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A clinico-dermatoscopic study of acral dermatosis

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Abstract

Background: Dermatoscopy has been found to be a useful tool in enhancing clinical diagnosis beyond pigmented/neoplastic lesions.

Aims: The present study was designed to identify the prevalence of skin lesions in the acral area and to study the clinical and dermatoscopic correlation of acral skin lesions.

Methods: A cross sectional clinico dermatoscopic study of 334 patients presenting with acral lesions to the outpatient skin department was done. Veos hd 2 hand held dermatoscope in polarised mode (10x) and iphone 7 camera was used.

Results: Out of 334 patients, maximum cases were of psoriasis 83 (24.85%) followed by its close differential chronic eczema 63 (18.86%), 44 (31.17%) scabies, 41 cases (12.28%) wart, 34 (10.18%) tinea. 12 cases of acute eczema, lichen planus 16 cases, 14 of pitted keratolysis, 10 of vitiligo, 4 of secondary syphilis, 4 of subacute eczema, 3 cases of dermatomyositis and 3 of lichen nitidus, 2 of porokeratosis and single case of erythema elevatum diutinum. Most of our patients (36.53%) were aged 31-40 years, and included 32.34% females and 67.66% males. In psoriasis, dermatoscopically regular dotted vessels (84.34%), red background (96.39%), and white scales (92.77%) were noted. In scabies, jet with contrail sign was seen in 97.73% cases. In palmoplantar warts, cluster of red/black dots (95.12%), yellowish structureless areas (87.80%) and interrupted skin markings (85.37%) were seen. Eczematous dermatitis showed yellow sero crusts and clusters of red dots with scaling. All patients of pitted keratolysis showed brown/yellow superficial pits with collarette of scaling. Wickham's striae was seen in 86.67% cases of lichen planus. Vitiligo lesions showed trichrome pattern, starburst pattern and telangiectasia.

Limitations: heterogenous group of disorders and histopathological co-relation was not done for all cases.

Conclusion: To the best of our knowledge, this is the first study which investigated the dermatoscopic features and epidemiology of various acral lesions.

Keywords: Dermatoscopy, acral dermatosis, non-invasive, polarised mode.

Introduction

Acral regions of the body can be affected by common dermatoses, such as superficial infections and contact dermatitis. Compared with the limited body surface area of the acral regions, involvement of these regions has a significantly negative impact on the patient's quality of life.

Dermatoscopy is a non-invasive diagnostic tool that allows a rapid evaluation of morphologic structures of the epidermis, the dermoepidermal junction, and the papillary dermis, not visible to the naked eye [1]. Nowadays, the dermatoscope is considered the dermatologist's stethoscope [2]. In diseases where peculiar dermatoscopy findings are noted, diagnostic procedures like skin biopsy can be avoided. We conducted this study to evaluate as well as compare clinical and dermatoscopic observations of acral lesions with an aim to determine if the non-invasive dermatoscopic technique can be used for diagnosis of acral skin lesions.

Methods

A cross sectional study was conducted at a tertiary care hospital and the study duration was of 2 years from October 2017-oct 2019. The study was initiated after obtaining approval from the institutional ethics committee. [Ref. No; PDDYPMC/Ethics/PG Dissert/2018]. Patients of all age groups and either sex complaining of acral skin lesions, willing to give

consent were enrolled randomly into the study. The sample size was estimated after a 15 day pilot study which included total number of patients presenting with acral dermatosis to the skin OPD. Total number of patients seen were 1680, out of which total number of patients diagnosed as acral dermatosis either clinically and histopathologically were 145. Among 145 diagnosed patients dermoscopic findings were seen in 112 patients. Prevalence of positive dermoscopy in diagnosed cases was found to be 77% {approx.} from the pilot study = $(122/145) \times 100 = 77.24\%$. From the above results and considering the allowable error to be 6%. The sample size was calculated using formula $(4pq/lx1)$ where, P=prevalence, Q=1- p, l = allowable error = $\{4 \times 77 \times 23\} / 4.62 \times 4.62 = 331.9$

Total sample size is 332 so N=332. Total 334 patients were enrolled in this study.

A detailed history was recorded and clinical photographs were acquired, additional tests if required were ordered to reach the diagnosis. Two fully qualified dermatologists made the clinical diagnosis of the lesion independently if any discrepancy, routine investigations and histopathology was done whenever necessary to aid the clinical diagnosis. Veos hd 2 hand held dermatoscope in polarised mode (10x) and iPhone 7 camera was used.

The data was entered in MS EXCEL spreadsheet and was

then analysed for percentages, rates, proportions and association, using a Chi-square test of significance, where $P < 0.05$ was considered significant.

Results

Age: In our study, 1.5% patients were under 10 years of age, 14.07% patients were aged between 11-20 years, 26.35% patients were between 21-30 years of age, 36.53% patients were between 31-40 years of age, 19.46% were between 41-50 years and only 2.10 % were >50 years. In our study, the mean age \pm SD of the cases was 32.22 ± 10.67 with the youngest patient being 6 years and the eldest being 56 years of age

Gender: Out of 334 patients, we found a male predominance with, 108 (32.34%) being females and 226 (67.66%) being males.

Duration: 218 (62.27%) were suffering from the disease for >6 months duration at the time of presentation, 57 cases (17.07%) had the disease for the past 1-6 months and 59 cases (17.66%) had the disease since the past 1 month itself.

Site: Most number of cases i. 145 (43.41%) presented with lesions solely on the hands, followed by 101 cases (30.24 %) with only involvement of feet. Both hands and feet were involved in 80 cases (26.35%).

Table 1: clinical diagnosis of acral skin lesions

Clinical diagnosis	Frequency	Percentage
acute eczema	12	3.59%
chronic eczema	63	18.86%
dermatomyositis	3	0.90%
erythema elevatum diutinum	1	0.30%
lichen nitidus	3	0.90%
lichen planus	16	4.79%
pitted keratolysis	14	4.19%
porokeratosis	2	0.60%
psoriasis	83	24.85%
scabies	44	13.17%
secondary syphilis	4	1.20%
subacute eczema	4	1.20%
tinea	34	10.18%
vitiligo	10	2.99%
wart	41	12.28%
Total	334	100.00%

[Table 1] summarises percentage wise distribution of various clinical diagnosis observed.

Psoriasis: Out of 83 patients clinically diagnosed as psoriasis dermoscopic findings included: 80 (96.39%) had red background, white scaling was seen in 77 (92.77%) and 70 (84.34%) had regular arrangement of dotted vessels.

Eczema: Out of 63 cases of chronic eczema, dermoscopy findings included: white and yellow scales were present in 57 (90.48%) and 53 (84.13%) cases respectively. Irregularly arranged salmon coloured dots/globules were seen in 49(77.78%) cases. Out of 12 cases of acute eczema, dermoscopic findings included: irregular cluster of red dots was seen in 10(83.33%) cases and yellow serocrusts were seen in 9 (75%) cases. [Figure 1] Out of 4 patients of subacute eczema [Figure 3], dermoscopic findings included: yellow serocrusts and cluster of red dots were seen in 3 cases and white scales were seen in all 4 cases. [Figure 2]

Scabies: Out of 44 clinically diagnosed cases of scabies, the characteristic dermoscopic spice jet with contrail sign was seen in 44 (97.73%) cases.

Vitiligo: Out of 10 cases of vitiligo, dermoscopic findings included: 7 (70%) cases showed trichrome pattern. [Figure 3], starburst appearance and telangiectasia was seen in 3 (30%) cases. Comet tail appearance was seen in a single case. Other findings included follicular repigmentation, marginal hyperpigmentation and white globules in vitiligo.

Verucca: Out of 41 cases of palmoplantar warts, dermoscopic findings seen in: 39 (95.12%) cases had irregularly distributed brown/black dots, yellowish structureless area was seen in 36 (87.80%) cases and interrupted skin lines were seen in 35 (85.37%) cases. [Figure 4] [Figure 5]

Tinea: 34 patients clinically diagnosed with tinea corporis. Dermatoscopic findings included: peripheral rim of scale

with intact outer border was seen in 82.35% patient and white scales in the creases seen in 88.24% patients

Lichen Planus: Of the 16 patients of lichen planus, wickhams striae was present in 86.67%, linear vessel were seen 66.67%, dotted vessel were seen in 73.33% [Figure 6] and hair pin vessel was seen in 20% patients

Pitted Keratolysis: On dermatoscopy of the multiple superficial pits present on soles in pitted keratolysis we observed multiple yellowish brown crateriform pits in all the cases and peripheral white collarette in 85.71% cases. [Figure 7]

Lichen Nitidus: Dermatoscopic findings of round homogenous sharply demarcated whitish area and brown shadow was seen in all 3 cases of lichen nitidus.

Dermatomyositis: Out of 3 cases of dermatomyositis, dermatoscopic findings included: dermatoscopic nail findings of hemorrhagic spots on nail folds, hyperkeratotic cuticle on erythematous background were present in all 3 cases and dilated vessels in nail folds was seen in 2 cases [Figure 8]. Dermoscopy of gottron's papule showed pinkish background with dotted/linear vessels in all 3 cases, central scaling was seen in 2 cases and central white area with pinkish halo seen in 1 case.

Secondary Syphilis: 4 patients who were clinically diagnosed as secondary syphilis, On dermatoscopy, monomorphic dotted vessels on a diffuse yellowish red background with a circular scaling edge towards the outward direction was evident in all 4 cases which is interpreted typically as Bietts sign suggesting secondary syphilis

Erythema Elevatum Diutinum (Eed): Single case of EED which was biopsy proven was enrolled in our study and dermatoscopy of the plaques and nodules on the extensor aspect of upper and lower limb showed purplish spots on a reddish purple background with central white & orange area. [Figure 9]

Porokeratosis: 2 cases of porokeratosis, one on upper limb and one on the sole biopsy proven, showed the characteristic porokeratotic dermatoscopic findings of hypopigmented scar like area with multiple scattered brown globules and dots and peripheral white line. [Figure 10]



Fig 1: Dermatoscopy 10x polarised mode of eczema shows cluster of red dots, yellowish white serocrusts

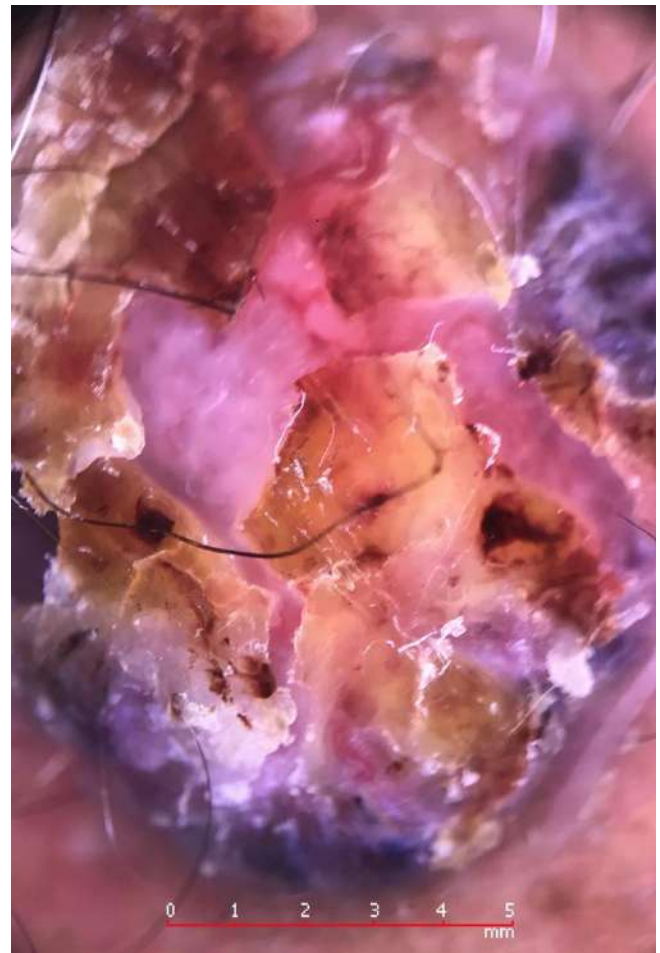


Fig 2: Dermatoscopy 10X polarized mode showing dilated capillaries with yellowish white serocrusts



Fig 3: Dermatoscopy 10X polarized mode showing Trichrome pattern of unstable vitiligo



Fig 4: Dermatoscopy (polarised 10X mode) of verruca shows interrupted skin markings & irregularly distributed brown dots



Fig 5: Dermatoscopy (polarised 10X mode) of verruca shows interrupted skin markings & irregularly distributed black/ brown dots

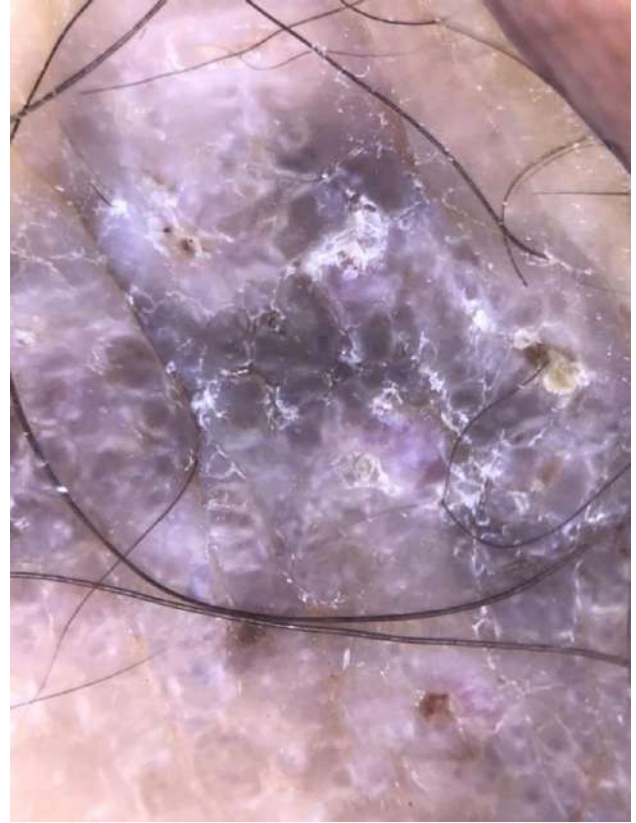


Fig 6: Dermatoscopy polarised 10X mode shows multiple yellow dots with diffuse scaling seen with wickham's striae.



Fig 7: Dermatoscopy (polarised 10X mode) of pitted keratolysis shows multiple yellowish brown crateriform pits with peripheral white collarette with free inner margin



Fig 8: Dermoscopy (polarised 10X mode) showing hyperkeratotic cuticle on an erythematous background, haemorrhagic spots in nail fold in dermatomyositis



Fig 9: Dermoscopy (polarised 10X mode): violaceous spots on a reddish background, central white and orange areas seen in erythema elevatum diutinum

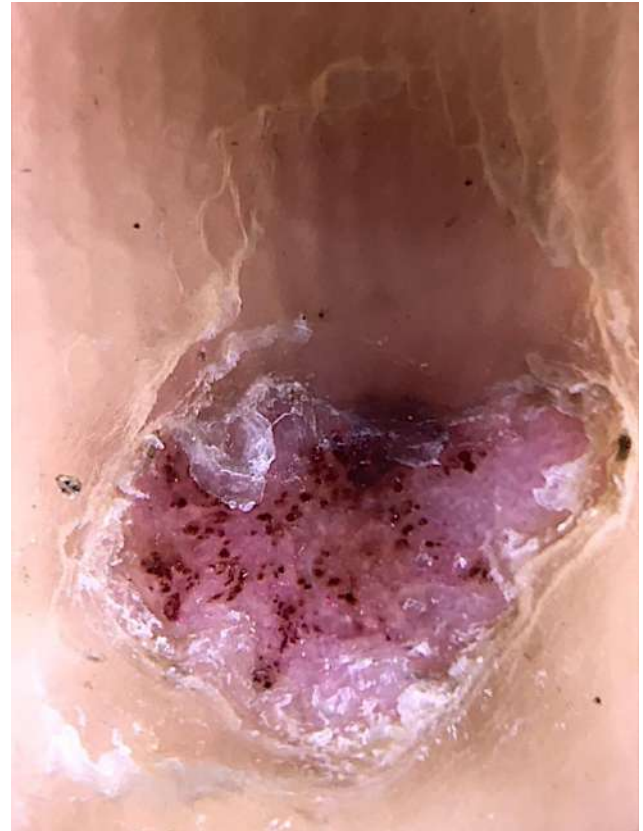


Fig 10: Dermoscopy (polarised mode 10 X) shows white line in periphery and double white track line in some areas with red dots, globules and few homogenous white areas

Discussion

A total of 334 patients with acral skin lesions fulfilling the inclusion and exclusion criteria were enrolled in this study. Nayak SS *et al.* clinic-dermatoscopically evaluated 475 dermatoses including inflammatory, infectious, vesiculobullous, vascular, benign face tumors, hypopigmentary, drug reactions and miscellaneous conditions [3]. Lallas A and colleagues evaluated 169 patients to determine and compare the dermatoscopic patterns associated with lichen planus, pityriasis rosea, psoriasis and dermatitis, and to assess the validity of certain dermatoscopic criteria in the diagnosis of psoriasis [4]. Walter B and colleagues compared and evaluated the diagnostic properties of dermatoscopy, with microscopic examination of skin scraping, and the adhesive tape test in 125 patients with a presumptive diagnosis of scabies [5]. Jha AK *et al.* analyzed dermatoscopic findings of 60 patients with either stable, progressive, or repigmenting vitiligo [6]. Dupuy A *et al.* conducted a prospective, nonrandomized, evaluator-blinded, noninferiority study to compare sensitivities and other diagnostic properties of dermatoscopy and microscopic examination of skin scrapings in 756 patients with a presumptive diagnosis of scabies [7].

We observed prevalence of psoriasis to be 24.85% out of 334 cases but the prevalence of cases with only palmo-plantar involvement was found to 12.04%. Kaur *et al.* observed 2.3% prevalence. In our study the mean \pm SD of

psoriasis patients was found to be 30.75 ± 11.77 . In the study by Lallas A *et al.*, the mean age of patients with psoriasis was found to be 47.8 years^[4]. The mean \pm SD age of patients in the study by Dupuy A *et al.* was 30 ± 19.5 years, ranging from 2 years to 99 years. We found a male predominance in our study and similar results were observed Kaur *et al.*^[8]

Dermatoscopic findings of psoriasis in our study included: 80 (96.39%) had red background, white scaling was seen in 77 (92.77%) and 70 (84.34%) had regular arrangement of dotted vessels. Lallas A *et al.* found dotted vessels in psoriasis to be most commonly arranged in a regular distribution in 88% of their patients and were associated with white scales (70%). The background colour of the lesions was red amongst majority 99.99% of their psoriasis patients. White scale colour was noted in 70% psoriasis patients. 4 Out of 60 patients diagnosed as psoriasis on histopathology 55 had dermatoscopic findings consistent with psoriasis.

In our study, a total of 12 cases of acute eczema, 4 cases of subacute eczema and 63 cases of chronic eczema were present with mean age of 28.25, 40.25 and 31.37 years respectively. Out of 12 cases of acute eczema, dermatoscopic findings included: irregular cluster of red dots was seen in 10(83.33%) cases and yellow serocrusts were seen in 9 (75%) cases. Out of 4 patients of subacute eczema, dermatoscopic findings included: yellow serocrusts and cluster of red dots were seen in 3 cases and white scales were seen in all 4 cases. Chronic eczema was found to be more common in females as compared to males as most of them were suffering from housewife's dermatitis or detergent's dermatitis. Similar findings were found in Kumar P *et al.*^[9]. Dermatoscopy of chronic eczema showed salmon coloured dots and globules in 77.78% cases yellowish scales (84.13%) cases and white scales in 90.48% cases. Similar findings were reported by Erichetti E *et al.*^[10] and Xu C *et al.* 11 Out of 41 cases of chronic eczema diagnosed on histopathology 39 cases had dermatoscopically characteristic feature.

We observed prevalence of scabies to be 13.17% with mean \pm SD age being 35.5 ± 12.09 and showing male preponderance. Out of 44 clinically diagnosed cases of scabies, the characteristic dermatoscopic jet with contrail sign was seen in 43 (97.73%) cases. For diagnosing scabies, Dupuy A *et al* found 91% sensitivity (95% CI: 86-96) and 86% specificity (95% CI: 80-92) for dermatoscopy^[7]. Walter B *et al* reported dermatoscopy to be 83% sensitive (95% CI, 70-94) and 46% specific (95% CI, 34-58) in the diagnosis of scabies; they found the sensitivity of dermatoscopy to increase with the severity of the disease^[5].

We observed a prevalence 2.99% of vitiligo in our study whereas Zhang Y *et al* observed 1.8% prevalence. We saw mean \pm SD of 34.7 ± 9.97 with male predominance. 12 Out of 10 patients (2.99%) clinically diagnosed with vitiligo, dermatoscopic findings included: 70% had trichrome pattern, 30% had star burst appearance, and 30% showed telangiectasia and comet tail appearance was seen in a single case. Other findings included follicular repigmentation, marginal hyperpigmentation and white globules in vitiligo. In the study by Jha AK *et al.*, perifollicular depigmentation was noted to be predictive of stable vitiligo, perifollicular pigmentation was characteristic of the active form. Starburst appearance, altered pigment network, and comet tail appearance were typical features observed in cases of progressive vitiligo; the 'tapiaco sago' appearance (sabudana), was seen in the skin adjacent to the

vitiligo lesion only in progressive vitiligo^[6].

Out of 41 cases of palmoplantar warts dermatoscopic findings included: 39 (95.12%) cases had irregularly distributed brown/black dots, yellowish structureless area was seen in 36 (87.80%) cases and interrupted skin lines were seen in 35 (85.37%) cases. Prevalence of verruca in our study was 12.28% with mean \pm SD of 31.85 ± 10.77 with male predominance. Aqil N *et al* found mean age of 32.8 years with male predominance. In the study by Aqil N *et al* all the cases showed yellowish structureless area, interrupted skin line and punctate haemorrhages^[13].

In our study, out of 34 total tinea patients mean \pm SD of 30.38 ± 9.84 was observed with male predominance. Other studies have also noted tinea in all age groups, with a higher incidence in the younger population, i.e. in those aged 20-40 years^[14-16]. Similar findings were reported by Lakshmanan A *et al.*,^[17] with 56% males and 44% females. 34 patients clinically diagnosed with tinea corporis, dermatoscopic findings included: peripheral rim of scale with intact outer border was seen in 82.35% patients and white scales in the creases seen in 88.24% patients. Jakhar D *et al* found white scales in furrows in all the cases^[18].

Our study had 16 patients of lichen planus that is 4.6% patients, mean age 32.69 ± 11.09 which was more common in males. In the study by Mohamadi MKN *et al* lichen planus was more common in males with mean \pm SD of 55 ± 9.84 . 19 Of the 16 patients, wickhams striae was present in 86.67%, linear vessel were seen 66.67%, dotted vessel were seen in 73.33% and hair pin vessel was seen in 20% patients. Among the patients analysed by Lallas A *et al.*, white crossing lines (Wickham striae) were seen exclusively in lichen planus 96% and occurred together with a dull red background colour 64% (16 / 25) and peripheral arrangement of vessels in 60% (15 / 25). 8 Mohamadi MKN *et al* noticed wickhams striae in 58.2%. 19 Out of 12 cases of histopathologically diagnosed lichen planus 11 had characteristic dermatoscopic feature.

In our study 14 patients (4.19%) of pitted keratolysis, mean \pm SD age was 35.21 ± 10.61 which was more common in males. On dermatoscopy of Multiple superficial pits present on soles we observed multiple yellowish brown crateriform pits in all the cases and peripheral white collarette in 85.71% cases. Similar findings were reported by Abeer H *et al.*^[20] and Lockwood LL *et al.*^[21]

3 patients of lichen nitidus were seen who had mean \pm SD age of 38.67 ± 15.50 . Dermatoscopy of all cases showed round homogenous sharply demarcated whitish halo with brownish shadow in the centre. Similar finding observed by Malakar S *et al.* 22 and Erichetti E *et al.*^[23]. All 3 cases on HP matched with dermatoscopic diagnosis.

4 patients were diagnosed as secondary syphilis with mean \pm SD age of 37.5 ± 3.79 . clinically multiple well defined dusky red annular plaques with peripheral scaling present on the palm in secondary syphilis. On dermatoscopy, monomorphic dotted vessels on a diffuse yellowish red background with a circular scaling edge towards the outward direction was evident in all 4 cases which is interpreted typically as Bietts sign suggesting secondary syphilis which correlated with the observations made by Tognetti L *et al.*^[24].

3 patients who were clinically diagnosed as dermatomyositis with mean \pm SD age of 33 ± 16.37 shows Multiple erythematous to violaceous plaques present on DIP & MCP joints in dermatomyositis. Dermatoscopic nail finding of hyperkeratotic cuticle on erythematous background (100%) dilated vessels (66.67%) & hemorrhagic spots (100%) in

nail fold. Pinkish background (100%) with dotted/linear vessels central scaling/crusting, central white area with pinkish halo (33.33%) was seen Dermatoscopically on gottron papules. Similar findings were documented by Hasingawa *et al.* [25] and Mendese G *et al.* [26]

Single case of EED in our study and dermatoscopy of the plaques and nodules on the extensor aspect of upper and lower limb showed purplish spots on a reddish purple background with central white & orange area. Similar observations were reported by Sharma V *et al.* [27]

2 cases of porokeratosis, one on upper limb and one on the soles showed the characteristic porokertaotic dermatoscopic findings of hypopigmented scar like area with multiple scattered brown globules and dots and peripheral white line. Findings were correlated with the ones found in the study by Delfino M *et al.* [28] & Moscarella E *et al.* [29]

Limitations: Heterogenous group of disorders and histopathological co-relation was not done for all cases.

Conclusion: From the findings of our study we found dermatoscopy to be a useful non-invasive tool in diagnosing acral lesions.

Ethical Methods: none, the study was initiated after obtaining approval from the institutional ethics committee. [Ref. No; PDDYPMC/Ethics/PG Dissert/2018].

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