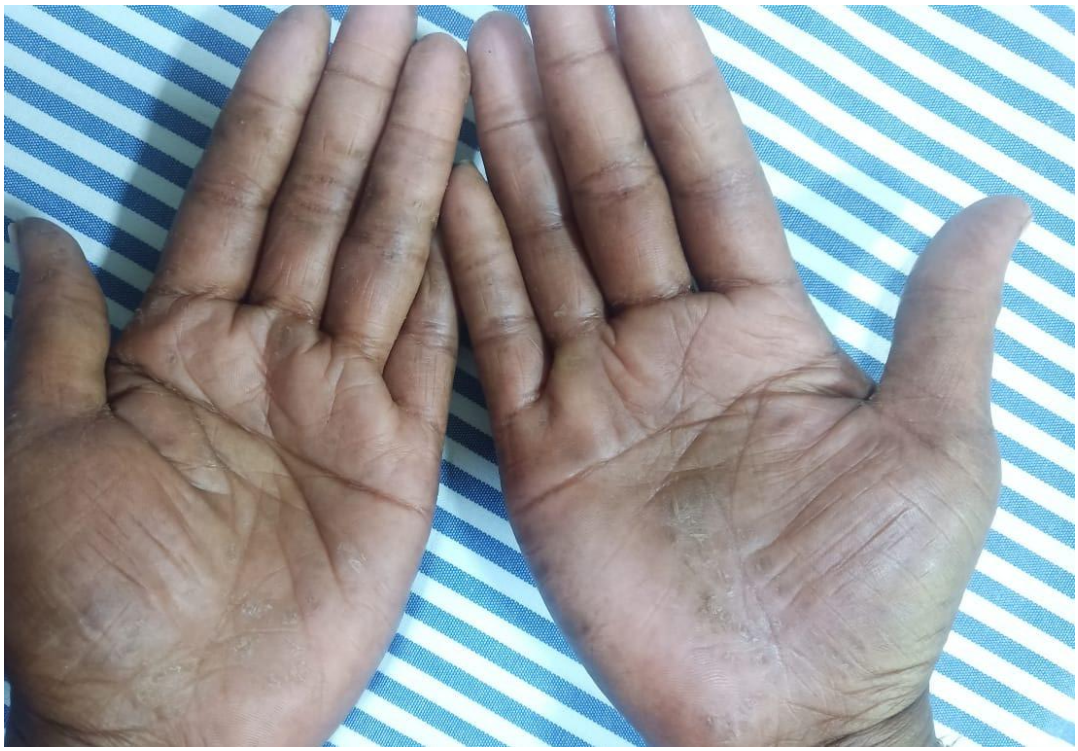


Figure 3: Irritant contact dermatitis= Hyperpigmented plaques with mild scaling seen on both palms

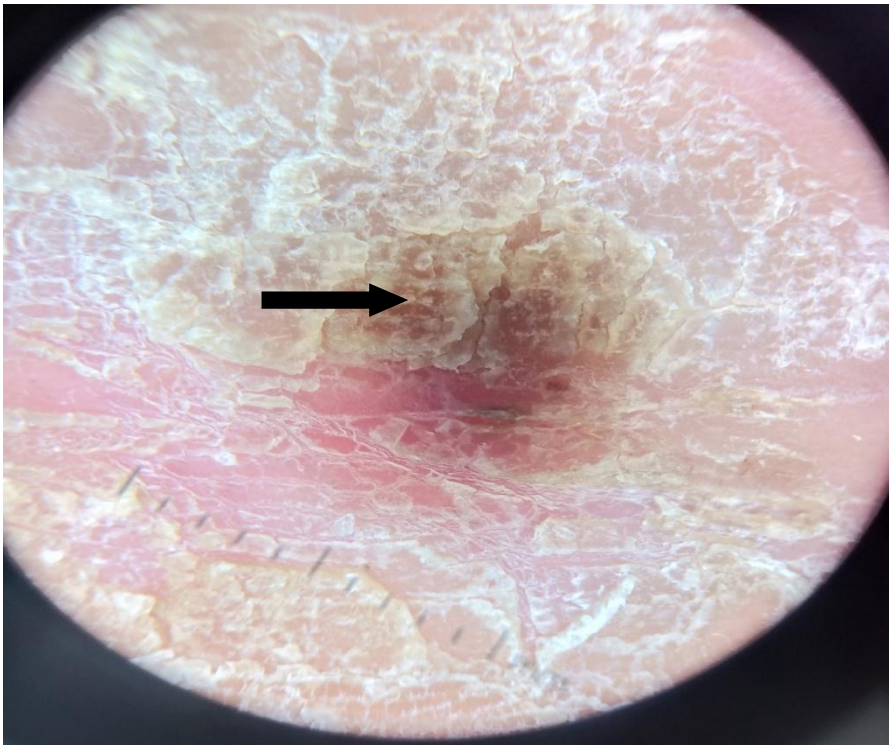


Figure 4: Dermoscopic image of ICD= yellow and white scaling seen

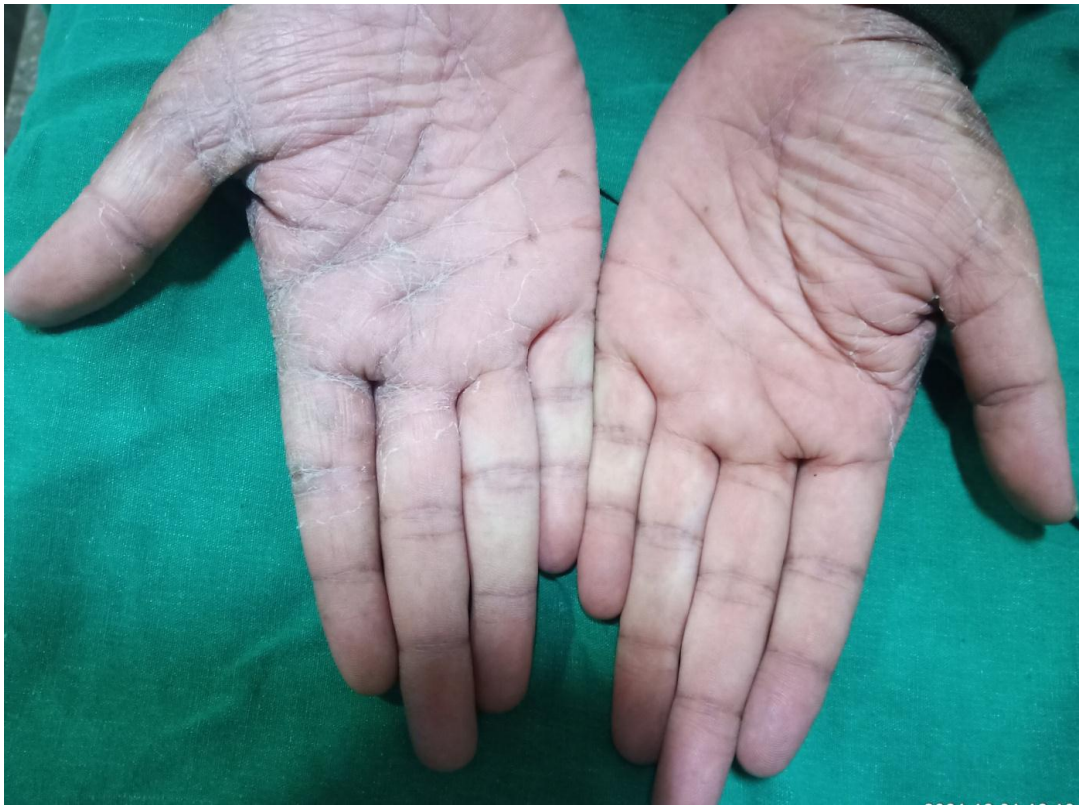


Figure 5a: Few hyperpigmented plaques with diffuse scaling seen over both palms= Tinea mannum

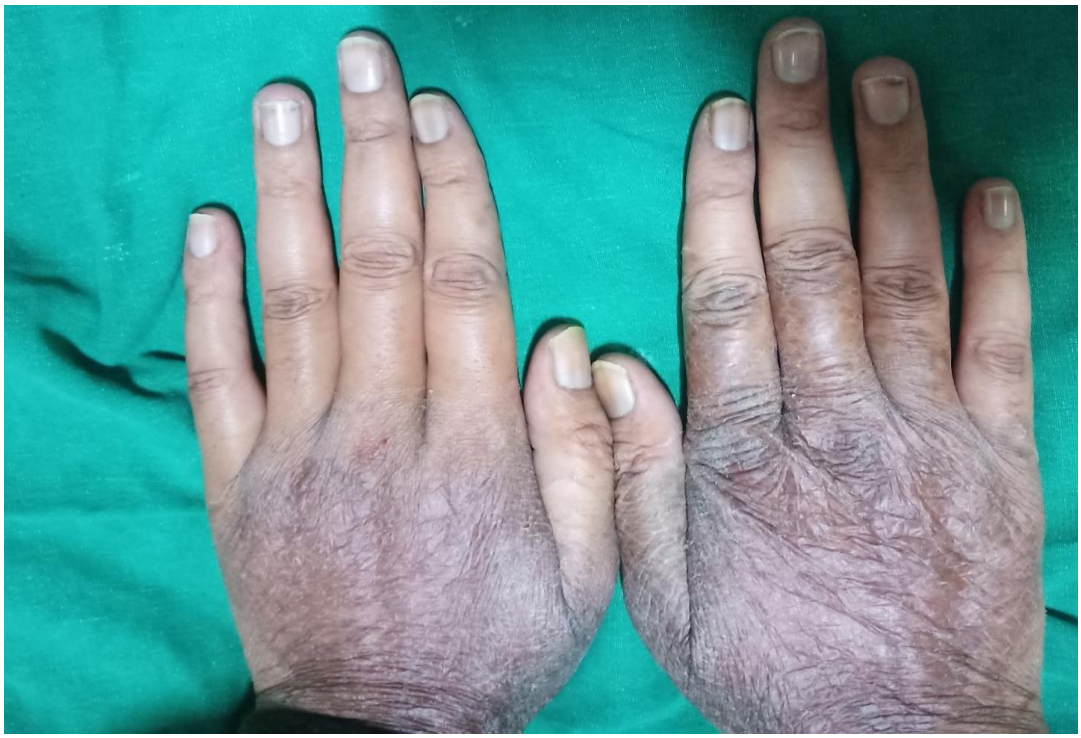


Figure 5b: Tinea mannum= Mild scaling seen on dorsum of hands

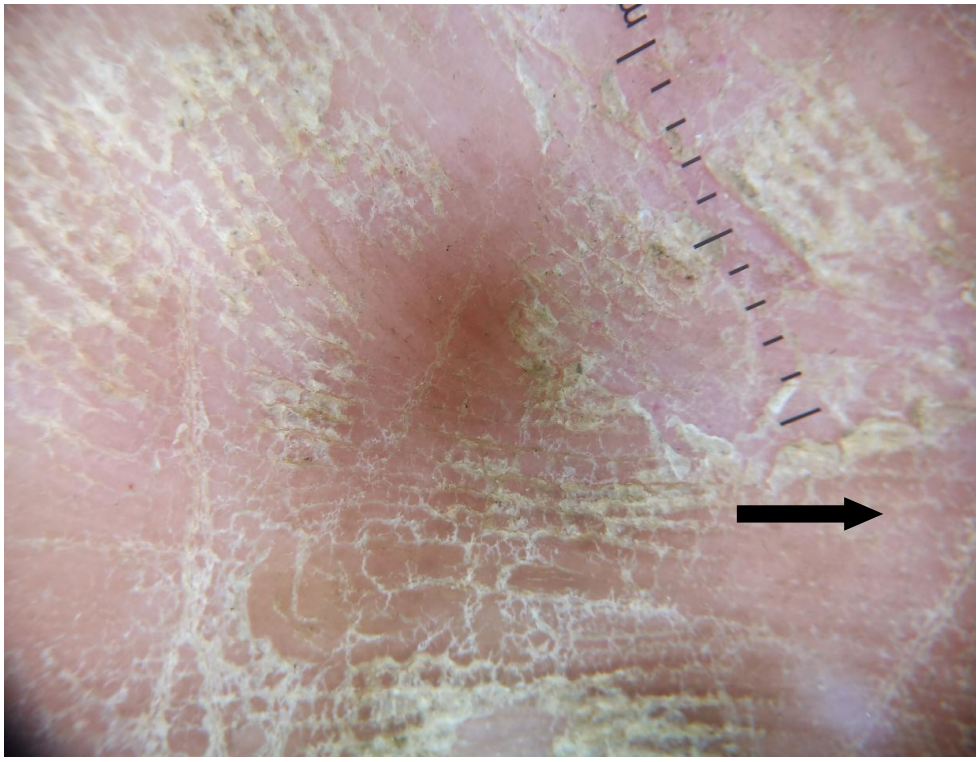


Figure 6: Tinea mannum on dermoscopy= Diffuse white scaling seen

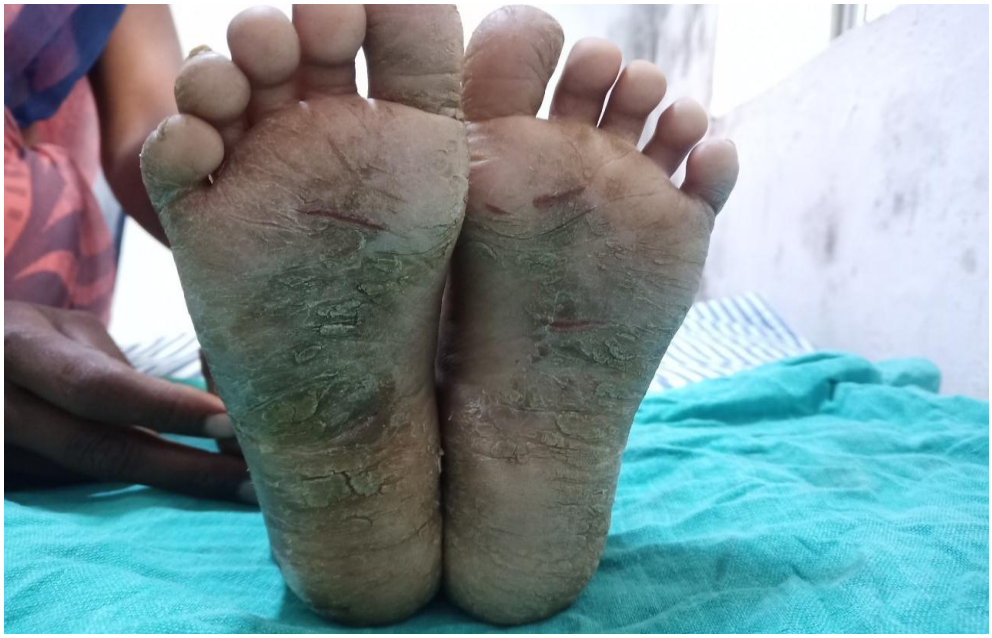


Figure 7 Plantar psoriasis= Hyperkeratotic plaques with scales along with fissuring present over both soles

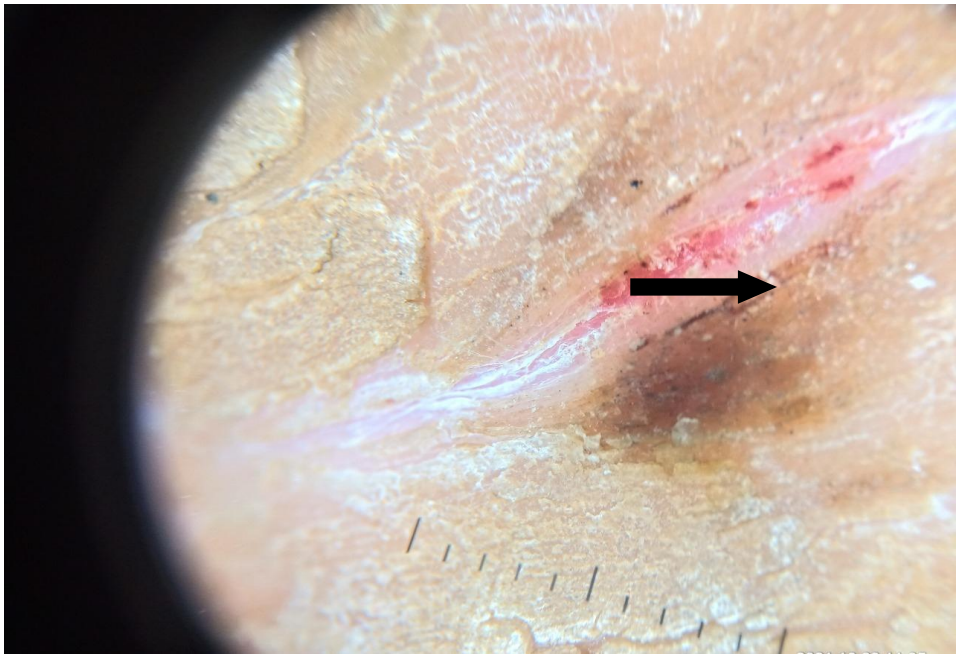


Figure 8: Plantar psoriasis on dermoscopy= White scales and blood vessels seen along skin furrows

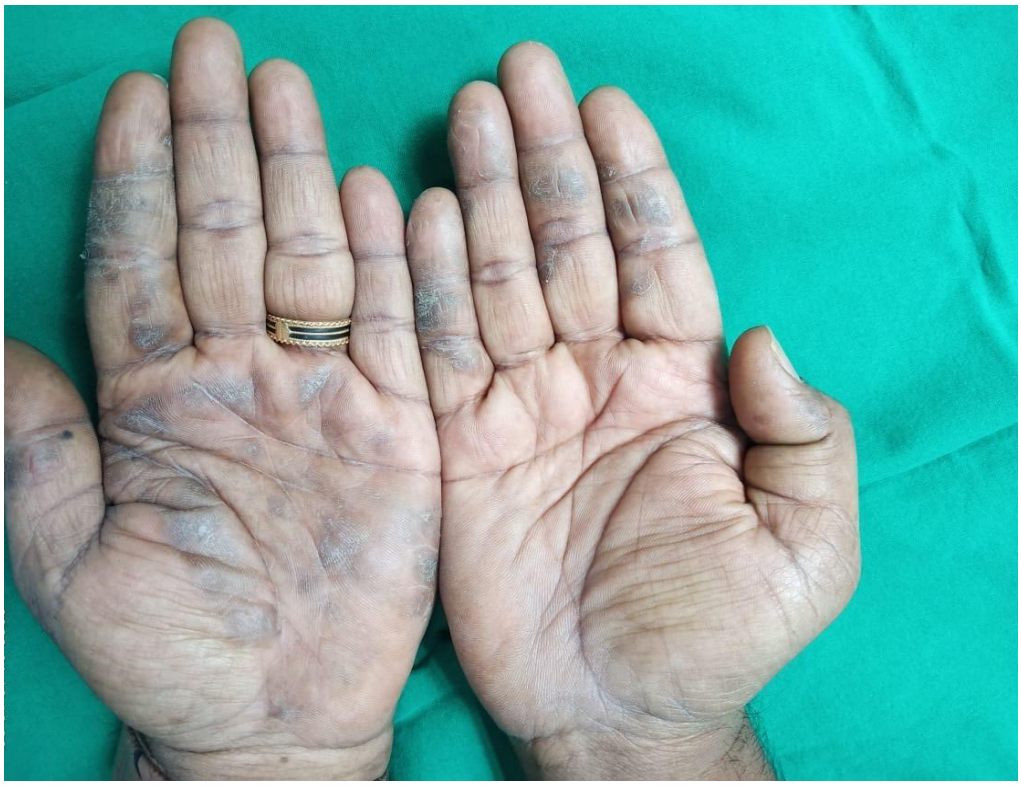


Figure 9: Multiple hyperpigmented macules coalescing to form plaques present over both palms= Lichen planus

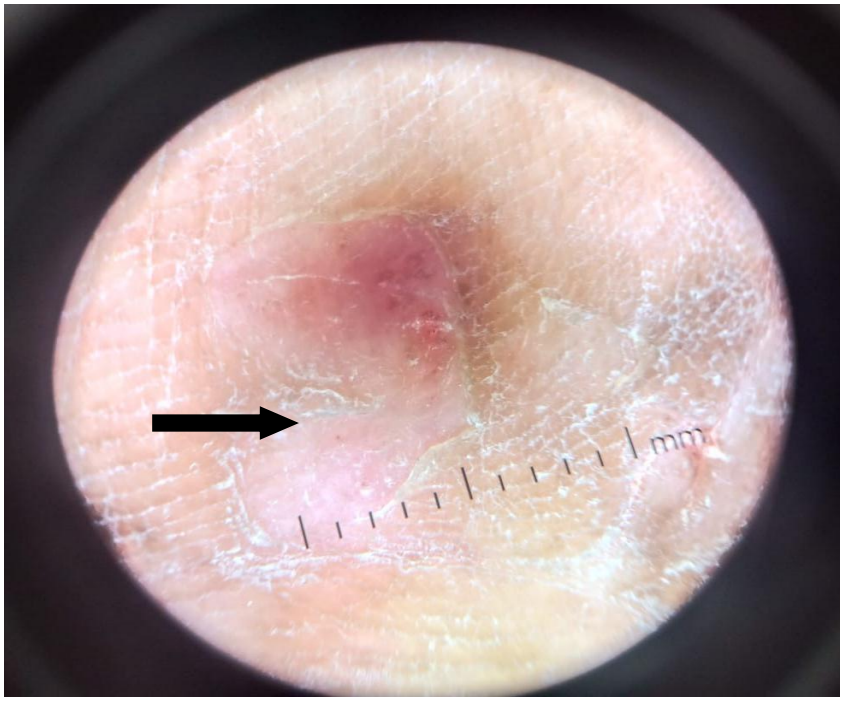


Figure 10: Brownish area surrounded by whitish halo= Lichen planus on dermoscopy

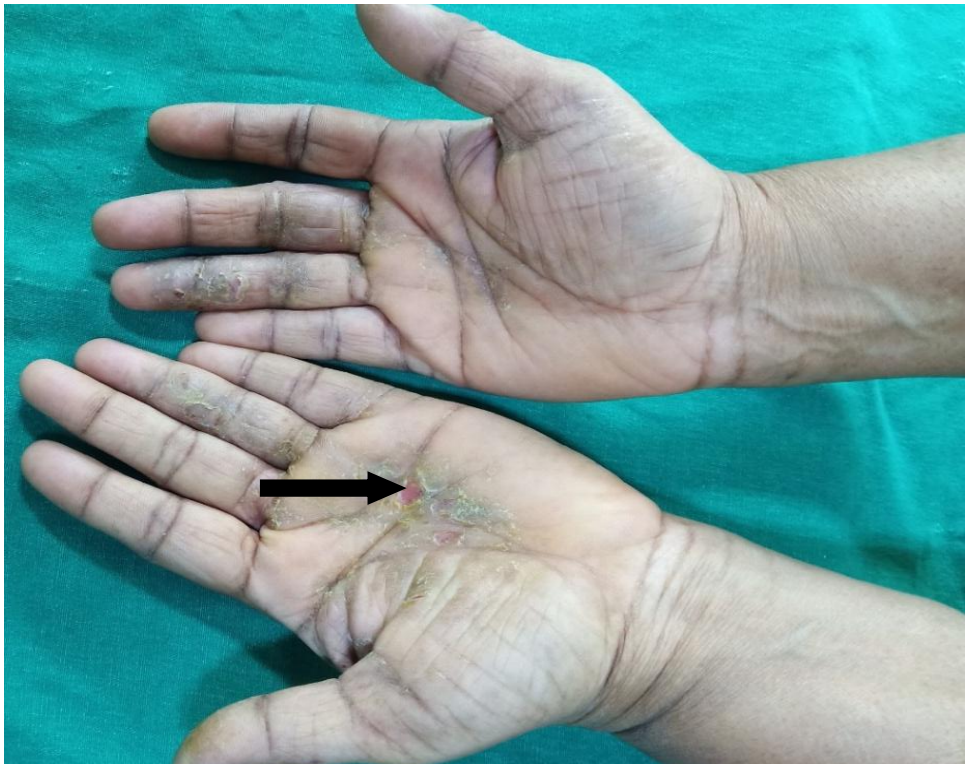


Figure 11: Yellow to hyperpigmented plaques with scaling, fissuring and erosions seen over palms= hand eczema

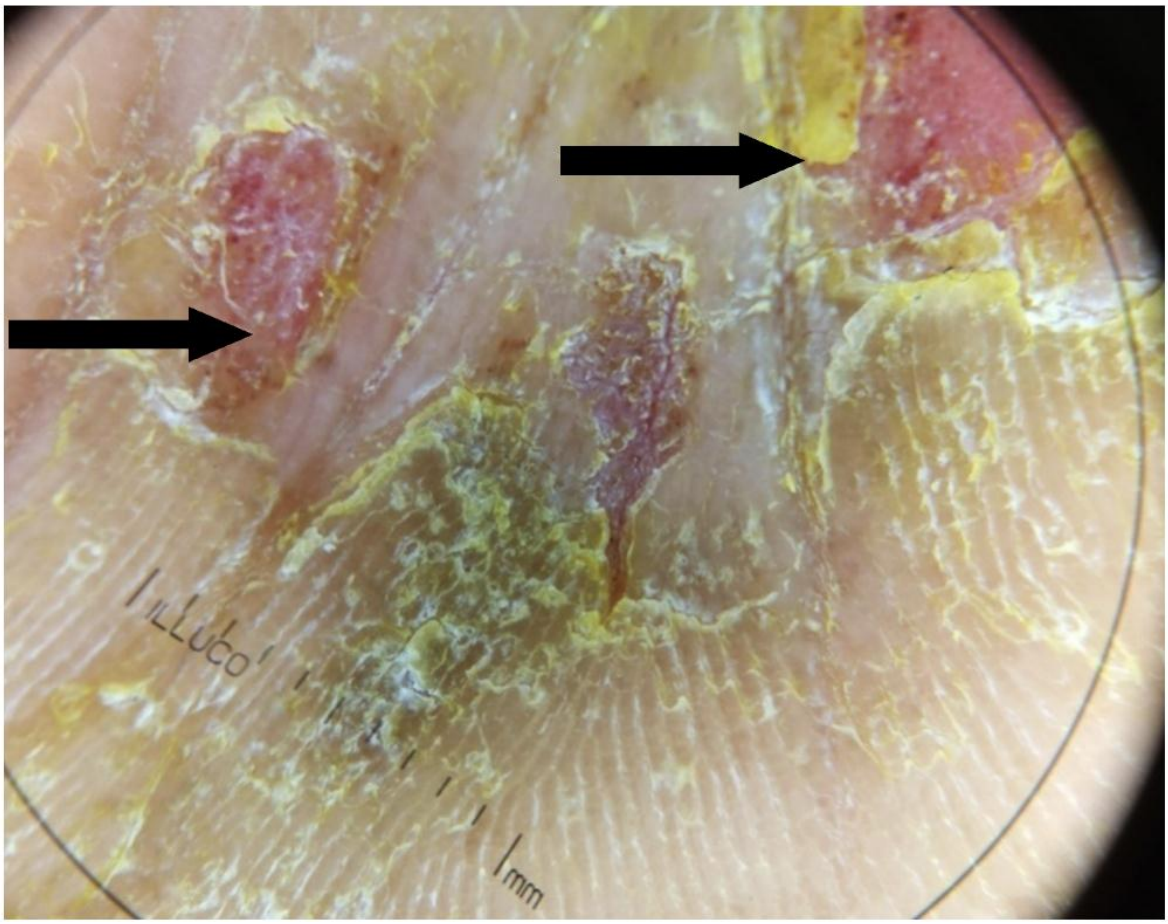
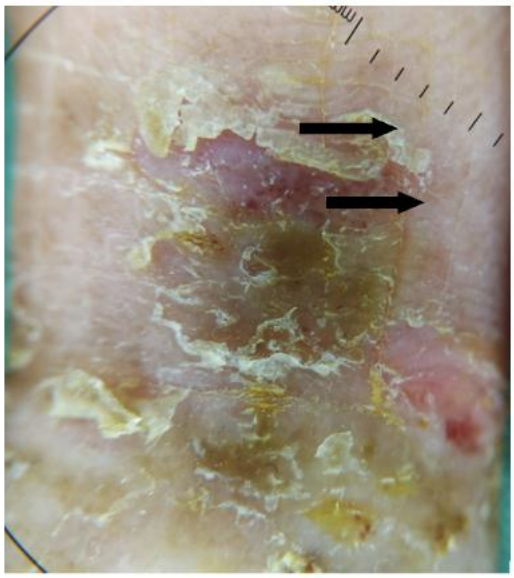


Figure11a&b :Dermoscopic image of hand eczema = yellow and white scales with punctuate hemorrhages seen



Master chart:

Sr. No.	AGE	SEX	UHID NUMBER	DIAGNOSIS	OCCUPATION	DURATION	Duration in Months	Associated symptoms B	Associated symptoms P	Associated symptoms I	Associated symptoms N	Aggravating factors E	Aggravating factors N	Aggravating factors R	Aggravating factors W	Aggravating factors WO	CUTANEOUS FI	CUTANEOUS PA	CUTANEOUS PL	CUTANEOUS PP	CUTANEOUS SC	CUTANEOUS BL	Site BI	Site LO	Site BL	Site UL
1	55	Female	760383	Palmoplantar psoriasis	HW	2years	24	Yes	Yes	Yes	No	No	No	No	Yes	No	No	No	Yes	No	Yes	Yes	Yes	Yes	No	No
2	9	Male	146657	plantar eczema	S	birth	108	Yes	Yes	No	No	No	Yes	No	No	No	No	No	Yes	No	Yes	No	Yes	Yes	No	No
3	73	Male	140219	plantar eczema	N	5 years	60	Yes	Yes	Yes	No	No	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No
4	43	Female	130206	ICD feet	HW	3months	3	Yes	No	Yes	No	Yes	No	No	No	No	No	Yes	No	No	No	No	No	Yes	No	No
5	39	Male	93776	ICD feet	F	3 years	36	Yes	Yes	Yes	No	No	Yes	No	No	No	No	No	Yes	No	Yes	No	No	Yes	Yes	No
6	59	Male	107244	T. mannum	O	4 months	4	No	No	Yes	No	No	No	Yes	No	No	No	No	Yes	No	Yes	No	No	Yes	No	No
7	33	Female	81550	T. pedis	HW	6 months	6	No	No	Yes	No	No	No	Yes	No	No	No	No	Yes	No	Yes	No	No	Yes	No	No
8	31	Male	22018	Palmar psoriasis	L	1 year	12	Yes	No	Yes	No	No	No	No	Yes	No	No	No	Yes	No	Yes	Yes	Yes	Yes	No	No
9	35	Male	47185	T. mannum	O	2 months	2	No	No	Yes	No	No	No	Yes	No	No	No	No	Yes	No	Yes	No	No	Yes	No	No
10	60	Male	38207	ICD feet	N	4 years	48	Yes	Yes	Yes	No	No	Yes	No	No	No	No	No	Yes	No	Yes	No	Yes	Yes	No	No
11	46	Female	37848	Palmoplantar psoriasis	HW	7 months	7	Yes	Yes	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	Yes	No	No
12	44	Female	952127	Hand eczema, Fissure feet	HW	2 years	24	Yes	Yes	No	No	Yes	No	No	No	No	No	No	Yes	No	Yes	No	No	Yes	No	No
13	65	Male	947850	ICD feet	N	10 years	120	Yes	Yes	No	No	No	Yes	No	No	No	No	No	Yes	No	Yes	No	Yes	Yes	No	No
14	38	Male	933361	Plantar psoriasis	L	3 years	36	Yes	No	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No	Yes	Yes	Yes	No	No
15	45	Male	949304	Eczema	L	5 months	5	Yes	Yes	No	No	No	No	No	No	Yes	No	No	Yes	No	Yes	No	No	Yes	No	No

16	10	Female	949209	plantar eczema	S	2 months	2	Yes	Yes	No	No	No	No	No	No	Yes	Yes	No	No	No	No	No	Yes	Yes	No	No
17	7	Male	947150	T. mannum	S	1 month	1	No	No	Yes	No	No	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes	No	No
18	55	Male	902516	Plantar Keratoderma	L	9 years	108	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No
19	30	Female	904016	Palmoplantar psoriasis	HW	2 years	24	Yes	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes	No	Yes	No	Yes	Yes	No	No
20	40	Female	904906	Palmoplantar psoriasis	HW	3 years	36	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No	No	No	Yes	Yes	Yes	Yes	No	No
21	19	Female	905209	Plantar dermatitis	S	7 months	7	Yes	Yes	No	No	No	Yes	No	No	No	No	No	No	Yes	Yes	No	No	Yes	No	No
22	26	Female	923713	plantar eczema	HW	1 year	12	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No	No	No	No	No	Yes	Yes	No	No
23	55	Male	923893	T. mannum	O	8 months	8	No	No	Yes	No	No	Yes	No	No	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes
24	45	Male	923366	plantar eczema	O	4 years	48	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No	No	No	No	Yes	Yes	Yes	No	No
25	65	Female	923509	Eczema	A	2 years	24	Yes	No	Yes	No	Yes	No	No	No	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes
26	38	Male	916857	T. mannum	FM	2 months	2	No	No	Yes	No	No	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes	No	Yes
27	45	Male	913005	Palmoplantar psoriasis	A	1 year	12	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No	Yes	No	Yes	No	Yes	Yes	No	No
28	21	Female	907589	Hand Eczema	HW	1 month	1	No	Yes	Yes	No	No	Yes	No	No	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes
29	10	Male	905188	Hand Eczema	S	15 days	0.5	Yes	Yes	Yes	No	Yes	No	No	No	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes
30	55	Male	902516	Plantar Keratoderma	A	20 days	0.666666667	Yes	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes	No	Yes
31	46	Female	48794	Hand Foot eczema	A	4 months	4	Yes	Yes	Yes	No	Yes	No	No	No	No	No	No	Yes	No	Yes	No	Yes	Yes	No	No
32	46	Female	37848	Palmoplantar psoriasis	HW	2 years	24	Yes	Yes	No	No	No	No	No	Yes	No	No	No	Yes	No	Yes	Yes	Yes	Yes	No	No
33	25	Male	61284	Hand Foot eczema	L	1 year	12	Yes	Yes	Yes	No	No	Yes	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes	No	No
34	13	Female	63271	Palmoplantar psoriasis	S	1 year	12	Yes	Yes	No	No	No	No	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	Yes	No	No
35	14	Male	63296	T. mannum	S	20 days	0.666666667	No	No	Yes	No	No	Yes	No	No	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes
36	0.25	Female	44350	Atopic eczema	N	birth	0.25	Yes	No	Yes	No	No	Yes	No	No	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes
37	5	Female	42413	Atopic eczema	N	birth	60	No	No	Yes	No	No	No	No	Yes	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes

38	38	Male	37704	T. mannum	A	4 months	4	No	No	Yes	No	No	No	Yes	No	No	No	No	Yes	No	Yes	No	No	Yes	No	No
39	35	Male	46467	ACD	O	18 days	0.6	Yes	Yes	Yes	No	No	Yes	No	No	No	No	No	Yes	No	Yes	No	No	Yes	No	No
40	45	Female	45189	ICD feet	HW	25 days	0.833333333	Yes	No	Yes	No	No	No	No	No	Yes	No	No	Yes	No	No	No	Yes	Yes	No	No
41	52	Male	45743	PRP	ME	10 days	0.333333333	No	Yes	No	No	No	Yes	No	No	No	No	No	Yes	No	No	No	No	Yes	No	Yes
42	25	Female	15369	ICD palms	O	1 month	1	Yes	No	Yes	No	No	No	No	No	Yes	No	No	Yes	No	Yes	No	Yes	Yes	No	No
43	17	Male	950911	Plantar psoriasis	S	10 years	120	Yes	No	Yes	No	No	Yes	No	No	No	No	No	Yes	No	No	No	Yes	Yes	No	No
44	52	Male	947134	Plantar psoriasis	A	13 years	156	Yes	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes	No	No	Yes	Yes	Yes	No	No
45	9	Male	59195	ICD palms	S	birth	108	No	Yes	Yes	No	No	No	No	No	Yes	Yes	No	Yes	No	Yes	No	Yes	Yes	No	No
46	48	Male	59193	ICD palms	A	5 years	60	No	Yes	No	No	No	No	No	No	Yes	No	No	Yes	No	Yes	Yes	Yes	Yes	No	No
47	28	Male	59090	ICD palms	L	10 months	10	Yes	No	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	No	No
48	13	Female	63020	Eczema	S	9 months	9	No	Yes	Yes	No	No	No	No	Yes	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes
49	13	Female	63018	T. pedis	S	2 months	2	No	No	Yes	No	No	No	Yes	No	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes
50	15	Female	62365	Atopic eczema	S	2 years	24	No	Yes	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No	No	No	Yes	No	Yes
51	14	Male	64270	ICD palms	S	3 years	36	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No
52	14	Male	64275	T. pedis	S	4 months	4	No	No	Yes	No	No	No	Yes	No	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes
53	14	Male	64277	T. mannum	FM	25 days	0.833333333	No	No	Yes	No	No	Yes	No	No	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes
54	19	Male	46067	Plantar dermatitis	L	15 days	0.5	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No	Yes	No	Yes
55	28	Male	18368	T. mannum	L	28 days	0.933333333	No	No	Yes	No	No	No	Yes	No	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes
56	32	Female	73639	ICD feet	HW	6 months	6	Yes	Yes	No	No	Yes	No	No	No	No	No	No	Yes	No	No	No	No	Yes	No	Yes
57	50	Male	69540	ICD palms	A	25 years	300	Yes	Yes	Yes	No	No	Yes	No	No	No	No	No	Yes	No	No	No	Yes	Yes	No	No
58	43	Male	72074	Hand Eczema	A	8 months	8	Yes	Yes	No	No	No	No	No	Yes	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes
59	35	Male	71984	ICD feet	O	4 months	4	Yes	No	No	No	No	No	No	No	Yes	No	No	Yes	No	Yes	No	No	Yes	No	Yes

60	21	Female	15640	T. pedis	HW	1 month	1	No	No	Yes	No	No	No	No	Yes	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes
61	73	Male	70549	Palmar psoriasis	N	5 years	60	Yes	No	Yes	No	No	No	No	Yes	No	No	No	Yes	No	Yes	Yes	No	Yes	No	Yes
62	75	Male	73865	PRP	N	6 months	6	No	No	Yes	No	No	Yes	No	No	No	No	No	Yes	No	No	No	No	Yes	No	Yes
63	20	Female	70447	plantar eczema	S	1 year	12	Yes	No	No	No	No	No	No	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes	No	No
64	34	Female	40512	Hand Eczema	HW	3 months	3	Yes	No	No	No	No	Yes	No	No	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes
65	35	Female	68667	Hand Eczema	HW	4 months	4	Yes	No	Yes	No	No	No	No	No	Yes	No	No	Yes	No	Yes	No	No	Yes	No	Yes
66	35	Male	68388	plantar eczema	O	1 year	12	Yes	No	Yes	No	No	No	No	No	Yes	Yes	No	No	No	Yes	No	No	Yes	Yes	No
67	45	Male	67654	plantar eczema	A	2 years	24	Yes	Yes	No	No	No	No	No	No	Yes	Yes	No	No	No	No	Yes	No	Yes	Yes	No
68	50	Female	68246	plantar eczema	HW	5 years	60	Yes	No	No	No	No	Yes	No	No	No	Yes	No	No	No	No	Yes	No	Yes	Yes	No
69	28	Female	64779	Palmar psoriasis	A	1 year	12	Yes	Yes	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No	Yes	No	Yes
70	35	Male	66584	ICD feet	A	10 months	10	Yes	No	Yes	No	No	No	No	No	Yes	No	No	Yes	No	Yes	No	No	Yes	No	Yes
71	4	Female	66378	ICD feet	N	7 months	7	Yes	No	No	No	No	No	No	No	Yes	No	No	Yes	No	No	No	No	Yes	No	Yes
72	32	Female	63635	Palmoplantar Psoriasis	HW	10 years	120	Yes	Yes	No	No	No	No	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	Yes	No	No
73	25	Female	61284	Punctate keratoderma	S	3 years	36	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes	No	Yes
74	54	Female	68811	PRP	L	4 months	4	No	No	Yes	No	No	Yes	No	No	No	No	No	Yes	No	No	No	No	Yes	No	Yes
75	32	Male	52928	Plantar psoriasis	L	7 months	7	Yes	No	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	Yes	No	No
76	4	Male	73918	Palmoplantar Psoriasis	N	1 year	12	Yes	Yes	No	No	No	Yes	No	No	No	No	No	Yes	No	No	No	No	Yes	No	Yes
77	2	Male	59358	Palmoplantar Psoriasis	N	birth	24	No	Yes	No	No	No	Yes	No	No	No	No	No	Yes	No	No	Yes	Yes	Yes	No	No
78	52	Male	54019	Palmar verruca	A	1 year	12	No	No	No	Yes	No	Yes	No	No	No	No	No	No	Yes	No	No	Yes	No	No	No
79	48	Female	44026	Plantar psoriasis	HW	6 years	72	Yes	Yes	No	No	No	No	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	Yes	No	No
80	6	Female	53054	Plantar psoriasis	N	birth	72	No	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes	No	No	Yes	Yes	Yes	No	No
81	23	Male	100510	Palmar psoriasis	S	2 years	24	Yes	Yes	No	No	No	No	No	Yes	No	No	No	Yes	No	Yes	No	Yes	Yes	No	No

82	40	Male	146556	ICD palms	O	1 month	1	Yes	No	Yes	No	No	No	No	No	Yes	No	No	Yes	Yes	No	No	Yes	Yes	No	No
83	15	Male	71747	Plantar psoriasis	S	2 years	24	Yes	Yes	No	No	No	Yes	No	No	No	No	No	Yes	No	No	No	Yes	Yes	No	No
84	10	Male	140927	T. mannum	S	5 months	5	No	No	Yes	No	No	No	Yes	No	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes
85	43	Male	146701	Hand Eczema	ME	8 months	8	Yes	No	Yes	No	No	Yes	No	No	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes
86	45	Female	146794	Plantar psoriasis	HW	4 years	48	Yes	Yes	No	No	No	No	No	Yes	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	No	No
87	57	Male	146806	ICD feet	A	6 months	6	Yes	No	Yes	No	No	Yes	No	No	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes
88	57	Male	146824	plantar eczema	A	6 years	72	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No	No	No	No	Yes	Yes	Yes	No	No
89	14	Male	63598	Atopic eczema	S	3 years	36	No	No	Yes	No	No	No	No	Yes	No	No	No	Yes	No	No	No	No	No	No	Yes
90	9	Male	146053	Atopic eczema	A	1 year	12	No	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes	No	No	No	No	No	Yes
91	10	Male	146198	T. pedis	A	5 months	5	No	No	Yes	No	No	Yes	No	No	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes
92	20	Female	146188	Palmar psoriasis	S	3 years	36	Yes	No	Yes	No	No	No	No	Yes	No	No	No	Yes	No	Yes	No	Yes	Yes	No	No
93	5	Female	146236	Plantar psoriasis	N	birth	60	No	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No
94	13	Female	145848	T. mannum	S	10 months	10	No	No	Yes	No	No	No	Yes	No	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes
95	13	Female	145846	ICD feet	S	1 month	1	Yes	No	No	No	No	No	No	No	Yes	No	No	No	No	Yes	No	Yes	Yes	No	No

Sr. No.	DERMOSCOPIC FINDINGS	DERMOSCOPIC FINDINGS 2	diffuse white scales	dotted and globular vessels	few dotted vessels	salmon coloured dots/globules	structurless orange areas	yellow crusts with punctate hemorrhages	Yellow crusts,few dotted vessels	yellow scales	yellow scales with brown orange dots	yellow scales with brown to orange globules
1	diffuse white scales	few dotted vessels	Yes	No	Yes	No	No	No	No	No	No	No
2	Yellow crusts,few dotted vessels		No	No	No	No	No	No	Yes	No	No	No
3	few dotted vessels		No	No	Yes	No	No	No	No	No	No	No
4	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
5	diffuse white scales	dotted and globular vessels	Yes	Yes	No	No	No	No	No	No	No	No
6	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
7	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
8	diffuse white scales	few dotted vessels	Yes	No	Yes	No	No	No	No	No	No	No
9	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
10	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
11	diffuse white scales	dotted and globular vessels	Yes	Yes	No	No	No	No	No	No	No	No
12	salmon coloured dots/globules	yellow scales	No	No	No	Yes	No	No	No	Yes	No	No
13	yellow scales		No	No	No	No	No	No	No	Yes	No	No
14	diffuse white scales	dotted and globular vessels	Yes	Yes	No	No	No	No	No	No	No	No
15	yellow scales with brown to orange globules		No	No	No	No	No	No	No	No	No	Yes
16			No	No	No	No	No	No	No	No	No	No
17	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
18	yellow scales		No	No	No	No	No	No	No	Yes	No	No
19	yellow scales		No	No	No	No	No	No	No	Yes	No	No
20	yellow scales		No	No	No	No	No	No	No	Yes	No	No
21	yellow scales		No	No	No	No	No	No	No	Yes	No	No
22	few dotted vessels	yellow scales	No	No	Yes	No	No	No	No	Yes	No	No

23	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
24	yellow scales	few dotted vessels	No	No	Yes	No	No	No	No	Yes	No	No
25	salmon coloured dots/globules	yellow scales	No	No	No	Yes	No	No	No	Yes	No	No
26	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
27	yellow scales		No	No	No	No	No	No	No	Yes	No	No
28	yellow scales with brown orange dots		No	No	No	No	No	No	No	No	Yes	No
29	yellow scales with brown orange dots		No	No	No	No	No	No	No	No	Yes	No
30	yellow scales		No	No	No	No	No	No	No	Yes	No	No
31	salmon coloured dots/globules	yellow scales with brown orange dots	No	No	No	Yes	No	No	No	No	No	Yes
32	yellow scales	few dotted vessels	No	No	Yes	No	No	No	No	Yes	No	No
33	yellow scales with brown orange dots		No	No	No	No	No	No	No	No	Yes	No
34	yellow scales		No	No	No	No	No	No	No	Yes	No	No
35	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
36	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
37	yellow scales		No	No	No	No	No	No	No	Yes	No	No
38	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
39	yellow scales		No	No	No	No	No	No	No	Yes	No	No
40	yellow crusts with punctate hemorrhages		No	No	No	No	No	Yes	No	No	No	No
41	structurless orange areas		No	No	No	No	Yes	No	No	No	No	No
42	yellow crusts with punctate hemorrhages		No	No	No	No	No	Yes	No	No	No	No
43			No	No	No	No	No	No	No	No	No	No
44	yellow scales		No	No	No	No	No	No	No	Yes	No	No
45	yellow scales	few dotted vessels	No	No	Yes	No	No	No	No	Yes	No	No
46	yellow scales		No	No	No	No	No	No	No	Yes	No	No
47	yellow scales		No	No	No	No	No	No	No	Yes	No	No
48	salmon coloured dots/globules		No	No	No	Yes	No	No	No	No	No	No
49	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
50	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
51	yellow scales		No	No	No	No	No	No	No	Yes	No	No
52	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No

53	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
54	diffuse white scales	few dotted vessels	Yes	No	Yes	No	No	No	No	No	No	No
55	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
56	yellow crusts with punctate hemorrhages		No	No	No	No	No	Yes	No	No	No	No
57	yellow scales		No	No	No	No	No	No	No	Yes	No	No
58	salmon coloured dots/globules		No	No	No	Yes	No	No	No	No	No	No
59	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
60	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
61	diffuse white scales	dotted and globular vessels	Yes	Yes	No	No	No	No	No	No	No	No
62	structurless orange areas		No	No	No	No	Yes	No	No	No	No	No
63	few dotted vessels		No	No	Yes	No	No	No	No	No	No	No
64	salmon coloured dots/globules		No	No	No	Yes	No	No	No	No	No	No
65	salmon coloured dots/globules		No	No	No	Yes	No	No	No	No	No	No
66	yellow crusts with punctate hemorrhages		No	No	No	No	No	Yes	No	No	No	No
67	few dotted vessels		No	No	Yes	No	No	No	No	No	No	No
68	yellow crusts with punctate hemorrhages		No	No	No	No	No	Yes	No	No	No	No
69	diffuse white scales	dotted and globular vessels	Yes	Yes	No	No	No	No	No	No	No	No
70	few dotted vessels	yellow scales	No	No	Yes	No	No	No	No	Yes	No	No
71	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
72	diffuse white scales	dotted and globular vessels	Yes	Yes	No	No	No	No	No	No	No	No
73	few dotted vessels		No	No	Yes	No	No	No	No	No	No	No
74	structurless orange areas		No	No	No	No	Yes	No	No	No	No	No
75	dotted and globular vessels	diffuse white scales	Yes	Yes	No	No	No	No	No	No	No	No
76	yellow scales		No	No	No	No	No	No	No	Yes	No	No
77	yellow scales		No	No	No	No	No	No	No	Yes	No	No
78	few dotted vessels		No	No	Yes	No	No	No	No	No	No	No
79	diffuse white scales	dotted and globular vessels	Yes	Yes	No	No	No	No	No	No	No	No
80	yellow scales		No	No	No	No	No	No	No	Yes	No	No
81	diffuse white scales	dotted and globular vessels	Yes	Yes	No	No	No	No	No	No	No	No
82	yellow scales	few dotted vessels	No	No	Yes	No	No	No	No	Yes	No	No

83	yellow scales		No	No	No	No	No	No	No	Yes	No	No
84	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
85	Yellow crusts,few dotted vessels		No	No	No	No	No	No	Yes	No	No	No
86	dotted and globular vessels	diffuse white scales	Yes	Yes	No	No	No	No	No	No	No	No
87	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
88	few dotted vessels	yellow scales	No	No	Yes	No	No	No	No	Yes	No	No
89	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
90	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
91	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
92	diffuse white scales	dotted and globular vessels	Yes	Yes	No	No	No	No	No	No	No	No
93	yellow scales		No	No	No	No	No	No	No	Yes	No	No
94	diffuse white scales		Yes	No	No	No	No	No	No	No	No	No
95	yellow crusts with punctate hemorrhages		No	No	No	No	No	Yes	No	No	No	No

Key to mastersheet

FEW DOTTED VESSELS			
M-MALE	I-ITCHING	WO-WORK	BL-BLEEDING
F-FEMALE	N-NIL	R-RAINY SEASON	BI-BILATERAL
HW-HOUSE WIFE	P-PAIN	W-WINTER SEASON	UL-UNILATERAL
B-BURNING	PA-PAPULES	SM-SUMMER	LO-LOCALIZED
S-STUDENT	PL-PLAQUES	E-EATING FOOD	ME-MECHANIC
O-OFFICE	A-AGRICULTURE	FI-FISSURING	
FM-FISHERMAN	L-LABOURER	SC-SCALING	