Texila International Journal of Public Health
Special Issue-2024
DOI: 10.21522/TIJPH.2013.SE.24.05.Art027

Dermoscopic and Histopathological Correlation in Cicatricial Alopecias: Unveiling Diagnostic and Therapeutic Insights

Sai Kavya D[1], Sukesh Gautam S[1], Afthab Jameela Wahab[1], Maghimaa M[2*], Saravanan, R[3]
[1]*Department of Dermatology, Venereology and Leprosy, Saveetha Medical College and Hospital, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai, 602 105, Tamil Nadu, India*
[2]*Centre for Global Health Research, Saveetha Medical College and Hospital, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, 602 105, Tamil Nadu, India*
[3]*Parambarya Nattu Vaithyar, Ulaga Parambariya Sitha Maruthuvargal Nala Sangam, Srirangam, Trichy, Tamil Nadu, India.*

Abstract

Trichoscopy is dermoscopic imaging of the scalp and hair. It is a non-invasive proven technique that aids in the diagnosis of alopecia. It enhances the visualization of abnormalities of follicular ostia, perifollicular skin, hair shafts and cutaneous blood vessels. In cicatricial alopecia, loss of follicular openings, atrophy and scattered follicular pustules or single hair follicles can be identified. Prompt diagnosis and timely therapeutic intervention are of extreme importance as permanent hair loss can lead to disorders related to self-esteem and psychosocial interactions. Trichoscopy helps in early diagnosis, monitoring of disease progression and determining the response to therapy. To determine the efficacy of trichoscopy as a valuable and superior non-invasive method over histopathological examination to diagnose cicatricial alopecias. This is a cross-sectional study conducted in our hospital from September 2023 to November 2023. Patients with cicatricial alopecia were selected. Demographic data and clinical variables in terms of site of alopecia, type, duration, size and lesion morphology were documented. Heine delta 30 dermoscope was employed. Both polarized and non-polarized versions were used for examination. In this study, 16 patients were enrolled. The causes of cicatricial alopecia were traumatic alopecia (6), lichen planopilaris (5), discoid lupus erythematosus (4) and acne keloidalis nuchae (1). Dermoscopy facilitated the identification of unique and characteristic features that helped in prompt diagnosis. This was correlated with histopathological findings. Trichoscopy of cicatricial alopecia demonstrates characteristic patterns. It is an accurate diagnostic method that reduces the number of unnecessary biopsies and hence it is crucial for the diagnosis and follow-up of patients.

Keywords: *Cicatricial alopecia, Dermoscopic Imaging, Discoid lupus erythematosus, Polarized and Non-polarized Light, Trichoscopy.*

Introduction

The term "cicatricial alopecia" refers to a broad range of conditions that cause the permanent loss of hair follicles. Primary and secondary cicatricial alopecia are additional divisions. Hair follicles are the main focus of inflammation in primary cicatricial alopecia (PCA), while in the secondary type, hair follicles are collateral damage to the surrounding skin's inflammation or injury [1]. As of right now, the North American Hair Research Society's classification of PCAs is

Received: 27.08.2024 ***Accepted: 11.11.2024*** ***Published on: 10.12.2024***
****Corresponding Author: maghimaamm@gmail.com***

the most widely accepted. It categorizes them into four groups based on the predominant inflammatory infiltrate: lymphocytic (including lichen planopilaris (LPP), frontal fibrosing alopecia (FFA), central centrifugal cicatricial alopecia (CCCA), etc.); neutrophilic (including folliculitis decalvans (FD) and dissecting cellulitis); mixed (including acne keloidalis and necrotica); and non-specific (idiopathic, not otherwise classifiable, or end stage of other PCAs) [2]. Since PCA is an uncommon ailment, little is known about its epidemiology among the general public. Research conducted at specialized healthcare centers revealed that 3.7%–7.2% of people who visited the facility had cicatricial alopecia [3-5].

To detect and diagnose scalp diseases that cause alopecia, a non-invasive method like as dermoscopy is particularly helpful [6]. Features such as follicular pustules, dispersed single hair follicles, and lack of follicular opening are seen with a dermoscopic examination [7]. A useful diagnostic confirmatory method is histopathological correlation [8]. Based on the main infiltration, cicatricial alopecia is characterized as lymphocytic and neutrophilic in addition to being distinguished from non-cicatricial alopecia [9]. There is not much-published material on the aetiolo pathogenesis of CA, despite the fact that it has been documented. Dermoscopy may help with early diagnosis, track the course of the illness, evaluate the effectiveness of treatment, and spot reactivations of the condition. The current research sought to determine the concordance between trichoscopic and histological diagnosis in PCA by retrospectively analyzing the clinical, trichoscopic, and histopathological features of PCA of the scalp.

Material and Methods

Study Design

This cross-sectional study, which focused on patients with cicatricial alopecia, was carried out at Saveetha Medical College and Hospital over three months, from September to November 2023. Comprehensive demographic and clinical information, including the location, type, length, size, and morphology of the alopecic lesions, was collected for the study. The lesions underwent a dermoscopic evaluation using a Heine Delta 30 dermoscope that utilized both polarized and non-polarized light. This method helped in the evaluation and characterisation of the cicatricial alopecia by providing a detailed visual representation of the scalp. The results of this investigation help to clarify the clinical manifestation and dermoscopic characteristics related to this illness.

Study Setting

The investigation was carried out in a strong clinical setting at a tertiary care hospital in the Department of Dermatology. The department is a vital healthcare facility that offers a specialized environment for performing studies since it is operated by professional dermatologists and has modern diagnostic technologies. A varied patient population with a range of clinical manifestations was included in this context due to the focus on cicatricial alopecia. This environment ensured that the research was carried out with a high degree of clinical rigor, making use of the hospital's facilities to enable extensive and precise data collection.

Study Participants

The study participants were chosen using precise inclusion criteria, ensuring that only people with apparent indications and symptoms of cicatricial alopecia were enrolled. By concentrating on patients whose clinical presentation matched the study's goals, this meticulous selection procedure sought to produce a homogenous group for analysis. The study was able to collect relevant data and make significant findings about the illness by focusing on individuals who had been

diagnosed with cicatricial alopecia. Because of its ability to reduce variability and ensure participant representation of the target demographic, this strategy improved the reliability and validity of the results.

Inclusion Criteria

In order to ensure that the results of the study are accurate and relevant, a specific patient population was chosen through the construction of the inclusion criteria. Participants were those who had been diagnosed with cicatricial alopecia but had not yet received medical treatment, allowing us to observe untreated, baseline characteristics. Furthermore, patients older than two months were included in the study, covering a broad age range and ensuring that the results could be applied to both adult and pediatric populations. To provide a concentrated analysis of the inherent clinical and dermoscopic characteristics of cicatricial alopecia without the influence of previous therapies, these criteria were developed to build a consistent research group.

Exclusion Criteria

For the purpose of removing any potential confounding variables from the study, the exclusion criteria were carefully designed. To ensure that the study concentrated only on cicatricial appearances of the disease, patients with non-cicatricial alopecia were eliminated. Furthermore, patients younger than two months were not included because the results may be affected due to the potential differences in clinical presentation between younger and older patients. Additionally, those who had been receiving medical care for their cicatricial alopecia for longer than three months were not included. This criterion was established to make sure the study examined the disease's untreated features and natural course without taking into account any previous or current medical interventions. The study's goal in implementing these exclusion criteria was to preserve a distinct and uniform participant group, which would increase the validity of the research findings.

Sampling Method

The research employed a non-probability sampling strategy called purposive sampling, in which participants are chosen according to particular traits and standards that are pertinent to the study's goals. In this instance, all individuals with cicatricial alopecia who satisfied the predetermined inclusion and exclusion criteria were included in the study. To ensure that the study population was extremely typical of the condition under investigation and to facilitate a thorough examination of its clinical and dermoscopic characteristics, this technique was selected. Purposive sampling made it easier to get valuable and relevant data by concentrating on a specific set of patients who showed the necessary criteria. This improved the study's overall integrity and validity.

Data Collection and Procedure

Demographic information such as age, gender, and clinical characteristics, including the location and duration of cicatricial alopecia, were meticulously recorded. Patients with the clinical diagnosis of cicatricial alopecia were selected for dermoscopic examination with histopathology verification. Biopsies were taken from target lesions, especially in cases with multiple lesions. To assess these lesions, a Heinz delta 30 dermoscope was employed. The assessment of dermoscopic patterns was conducted by a dermatologist who was blinded to the clinical diagnosis, ensuring unbiased evaluation. Similarly, the pathologist responsible for assessing histological alterations was unaware of the clinical diagnosis. The gathered information was then analyzed statistically, and the outcomes were classified into various dermoscopic patterns.

Ethical Considerations

The study was conducted following the ethical standards set by the institution alethics committee, which provided the necessary ethical clearance. Informed consent was obtained from all participating patients, who were thoroughly informed about the study's goals, methods, potential risks, and benefits. Patients were encouraged to ask questions and reassured that their decision to withdraw from the study at any time would not affect their ongoing medical treatment. The research team strictly adhered to patient confidentiality requirements, ensuring that all collected data was securely stored and anonymized to protect patient privacy. The potential benefits of enhancing our understanding and treatment of cicatricial alopecia were carefully balanced against any possible risks, such as those related to medications or additional medical procedures.

Results

The research comprised 12 individuals with a mean age of 37.04 ± 24.64 years who were diagnosed with primary cicatricial alopecia (PCA). This indicates a wide age range of participants, ranging from 5 to 76 years old. The demographic profile showed that 66.7% (N=8) of the study sample was made up primarily of female participants. This gender pattern points to a higher incidence of PCA among female study participants, or possibly a higher rate of consultation. A comprehensive understanding of the demographic aspects of PCA in the study population is possible due to the wide age range and majority of female patients, which may have an impact on the clinical and dermoscopic findings identified.

Table 1. Common Aetiology of PCA among the Study Participants

S.No.	Aetiology	Frequency	Percentage
1	Discoid lupus erythematosus	8	66.7%
2	Lichen Planopilaris	2	16.7%
3	Acne Keloidalis Nuchae / Folliculitis Keloidalis	1	8.3%
4	Traumatic alopecia	1	8.3%

Table 2. Association between Gender and Aetiology

Aetiology	Male		Female		P value
	N	%	N	%	
Discoid lupus erythematosus	2	50	6	75	0.391
Lichen Planopilaris	1	25	1	12.5	
Acne Keloidalis Nuchae / Folliculitis	0	0	1	12.5	

Keloidalis					
Traumatic alopecia	1	25	0	0	

Table 3. Common Clinical Features

S. No	Condition	Clinical presentation
1	Discoid lupus erythematosus (N=8)	All 8 patients had Scaly indurated plaques with Erythema and peripheral hyperpigmentation
2	Lichen Planopilaris (N=2)	Both the patients had scattered foci of partial hair loss with perifollicular erythema and scaling
3	Acne Keloidalis Nuchae / Folliculitis Keloidalis (N=1)	Inflammatory papules, pustules, and keloidal papules or plaques limited to the lower posterior Scalp and nape of the neck
4	Traumatic alopecia(N=8)	Well-circumscribed complete area of hair loss over the scalp

Clinical Photographs

Figure 1. Discoid Lupus Eruthematosus

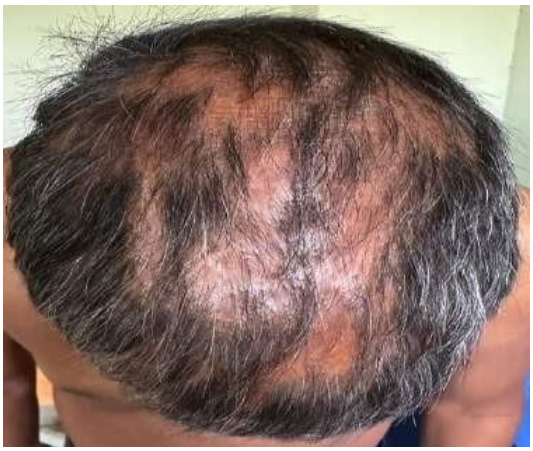

Figure 2. Lichen Planopilaris

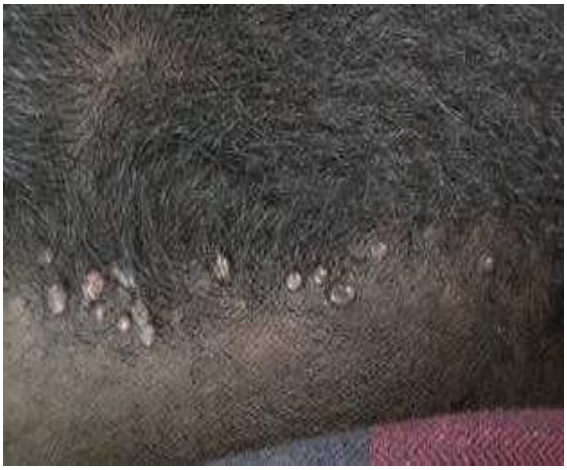

Figure 3. Acnekeloidalisnuchae

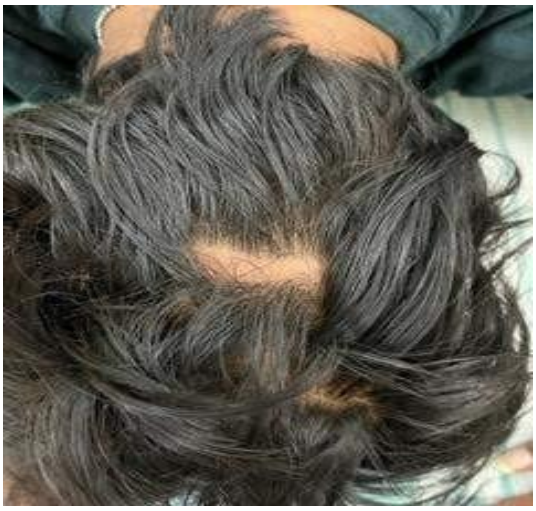

Figure 4. Traumatic Alopecia

Table 4. Dermoscopy Findings

S.No	Condition	Dermoscopy findings
1	Discoid lupus erythematosus (N=8)	• White patchy scales –8(100%) • Speckled pigmentation –7(87.5%) • Perifollicular white halo–5(62.5%) • Follicular erythema–8(100%) • Rosettes –6(75%)
2	Lichen Planopilaris (N=2)	• Double ring sign-2(100%) • Perifollicular scaling–2(100%) • Follicular keratotic plugging –1(50%)
3	Acne Keloidalis Nuchae / Folliculitis Keloidalis (N=1)	• Perifollicular pustules–100% • Perifollicular nodules– 100%
4	Traumatic alopecia(N=8)	• Atrophy-Loss of follicular ostia–100%

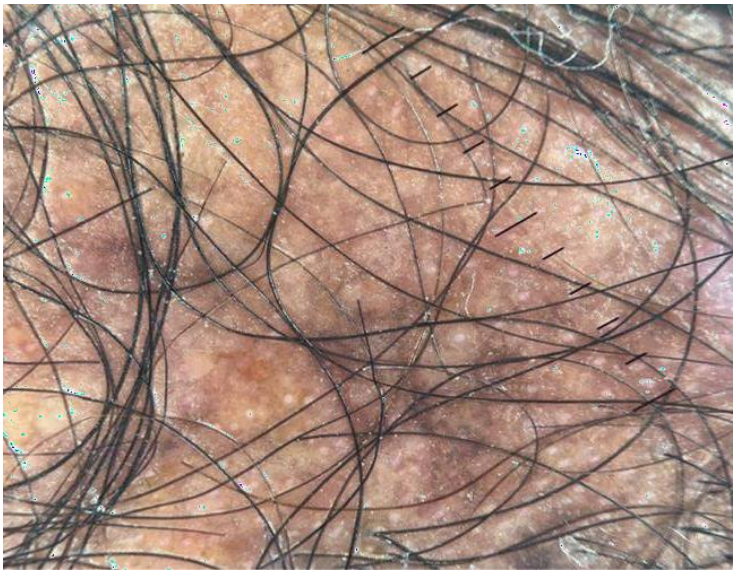

Figure 5. Dermoscopic Findings Discoid Lupus Erythematosus

Figure 6. Speckled Pigmentation With Structureless White Areas Lichen Planopilaris

A-Perifollicularpustule B-Perifollicularnodules

Figure 7. Perifollicular Scaling With Follicular Plugging Acnekeloidalis Nuchae Traumaticalopecia

Figure 8. Loss of Follicularostia

Table 5. Histopathology Findings

HPE report	**Discoid lupus erythematosus (N=8)**	**Lichen Planopilaris (N=2)**	**Acne Keloidalis Nuchae/Folliculitis Keloidalis (N=1)**	**Traumatic Alopecia (N=1)**
Basal Cell Degeneration	8(100%)			
Apoptotic Keratinocytes	8(100%)			
Increased Thickness of Basal Layer	6(75%)			
Pigment Incontinence	8(100%)	2(100%)		
Follicular Plugging	7(87.5%)			
Perivascular/Periadnexal InflammatoryInfiltrate	8(100%)	2(100%)	1(100%)	
DermalMucin	5(62.5%)			
Orthokeratosis		1(50%)		
V-Shaped Hypergranulosis		1(50%)		
Basal Cell Vacuolation		1(100%)		
Superficial Dense LymphoplasmacyticInfiltrate			1(100%)	
Deep Dense LymphoplasmacyticInfiltrate			1(100%)	
Follicular disruption			1(100%)	
Increased Telogen and Catagen Hair Follicles				1(100%)
Trichomalacia				1(100%)
Normal Number of Hair Follicles				1(100%)

Basket Weave Hyperkeratosis				1(100%)
Melanophages		2(100%)		

Histopathology Findings

Discoid Lupus Erythematosus

The histological characteristics presented in Sections A, B, and C, which indicate substantial skin damage, included basal cell degeneration, apoptotic keratinocytes, and pigment incontinence. Increased thickness of the basal cell layer and follicular clogging were also noticeable, which is a common observation in several alopecias. Together with dermal mucin, there was a noticeable perivascular and periadnexal inflammatory infiltration, which points to an underlying inflammatory or autoimmune disease. These results offer an overview of the pathological alterations related to the illness [10]. Figures 1, 5, 9 demonstrates the clinical, dermoscopic and histopathological findings of Discoid Lupus Erythematous.

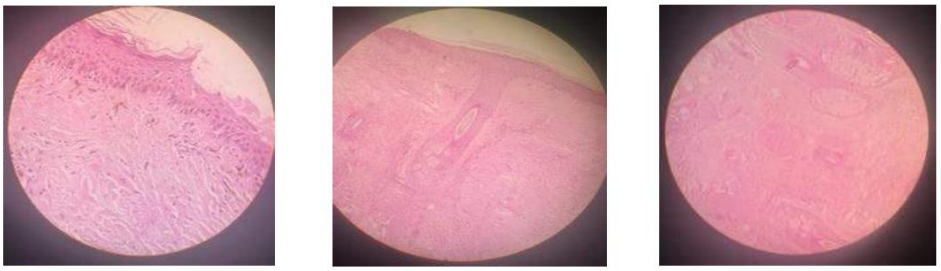

Figure 9. Histopathological Characteristics of Discoid Lupus Erythematous

Lichen Planopilaris

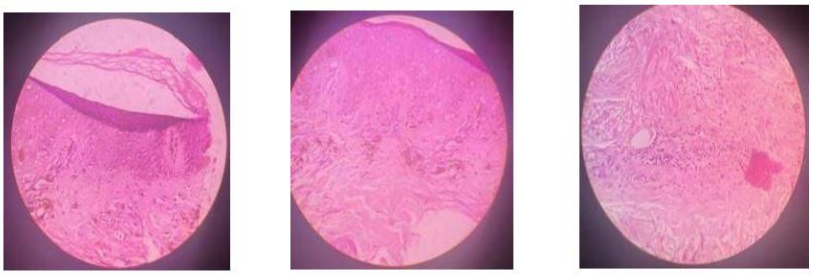

Figure 10. Histopathological Characteristics of Lichen Planopilaris

A number of significant histological characteristics were seen in Sections A, B, and C. These included epidermal thinning, which denotes changes in the skin's protective layer, and orthokeratosis, a typical pattern of keratinization. Acanthosis, or thickening of the skin, and V-shaped hypergranulosis were also noted, indicating abnormal skin growth. Furthermore, melanophages (cells that eat melanin), basal cell vacuolation, pigment incontinence, and Civatte bodies degenerated keratinocytes were seen, indicating continuous pigmentary alterations and skin degradation. Additionally, the sections displayed perivascular and periadnexal inflammatory infiltrates, suggesting that blood vessels and skin appendages are affected by an inflammatory process [11]. Figures 2, 6, 10 demonstrates the clinical, dermoscopic and histopathological findings of Lichen Planopilaris.

Acnekeloidalisnuchae

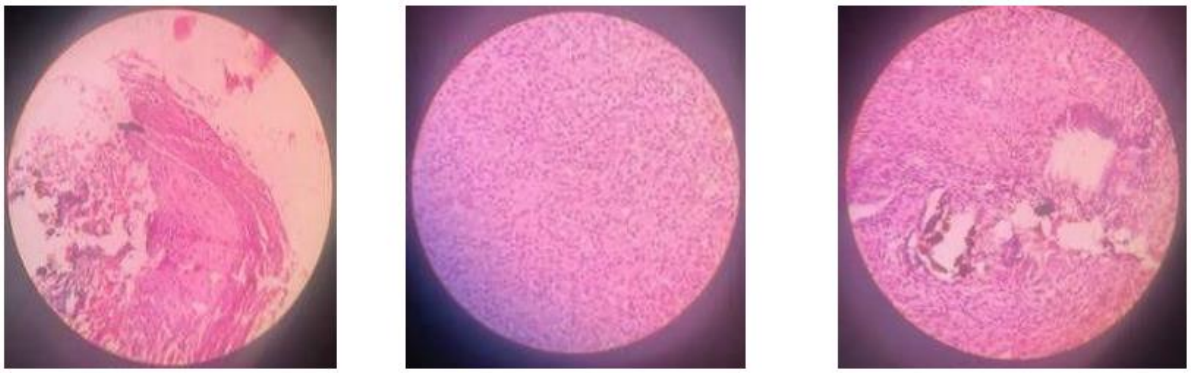

Figure 11. Histopathological Characteristics of Acne Keloidalis Nuchae

In the superficial and deep dermis, Sections A, B, and C showed a dense lymphoplasmacytic infiltration together with scattered neutrophils, suggesting a potent inflammatory response. Notable follicular disruption was also observed, indicating injury to the hair follicles. These results point to a substantial inflammatory component that affects several skin layers and interferes with the regular development of hair follicles [12]. Figure 3, 7, 11 demonstrates the clinical, dermoscopic and histopathological findings of Acne Keloidalis Nuchae.

Traumatic Alopecia

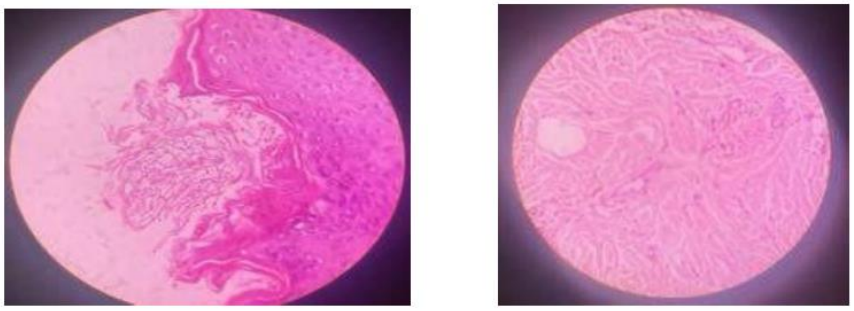

Figure 12. Histopathological Characteristics of Traumatic alopecia

Basket weave hyperkeratosis, which is represented by a thicker stratum corneum with a unique arrangement of keratin were observed in Sections A and B. A periadnexal infiltration was also noticed, which suggests inflammation around the cutaneous appendages. These results highlight localized inflammatory reactions near hair follicles and other adnexal structures, along with alterations in the keratin layer [13]. Figure 4, 8, 12 demonstrates the clinical, dermoscopic and histopathological findings of Traumatic alopecia.

Discussion

The study on Primary Cicatricial Alopecia (PCA) encompassed 12 patients, reflecting a diverse range of ages from 5 to 76 years, with a mean age of 37.04 years and a wide standard deviation of 24.64 years, highlighting the condition's occurrence across various age groups. Notably, the majority of participants were female, constituting 66.7% of the sample (N=8). This gender predominance aligns with existing literature indicating a higher prevalence of certain types of PCA, such as Discoid Lupus Erythematosus (DLE), in women [14].

The distribution of common etiologies among the study participants revealed DLE as the most frequent subtype of PCA, accounting

for 66.7% of cases (N=8). This finding emphasizes the clinical significance of DLE as a primary cause of cicatricial alopecia. Lichen Planopilaris (LPP) was the second most prevalent etiology, observed in 16.7% of patients (N=2), followed by Acne Keloidalis Nuchae / Folliculitis Keloidalis (AKN/FK) and Traumatic Alopecia (TA), each accounting for 8.3% of cases (N=1). The distribution of these etiologies underscores the diverse nature of PCA, reflecting a spectrum of inflammatory, autoimmune, and traumatic causes contributing to hair follicle damage and subsequent scarring alopecia.

The association between gender and etiology revealed interesting patterns in disease prevalence. While DLE showed a higher prevalence in females (75%) compared to males (50%), this difference was not statistically significant (p=0.391). LPP and AKN/FK demonstrated an even distribution between genders, with LPP affecting 25% of males and females and AKN/FK affecting 12.5% of females. Incontrast,TA was more prevalent in males, affecting 25% of male patients compared to none in the female group. These gender-specific variations in PCA etiology warrant further investigation into potential hormonal, genetic, or environmental factors influencing disease development and presentation, contributing valuable insights into personalized management strategies for patients with PCA.

The primary focus of the folliculo centric inflammatory process in PCA is the hairfollicle.[5] Hair regrowth is inhibited by the death of epithelial stem cells in the outer root sheath bulge. DLE was the most prevalent, according to Tan et al. (33.9%), followed by pseudopelade (24.1%) and LPP (22.3%) [5]. After analyzing 136 biopsy specimens of scarring alopecia, Trachsler Sand Trueb RM discovered that LPP was the most common diagnosis (26%), followed by DLE(21%), folliculitis decalvans (20%), and pseudopelade of Brocq (10%) [15].

Clinically, the characteristic features observed in each subtype of PCA provided valuable diagnostic clues. All patients with DLE exhibited scaly indurated plaques with erythema and peripheral hyperpigmentation, consistent with established clinical presentations of DLE-associated cicatricial alopecia. Both patients with LPP displayed scattered fociofpartial hair loss accompanied by perifollicular erythema and scaling, highlighting the distinctive clinical manifestations of LPP-induced hair follicle damage. The single patient with AKN/FK presented with inflammatory papules, pustules, and keloidal papules or plaques limited to the lower posterior scalp and nape of the neck, indicative of the characteristic features of AKN/FK-associated cicatricial alopecia. Similarly, patients with TA exhibited a well-circumscribed complete area of hairloss over the scalp, reflecting the traumatic nature of this subtype of PCA. These clinical findings underscore the importance of thorough clinical evaluation and differentiation to accurately diagnose and manage patients with PCA, guiding appropriate treatment strategies tailored to each subtype's specific pathophysiology.

Trichoscopy, or the dermoscopic examination of the scalp and hair,is a highly helpful method for diagnosing and monitoring problems of the hair and scalp [16, 17]. The loss of follicular apertures and reduced hair density are the hallmarks of trichoscopy in primary scarring alopecia. Dermoscopic examination further elucidated the distinctive features of each PCA subtype. In DLE,white patchy scales were universally observed, along with speckled pigmentation, perifollicular white halos, follicular erythema, and rosettes, aligning with previous literature describing dermoscopic findings in DLE-associated cicatricial alopecia. LPP exhibited a double ring sign, perifollicular scaling, and follicular keratotic plugging, characteristic dermoscopic features indicative of LPP-induced hair follicle

damage. AKN/FK demonstrated perifollicular pustules and nodules, highlighting the inflammatory nature ofAKN/FK-associated cicatricial alopecia. TA was characterized by atrophy and loss of follicularostia, reflecting the traumatic impact on hair follicles seen in TA-induced cicatricial alopecia. These dermoscopic findings provide valuable adjunctive diagnostic information, aiding in the accurate differentiation and classification of PCA subtypes and guiding appropriate treatment selection and monitoring.

Histopathological examination further delineated the underlying pathophysiology of each PCA subtype. Common findings across different etiologies included basal cell degeneration, apoptotic keratinocytes, increased thickness of the basal layer, pigment incontinence, and perivascular/periadnexal inflammatory infiltrate.These shared histopathological features underscore the common pathways of inflammation, immune dysregulation, and follicular damage contributing to PCA-induced cicatricial alopecia. However, unique findings were also noted, with LPP exhibiting orthokeratosis, V-shaped hypergranulosis, and basal cell vacuolation, indicative of the distinctive histopathological patterns seen in LPP-associated cicatricial alopecia. AKN/FK and TA showed features such as superficial and deep dense lymphoplasmacytic infiltrates, follicular disruption, and basal cell vacuolation, highlighting the varied histopathological characteristics of these subtypes of PCA.

Epidermal atrophy, interface dermatitis, papillary dermal fibrosis, deep and superficial dermal lymphocytic inflammation, periadnexal inflammation, dermal mucin, and thickened periodicacid-Schiff-positive epidermal and follicular basement membrane have historically been used in histopathology to diagnose DLE [18-21]. In the majority of our situations, these requirements were met. Overall, the histopathological findings provide valuable insights into the underlying mechanisms driving hair follicle damage and scarring in different PCA subtypes, guiding targeted therapeutic approaches aimed at mitigating inflammation, preserving follicular integrity, and preventing further scarring and hair loss.

Conclusion

In conclusion, the thorough examination of the etiological, clinical, dermoscopic, and histological data in PCA underscores the need of a multidisciplinary approach to diagnosis and treatment while highlighting the varied nature of this dermatological disease. In addition to offering insightful information about many presentations, pathophysiological processes, and gender-specific patterns observed in PCA, the study's findings highlight the need for advanced diagnostic tools and specialized treatment approaches. Addressing the complex and varied signs of PCA, which can vary greatly amongst people, requires an integrated strategy. Furthermore, in order to personalize treatment plans to the specific requirements of each patient, the research underscores the significance of periodic evaluation and reconsideration of treatment efficacy. The results of this study have the potential to greatly improve outcomes and raise the quality of life for patients with PCA-induced cicatricial alopecia by influencing the development of diagnostic criteria and treatment methods. Additionally, the study recommends more investigation into the genetic and environmental influences on PCA, which may result in more specialized and efficient treatments.

Limitation

Limitations of the study include the relatively small sample size of 12 patients and single center design, which may limit the generalizability of findings to larger populations with Primary Cicatricial Alopecia (PCA). Longitudinal studies tracking disease

progression and response to different therapeutic interventions would provide valuable insights into the natural history of PCA and the effectiveness of various treatment modalities, including topical and systemic therapies, immunomodulators, and surgical interventions such as hair transplantation.

References

[1]. Kanti, V., Röwert-Huber, J., Vogt, A., Blume-Peytavi, U., 2018. Cicatricial alopecia. JDDG: Journal der Deutschen Dermatologischen Gesellschaft, 16(4), 435-461.

[2]. Olsen, E. A., Bergfeld, W. F., Cotsarelis, G., Price, V. H., Shapiro, J., Sinclair, R., ... Whiting, D. A., 2003. Summary of North American Hair Research Society (NAHRS)-sponsored workshop on cicatricial alopecia, Duke university medical center, February 10 and 11, 2001. Journal of the American Academy of Dermatology, 48(1), 103-110.

[3]. Villablanca, S., Fischer, C., García-García, S. C., Mascaró-Galy, J. M., Ferrando, J., 2017. Primary scarring alopecia: clinical-pathological review of 72 cases and review of the literature. Skin Appendage Disorders, 3(3), 132-143.

[4]. Whiting, D. A., 2001. Cicatricial alopecia: clinico-pathological findings and treatment. Clinics in dermatology, 19(2), 211-225.

[5]. Tan, E., Martinka, M., Ball, N., Shapiro, J., 2004. Primary cicatricial alopecias: clinicopathology of 112 cases. Journal of the American Academy of Dermatology, *50*(1), 25-32.

[6]. Jain, N., Doshi, B., Khopkar, U., 2013. Trichoscopy in alopecias: diagnosis simplified. International journal of trichology, *5*(4), 170-178.

[7]. Tosti, A., 2007. Dermoscopy of Hair and Scalp Disorders: with Clinical and Pathological Correlations. CRC Press.

[8]. Puri, N., 2013. A clinical and histopathological study of cicatricial alopecia. Journal of Pakistan Association of Dermatologists, 23(3), 272-276.

[9]. Stefanato, C. M., 2010. Histopathology of alopecia: a clinicopathological approach to diagnosis. Histopathology, 56(1), 24-38.

[10]. Goyal, M., Khandpur, S., Ramam, M., Sharma, V. K., Singh, M. K., 2019. A study of the histopathological features of alopecias on transverse sections of scalp biopsies. Indian Journal of Dermatology, 64(1), 47-54.

[11]. Batchu, V. R., Panthalla, V. L., Kumar, P. K., Penchalaiah, K., 2022. A clinicopathological study on interface dermatitis. International Journal of Research, 8(5), 1.

[12]. Cummins, D. M., Chaudhry, I. H., Harries, M., 2021. Scarring alopecias: pathology and an update on digital developments. Biomedicines, 9(12), 1755.

[13]. Petak, A., Boras, J., Bata, I., Ilić, I., Hohšteter, M., Šoštarić-Zuckermann, I. C., 2023. Clinical and histopathological investigation of symmetrical alopecia with associated chronic pruritus in tufted capuchin monkeys (Sapajus apella apella). Journal of Medical Primatology, 52(4), 244-258.

[14]. Thakur, B. K., Verma, S., Raphael, V., 2015. Clinical, trichoscopic, and histopathological features of primary cicatricial alopecias: A retrospective observational study at a tertiary care centre of North East India. International journal of trichology, 7(3), 107-112.

[15]. Trachsler, S., Trüeb, R. M., 2005. Value of direct immunofluorescence for differential diagnosis of cicatricial alopecia. Dermatology, 211(2), 98-102.

[16]. Olszewska, M., Rudnicka, L., Rakowska, A., Kowalska-Oledzka, E., Slowinska, M., 2008. Trichoscopy. Archives of Dermatology, 144(8), 1007-1007.

[17]. Jain, N., Doshi, B., Khopkar, U., 2013. Trichoscopy in alopecias: diagnosis simplified. International journal of trichology, 5(4), 170-178.

[18]. Sperling, L. C., Cowper, S. E., 2006. The histopathology of primary cicatricial alopecia. In Seminars in cutaneous medicine and surgery, 25(1), 41-50.

[19]. Pinedo-Moraleda, F., Tristán-Martín, B., & Dradi, G. G., 2023. Alopecias: practical tips for the management of biopsies and main diagnostic clues for general pathologists and dermatopathologists. Journal of Clinical Medicine, 12(15), 5004.

[20]. Umar, S., Ton, D., Carter, M. J., Shitabata, P., 2023. Unveiling a shared precursor condition for acne keloidalis nuchae and primary cicatricial alopecias. Clinical, Cosmetic and Investigational Dermatology, 2315-2327.

[21]. Palmer, V., Valdebran, M., 2023. Central centrifugal cicatricial alopecia in the adolescent population: an overview of available literature. Life, 13(4), 1022.