

Is Frictional Lichenoid Dermatitis a Minor Variant of Atopic Dermatitis or a Photodermatosis

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Abstract

Context:

Frictional lichenoid dermatitis.

Background:

Frictional lichenoid dermatitis (FLE) is an entity that is probably under diagnosed and has been variably associated with either friction and/or atopy with a distinctive seasonal variation.

Aims and Objectives:

To study correlation of FLE with UV index and to assess its association with atopic dermatitis.

Materials and Methods:

A cross sectional analysis of children with FLE was done, over a period of 6 years in two tertiary hospitals. A detailed history and examination was done to assess the features of atopic dermatitis. The number of cases seen per month was compared with the mean monthly UV index. Two-tailed significance tests using Pearson's coefficient of correlation and T-test were used to interpret the data. ($P < 0.05$).

Results:

One hundred seventy-four patients were studied using the UKC criterion 17.2% of the patients had AD while xerosis (40.3%) was the predominant cutaneous finding. The number of patients seen in summer was more than in winter ($P < 0.05$) but there was no statistical difference between the cases in winter and spring. There was a significant correlation of the number of cases per month with UV index ($P = 0.019$). Almost 42% of patients gave a history of recurrence.

Conclusions:

FLE is probably not associated with atopic dermatitis and is likely to be related to the ambient UV index though a larger cohort with meticulous follow up may be needed to draw a final conclusion.

Statistical Analysis Used:

The Pearson's coefficient of correlation was used for comparing the cases per month with the UV index. The tests of hypothesis used included the paired T-tests. F-test of variance, Welch test, Wilcoxon rank sum

test and the Kolmogorov-Smirnov Test. $P < 0.05$ was considered significant.

Keywords: *Atopic dermatitis, frictional lichenoid dermatitis, seasonal variation, summer, Sutton's prurigo, UV Index, UV light*

What was known?

Frictional lichenoid dermatitis is a dermatoses seen in children localized to the extensors which has been associated with friction, trauma, sunlight, sand, sports or atopic dermatitis.

Introduction

Frictional lichenoid dermatitis (FLE) or Sutton's summer prurigo is an entity[1,2,3,4,5] that is probably more commonly seen than reported and we believe that the condition is commonly underdiagnosed. This entity receives little attention in most textbooks.[5] Sutton first described this skin disease in 1956 and anointed the name "summertime pityriasis of the elbow and knee".[1] Various authors have assigned numerous descriptive names to this entity [Table 1].[1,2,3,4,5,6,7,8,9,10,11,12,13] As some studies have been published in foreign language journals,[10,11,12,13,14] it is difficult to analyze the true nature and prevalence of this entity. Amongst the various causative factors, friction,[2,4,6,8] UV radiation[4,6,15] and an underlying atopic state,[5,6,8] have been implicated [Table 2]. Though FLE is considered to be associated with atopic dermatitis (AD), it is at best a minor morphological variant[16] and using the existing diagnostic criterion of AD,[17] in most cases a "atopic state" has been found, not overt AD. The consistently reported seasonal association with summers and spring[1,2,3,4,5,6,7,8,9,10,11,12,13,14,15] is a pointer against AD which usually improves in summers. The ultraviolet index (UVI) which is a measure of the intensity of the sun's erythema ultraviolet radiation[18,19] is the most objective index for assessing the UV flux.[19] In this prospective cross sectional study we studied cases of Sutton's prurigo to analyze the demographic profile and factors that are associated with its occurrence in pigmented skin. Our objective was to study the correlation of FLE/Sutton's prurigo with the UV index and to assess the association of atopic dermatitis with this dermatoses. Our hypotheses is that UV light probably plays an important part in the causation of FLE.

Materials and Methods

A cross sectional analysis of all children with FLE was undertaken from January 2005 to November 2012 at the Dermatology outpatient department of two tertiary care hospitals. All cases with a mildly symptomatic eruption composed of discrete closely aggregated lichenoid papules with occasional scaling on the extensors were included. An algorithm was used to exclude other similar looking dermatoses [Figure 1]. The characteristic localization, morphology and seasonal recurrence ruled out other conditions like Gianotti-Crosti syndrome and id eruption. As id eruption consequent to infective foci is common, an attempt was made to look for any primary cutaneous fungal, viral or bacterial infection. The morphological diagnosis was based largely on the clinical description by Waisman.[2] The dermatoses was graded as mild moderate or severe [Table 3][2,7] Biopsy confirmation was done only in atypical cases. Apart from recording the epidemiological data the month of presentation was noted in all cases. A specific history of previous episodes was taken to assess whether the condition recurred. We used the UVI which is an linear irradiance scale and usually ranges from 0 to 16.[18,19]

The monthly UV index data was derived from the SCIAMACHY - data base (scanning imaging absorption spectrometer for atmospheric cartography).[20,21,22,23] The data for New Delhi was taken from the site (<http://www.temis.nl/uvradiation/archives>).

History and examination was directed towards diagnosing atopic diseases (asthma, hay fever, allergic rhinitis), atopic dermatitis[16] and to look for any other dermatoses. The UK Working Party Diagnostic Criteria (UKC) was used to confirm cases of AD.[17] In AD measurement of disease incidence poses difficulties as this is usually an intermittent disease.[20] Thus, we used the one year period to assess the diagnostic criterion. Absence of burrows or finger web lesions which is considered as a necessary major

criterion[21] was included in our diagnostic definition. Other data that was collected included history of recurrences, season of recurrence, morphology and site of eruption, duration and symptomatology of the rash. No laboratory tests were ordered as they do not find a place in the UKC.[20,21] The patients were asked to follow-up so that the time to healing and recurrences could be assessed. Apart from emollients and antihistaminics topical mid potent steroids and tacrolimus therapy were administered if necessary.

All the data was entered in an excel work sheet and analysed by standard statistical software (Microsoft Office Excel 2007 and Wessa Net, (2012), <http://www.wessa.net>). The data of number of cases per month was collected for the period 2005 to 2012 and was compared with the mean monthly UV index. The data of cases month wise were divided into four seasons spring, summer, autumn and winter. As Delhi falls in a tropical zone the seasonal variation is not marked and thus for statistical calculation the number of cases of winter and autumn were collated and compared with spring and summer cases. Two-tailed significance tests were used to interpret the finding. The Pearson's coefficient of correlation was used for comparing the cases per month with the UV index. The tests of hypothesis used included the paired T-tests. F test of variance, Welch test, Wilcoxon rank sum test and the Kolmogorov-Smirnov Test. $P < 0.05$ was considered significant.

Results

A total of 174 patients were studied [Table 4], the majority of which were males (64.5%). The morphology was varied with the severity ranging from mild to the severe forms with crusting[2,6] [Table 3, Figures 2–4]. The commonest site affected was the elbows [Figures 2–4] followed by the dorsum of hands [Figure 5a] and the knee [Figure 5b]. The condition was symptomatic in 33% of cases and in the rest the pruritus was mild to moderate in most cases. Though almost 42% of patients gave a history of recurrence in, only 42 patients could be prospectively followed up over the 7 year study period. Of these patients almost 70% had a second episode in the same season. The period of follow up after the first episode ranged from 1-5 years. None of the patients followed up developed AD on follow-up. Using the UKC criterion[17] out of all the cases seen of FLE only 17.2% of cases had AD while the commonest associated finding was xerosis (40.3%). The rest (42.5%) had no significant abnormality. Histological examination revealed a nonspecific perivascular lymphocytic infiltrate in the patients who were biopsied ($n = 30$).

Delhi being in the tropics there is a short winter and autumn (October to January) while the spring (February to March) and summers (April to June) seasons tend to overlap. From July to August the monsoons intervene but the temperatures are high and these are included in the summer months. The number of patients in summers (April to September) were more than the cases in winters (November to January) [Table 4], [Figure 6] to enable statistical analysis the number of cases of autumn and winter (24) were compared with the cases in summer (119) and spring (31) using the Paired *t*-test [Table 5, Figure 6]. The difference between the number of cases in winter and summer was found to be significant ($P < 0.05$) but there was no statistical difference between the cases in winter and spring [Table 5]. The mean UV Index was 8.02 (SD 3.02; SE 0.88). A correlation [Figure 7, Table 5] of the number of cases per month with the UV index (mean for each month from 2005-2012) was analyzed by Pearson product moment correlation and was also found to be significant ($R = 0.658$; $P = 0.019$).

Of the patients who were followed up ($n = 42$) most (38/42; 90%) had a summer or spring aggravation.

Discussion

FLE is probably more common than it is reported and it is likely to be unrelated to atopic dermatitis.[20] The recurrence of the dermatoses is probably a reason for their referral to dermatologists. [1,2,3,4,5,6,7,8,9,10,11,12,13,14,15] It was originally believed that friction is the probable cause[2,4,6] but this is probably a “nebulous”[6] and inconsistent finding. In our series, [Table 2] friction had no role to play. The purported relation to atopic dermatitis is not consistent and this is largely restricted to one study.[8] Other authors believe that it may be related to an underlying atopic state[5,6,8,9] and its label as a minor manifestation of AD[8] was probably as the diagnostic criterion used did not have the requisite sensitivity or specificity.[20,21] In fact in the study by Patrizi *et al.*,[8] the authors admit that it is difficult to confirm that FLE is a morphological variant of AD. In fact some of the original authors[2,3] never

believed that atopy is related to FLE though Rasmussen[5] suggested that FLE cases may be latent atopics.

The diagnosis of AD despite its visual nature is not easy because of variations in morphology, distribution and time course.[20,21] Of all the diagnostic criterion only two have been validated comprehensively, the Hanifin and Rajka criterion (sensitivity: 87.9-96%; specificity 77.6-93.8%) and UKWC criterion (sensitivity: 10-95.5%; specificity 90.4-98.3%).[20] As the UKWC has been more comprehensively validated (8 hospital based and 13 population based studies)[20] and a study like ours where specificity of case definition probably outweighs sensitivity, this criterion was used.[20,21] This is important as this makes our analysis of the correlation of AD in relation to FLE more accurate than previous studies.[5,6,8,9] There are numerous arguments that suggest that FLE is unrelated to AD. Firstly most diagnostic criterion focus on minor criterions like FLE, which probably are unrelated to AD[20,21] The sites that are affected are usually the extensors[1,2,3,4,5,6,7,8,9,10,11,12,13,14,15] as opposed to the predominant flexural distribution in AD.[17] FLE is largely asymptomatic[2] and importantly the summer or spring aggravation[1,2,3,4,5,6,7,8,9,10,11,12,13,14,15] is against the conventional aggravation of AD in winter months. Though various studies have found that a proportion of cases are either overt “atopics” or predisposed to “atopy”, [5,6,8,9] in our study only 17.2% of FLE cases were diagnosed as AD. Though most studies have not used a validated diagnostic criterion, if we group the patients with signs of “atopy” with cases of AD [Table 2] the percentage of the so called “atopic cases” in published studies of FLE varies from 14.2 to 31.4%. [3,5,6,8,9] This itself is a good argument against clubbing FLE with AD. Lastly a validation study[22] revealed that the non-AD false positive cases were composed mainly of mild inflammatory dermatoses including keratoses pilaris, frictional lichenoid dermatosis and pityriasis alba.

In spite of the aforesaid arguments against labeling FLE as a variant of AD, it should be understood that the UKC criteria like most other criterion were not designed to determine the degree of “atopiness” in other purported atopic eczema variants. Thus, it would be probably accurate to state that, considering a prevalence of 5.6%[15] there is a 98.7% probability that a large proportion of cases (82.8%) of FLE in our study did not have a “typical atopic eczema”.

Our primary hypothesis was that FLE is probably triggered and caused by sunlight and UV radiation. The marked aggravation in months with a high UV index as compared to winters has been reported in all studies[1,2,3,4,5,6,7,8,9,10,11,12,13,14,15] and is evidenced by the consistent use of “summer” aggravation in most studies [Table 1]. We have statistically confirmed a correlation between the number of cases month wise with the UV index [Table 4] which suggests that FLE is more common in the summer months. All the patients who gave a history of previous episodes noted that it recurred consistently in the same season. The patients who were followed up ($n = 42$) also had consistent aggravation in the summer months, though this could not be analysed statistically. The tropical climate and the adaptive clothing which necessitates loose clothes with exposed extremities explains the effect of UV radiation in the causation of FLE. The spring aggravation,[5,6,8] reported in previous studies was not significant statistically [Table 5], as in a tropical settings these months overlap with the predominant summer season. Though a previous study has reported an association of FLE with UVB light,[6] we were unable to obtain the data for UVA and UVB in our city to pinpoint the exact spectrum of UV light that causes the eruption. As the UV index is largely composed of UVB it can be surmised that this may play an important role in FLE The inherent drawback though of relying on the UV index is that this largely measures a mid day UV radiation and depends on the cloud cover and ozone layer in a particular geographical area.[23,24] It seems that Sutton’s prurigo/FLE is similar to PMLE[25,26] but there are certain differences [Table 6] which cannot be ignored.

The one drawback in our study is that cross sectional design is probably an inappropriate design to look at a temporal relationship between a possible exacerbating factor and an underlying condition. But though a cohort study or a panel study would have been ideal, a condition like FLE which is benign, self heals and is amenable to topical steroids does not lend itself to follow-up. But as the patients consistently recalled a summer aggravation even on follow-up ($n = 42$) we believe that our hypothesis is correct.

The consistent summertime aggravation[1,3,4] of FLE[2] and its subsequent rechristening as Sutton’s summer prurigo,[5] was we believe an appropriate terminology for this condition. We believe that it is time to stop labeling FLE as a minor manifestation of AD. Our study shows that an underlying xerotic state is probably more important in pigmented skin. Future studies involving a follow-up of a larger number of

cohorts with correlation of the seasonal variation of the disorder with the monthly UVI and type of UV light are needed to validate our findings. Probably then FLE/Sutton's Summer Prurigo may well be re-labelled as an idiopathic photodermatosis.[\[24,25\]](#)

What is new?

We have shown that FLE is probably related to the ambient UV flux and is not likely to be a manifestation of atopic dermatitis.

Though UV Testing may be needed it might be a form of photodermatosis.

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Footnotes

Source of support: Nil

Conflict of Interest: Nil.

References

1. Sutton RL. Summertime pityriasis of the elbow and knee. In: Sutton RL Jr, editor. *Diseases of the Skin*. 2nd ed. St Louis: Mosby; 1956. p. 898.
2. Waisman M, Sutton RL., Jr Frictional lichenoid eruption in children. Recurrent pityriasis of the elbows and knees. *Arch Dermatol*. 1966;94:592–3. [PubMed: 5960363]
3. Goldman L, Kitzmiller KW, Richfield DF. Summer lichenoid dermatitis of the elbows in children. *Cutis*. 1974;13:836–8.
4. Holzwanger JM, Rudolph RI. Letter: Summertime pityriasis of the elbows in an adult. *Arch Dermatol*. 1974;110:639. [PubMed: 4414413]
5. Rasmussen JE. Sutton's summer prurigo of the elbows. *Acta Derm Venereol*. 1978;58:547–9. [PubMed: 83084]
6. Menni S, Piccinno R, Baietta S, Pigatto P. Sutton's summer prurigo: A morphologic variant of atopic dermatitis. *Pediatr Dermatol*. 1987;4:205–8. [PubMed: 3422851]
7. Kraigher O, Brenner S. Dermatitis papulosa adultorum. *Clin Exp Dermatol*. 2009;34:620–2.
8. Patrizi A, Di Lernia V, Ricci G, Masi M. Atopic background of a recurrent papular eruption of childhood (frictional lichenoid eruption) *Pediatr Dermatol*. 1990;7:111–5. [PubMed: 2359726]
9. Serna MJ, España A, Idoate MA, Quintanilla E. Lichenoid papular eruption in a child. Frictional lichenoid dermatitis of childhood (FLDC) *Arch Dermatol*. 1994;130:106. [PubMed: 8285727]
10. Dupre MM, Christol B, Bonafe JL. La dermatite dutoboggan (variant de "frictional lichenoid eruption in children") *Bull Soc Fr Dermatol Syphiligr*. 1972;81:203–5.
11. Wüthrich B. Papulöse Neurodermitis atopica: Einebesondere Form der juvenilen papulöse Dermatitis? *Dermatologica*. 1983;167:196.
12. Storck H. Neurodermitis disseminata mit Ver-schlechterung im Sommer, Aufflammen nach Inhalation von Pollenallergenen. *Dermatologica*. 1960;121:150–1.
13. Piñol Aguadé J, Peyri Rey J. Summer lichenoid papulosis. *Med Cutan Ibero Lat Am*. 1975;3:193–8. [PubMed: 1241071]
14. Fölster-Holst R, Kiene P, Brodersen JP, Christophers E. Dermatitis papulosa juvenilis. *Hautarzt*.

1996;47:129–31. [PubMed: 8868457]

15. Sardana K, Mahajan S, Sarkar R, Mendiratta V, Bhushan P, Koranne RV, et al. The spectrum of skin disease among Indian children. *Pediatr Dermatol.* 2009;26:6–13. [PubMed: 19250398]

16. Wüthrich B. Minimal Variants of Atopic Eczema. In: Ring J, Przybilla B, Ruzicka T, editors. *Handbook of Atopic Eczema Second Edition.* New York, Berlin: Springer-Verlag, Heidelberg; 2006. pp. 74–82.

17. Williams HC, Burney PG, Hay RJ, Archer CB, Shipley MJ, Hunter JJ, et al. The UK Working Party's Diagnostic criteria for atopic dermatitis I: Derivation of a minimum set of discriminators for atopic dermatitis. *Br J Dermatol.* 1994;131:383–96. [PubMed: 7918015]

18. Fioletov V, Kerr JB, Fergusson A. The UV Index: Definition, distribution and factors affecting it. *Can J Public Health.* 2010;101:I5–9. [PubMed: 21033538]

19. World Health Organization. Geneva, Switzerland: WHO; 2002. *Global Solar UV Index, A Practical Guide.* WHO/SDE/OEH/02.2.

20. Langan SM, Williams HC. Clinical Features and Diagnostic criterion of Atopic dermatitis. *Harper's Textbook of Pediatric Dermatology.* In: Irvine AD, Hoeger PH, Yan AC, editors. 3rd ed. Vol. 28. Oxford: Wiley-Blackwell Science Ltd; 2011. pp. 10–7.

21. Williams HC, Flohr C. So How Do I define atopic Eczema? A Practical manual for researchers wishing to define atopic eczema. [Last accessed on 2013 May 16]. Available from: <http://www.nottingham.ac.uk/dermatology/eczema/contents.html> .

22. Williams HC, Burney PG, Pembroke AC, Hay RJ. Validation of the UK diagnostic criteria for atopic dermatitis in a population setting. *Br J Dermatol.* 1996;135:12–7. [PubMed: 8776351]

23. Allaart M, van Weele M, Fortuin P, Kelder H. An Empirical model to predict the UV-index based on Solar Zenith Angle and Total Ozone Meteorological Applications (Royal Met. Society) 2004 doi:10.1017/S1350482703001130.

25. van Geffen J, van der A R, van Weele M, Allaart M, Eskes H. Salzburg, Austria: ESA publication SP; 2004. Sep 6-10, Surface UV radiation monitoring based on GOME and SCIAMACHY n: Proceedings of the ENVISAT & ERS Symposium. 572,2005.

25. Ferguson J. The Idiopathic Photodermatoses. In: Irvine AD, Hoeger PH, Yan AC, editors. *Harper's Textbook of Pediatric Dermatology.* 3rd ed. Vol. 106. Oxford: Wiley-Blackwell Science Ltd; 2011. pp. 1–3.

26. Lim HW, Hawk JL. Photodermatologic Disorders. In: Bologna JL, Jorizzo JL, Schaffer JV, editors. *Dermatology.* 3rd ed. Vol. 2. New York: Elseiver; 2012. pp. 954–62.

Figures and Tables

Table 1

Author/year	Terminology
Sutton RL (1956)	Summertime pityriasis of the elbow and knee
Waisman M (1966)	Frictional lichenoid eruption
Holzwanger JM (1974)	Summertime pityriasis of the elbows
Dupre MMA (1974)	“Dermatite du Toboggan”
Goldman L (1976)	Summer lichenoid dermatitis
Rasmussen JE (1978)	Sutton’s Summer prurigo
Wüthrich B (1984)	Papular neurodermatitis
Patrizi A (1990)	Recurrent papular eruption of childhood
Folster Holst R (1996)	Dermatitis papulosa juvenilis
Kraigher O (2009)	Dermatitis papulosa adultorum

FLE: Frictional lichenoid dermatitis

A chronological list of terminology used for FLE/Suttons Prurigo[[1](#),[2](#),[3](#),[4](#),[5](#),[7](#),[8](#),[9](#),[10](#),[11](#)]

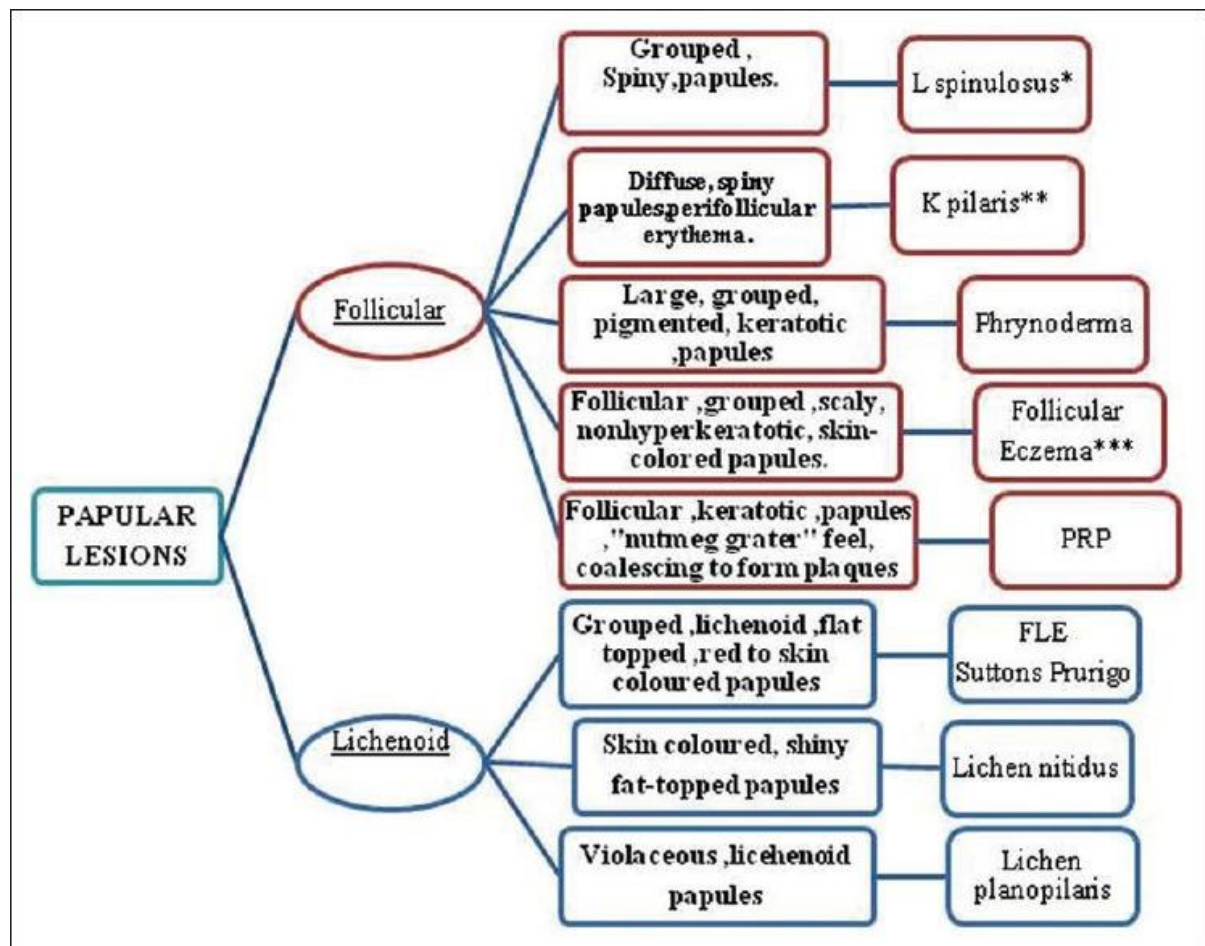
Table 2

Author/year	Patients Age/sex/no	Site	Seasonal aggravation	Friction	Atopic stigmata*	Atopic dermatitis	Comments
Waisman <i>et al.</i> 1966 (Florida)	4-12 years (M:F-3:1)	Elbows, knee, Dorsal hand and feet, extensor of forearms. Chest and back	Summer	+	-	-	Friction consequent to abrasion is the probable Cause
Goldman L 1974	4-17 years 7pts	Elbow, knee Cheeks	Summer	-	-	1 pt	Pruritus was noted in all patients Not likely to be AD
Holzwanger al. 1974 (Philadelphia)	27 years, male 1 case	Elbows, knee	Spring	+	-	-	Solar radiation could be a cause First adult case
Rasmussen 1978 (New York)	6 year (4-10) (8M 5F) 13 pts	Elbow, knee, trunk, face	Spring (April-June)	-	-	Present in 3 patients (3/13)	Exact cause not known Patients could be latent - atopics
Serna <i>et al.</i> , 1994 (Spain)	3 years male 1 case	Cheeks, neck, hands, elbows, knees	Summer	-	Family history of atopy	-	-
Patrizi <i>et al.</i> , 1990 (Italy)	1-10 years (22 M, 13 F) 35 cases	Dorsa of hands and fingers , elbow, knee, extensor forearms, cheeks wrist	Spring>summer	+	24 patients	11 patients (Hanifin and Rajka criterion)	Using strict diagnostic criterion of AD majority of cases are not strictly cases of AD. An atopic state is present in 60% while 40% have no such predilection
Kraigher <i>et al.</i> , 2008 (Israel)	24-45 years (1M, 2 F) 3 cases	Elbows	Nov, Jan, Feb	-	-	-	Adult cases reported. Probably related to sunlight
Menri <i>et al.</i> , 1987 (Italy)	3-13 years, (4M, 2F) 18 (6 studied in detail)	Elbows, knees, back of hands	Spring, summer	+/-	5/6	1/6	Using the UKWC only one patient has AD. The rest were diagnosed using non specific criterion * UVB radiation may have a role to play
Sardana K <i>et al.</i> , 2009 (India)	6	Elbows, knees, back of hands	Summer	-	Xerosis		Probably related to xerosis With sunlight being the inciting factor
Present Study	174	Elbow , dorsa of hands, knee, Face, Lower limbs	Summer	-	70: Xerosis 20: Atopy	30	Statistical analysis confirms a correlation with a high UV index seen in summer months with a underlying xerotic state

*Anamnestic Data, history of atopy and/or Laboratory Investigations Out of 35 patients 11 had no signs of "atopy", 8 had family history of atopy or laboratory data suggestive of atopy. 5 had allergic disease (rhinitis/asthma), FLE: Frictional lichenoid dermatitis, UKWC: United kingdom working criteria, AD: Atopic Dermatitis, UV: Ultraviolet, UVB: Ultraviolet B radiation

A summary of the literature on FLE/Suttons Summer Prurigo[2,3,4,5,7,8,9,15]

Figure 1



Differential of Follicular/Lichenoid papular lesions localized to the extensors.* The spine is the most prominent feature as the lesions are small. The spine can be dislodged leaving the papule intact.** The follicular prominence is known as the antenna sign, removal of the spine classically reveals a "coiled up" hair in the papule.*** The other terminology used includes patchy pityriasiform lichenoid eczema, follicular variant of atopic dermatitis and papular eczema.

Table 3

Severity	Clinical Findings
Mild	Faintly depigmented, pityriasiform lesions, pinhead sized, imperceptibly raised on a dark background
Moderate	Dull pink lichenoid, thick raised papules, periphery shows flat lesions
Severe	Crusted papules with itching

*: The elementary lesion is a lichenoid, globular, angular, papule, discrete and closely aggregated to occasionally forms plaques

Morphological types of frictional lichenoid dermatitis/sutton's summer prurigo*[[2](#),[7](#)]

Figure 2



Faintly depigmented pinhead sized papular aggregated lesions on the elbow

Figure 3



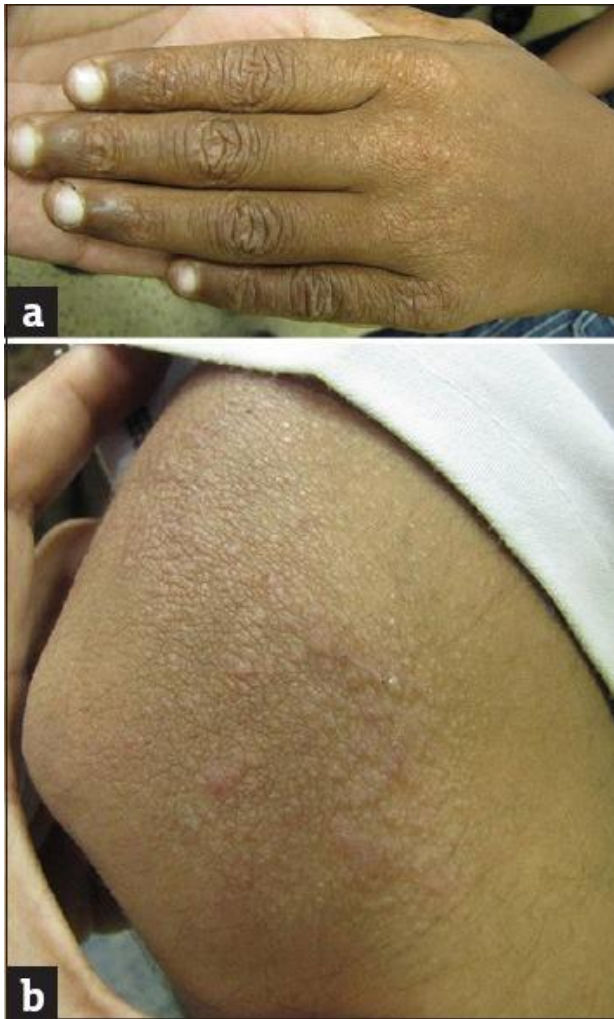
Multiple discrete, pinhead sized, lesions seen on a pigmented background

Figure 4



Discrete crusted papules on the elbows

Figure 5



(a) Lesions of FLE on the dorsum of the hand. (b) Lesions of FLE in a child localized to the exposed part of the knee. Note the aggregated lesions which occasionally form a plaque

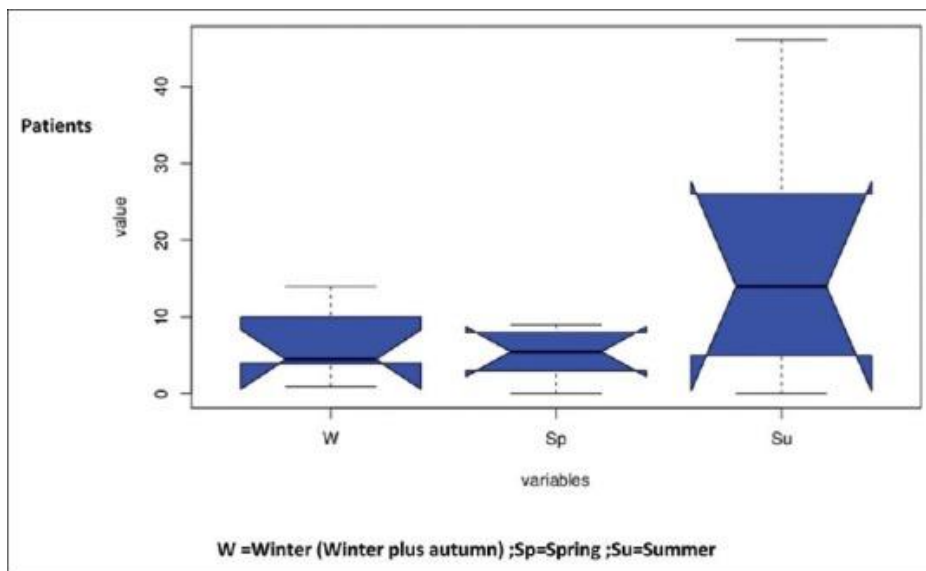
Table 4

Total number of patients: 174
Mean age: 6.13 years
Sex: Male:=64.5% ; Female:=35.48%
Duration of disease: 8.8 days to 3.33 years
Site: (%)
Elbows: 90
Dorsa of hands: 55
Knee: 25
Face: 25
Lower limbs: 35
Clinical findings:
Morphology: Mild ($n=112$) , Moderate ($n=38$) , Severe ($n=24$) ²
Symptoms: Pruritis : 33.33%; History of Recurrence: 42%;
Recurrence on Follow up (42 patients)=70%
Time for healing=6-9 weeks
No of episodes=3-5
Associations
Atopic dermatitis:=17.2% (30)
Atopic diathesis/stigmata=40.3% (70)*
No abnormality=42.5% (74)
Seasonal variation:
Summer: (119) 68.3%
Spring: (31) 17.8%
Autumn: (19) 10.9
Winter: (5) 3%

*All 70 patients had xerosis out of which 20 patients had a personal history of atopy. Other stigmata seen included pityriasis alba ($n=20$) , hyperlinear palms ($n=11$), cheilitis ($n=3$) , Dennie Morgan fold ($n=12$) , Orbital Darkeing ($n=4$) , Patchy pityriasiform lichenoid eczema/follicular eczema($=5$) , Cheilitis ($n = 2$) , perleche ($n=2$)

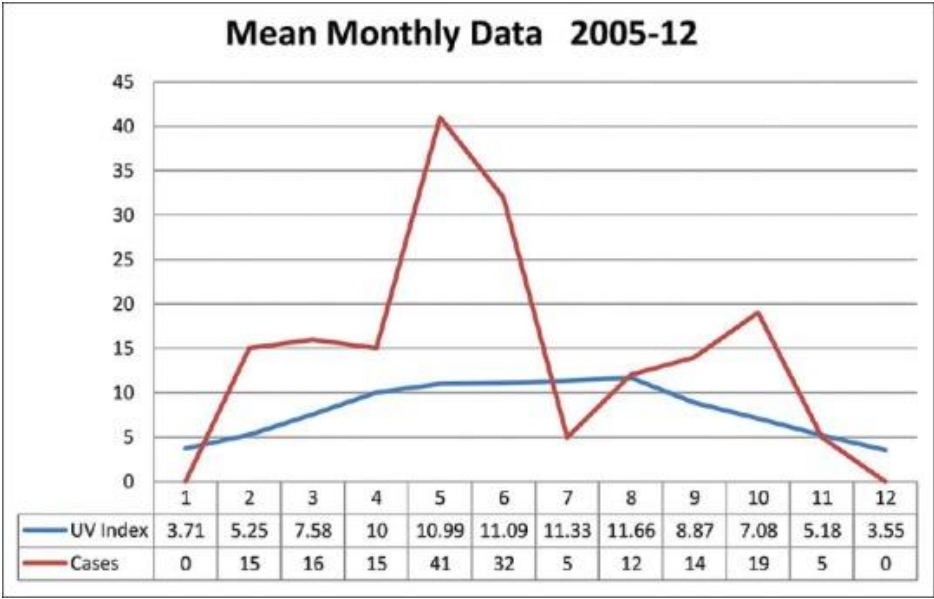
Summary of results

Figure 6



A notched boxplot depicting the number of cases in winter (W), spring (sp) and summer (S)

Figure 7



A comparison of the number of cases seen per month and the monthly UV index

Table 5

Correlation between UV index and number of cases			
Pearson product moment correlation*	Covariance=25.24 Correlation=0.65 Determination=0.433 T Test=2.76	P value (2 sided)=0.019	There is a highly Significant Correlation between the number of cases and UV index (P<0.05)
Analysis of seasonal variation of cases			
	Winter vs spring	Winter vs summer	
T Test	T value=0.61	T value=-4.27	There was a highly significant difference between summer and winter months (P<0.05) As compared to winter and spring months
Two Sample t test (paired)	P value=0.56 CI=0.95	P value=0.007	
F-stat (paired)	F value=1.92 P=0.48 CI=0.95	F value=0.112 P=0.03	
Welch two sample t test (paired)	t-stat=-0.68 P=0.56 CI=0.95	T stat=-4.27 P=0.007	
Wicoxon rank sum test with continuity correction (paired)	P value=0.53	P value =0.035	
Kolmogorov-Smirnov test to compare	KS Statistic=0.33 P value =0.89	KS Statistic=0.83 P value =0.31	
Distributions of two samples			
UV: Ultraviolet, CI: Confidence interval, KS: Kolmogorov-Smirnov			

Overview of statistical tests and their results

Table 6

Factors	PMLE	FLE
Geographic Location	Inversely related to latitude	Though uncommonly reported probably seen all over the world
Age	Adults>children	Children>adults
Season	Spring and summer Winter sunlight, particularly at high altitude	Spring and summer
Association	Sunlight	Friction, atopy, sunlight
UV spectrum	Broadband UVB (BB-UVB) to UVA and rarely to visible radiation	Not certain most likely UVB
Pathogenesis	Delayed-type hypersensitivity (DTH)	Unknown
Genetics	Up to 70% having a predisposition to the condition	Unknown
Site	Face, "V" of the neck, outer aspects of the arms, and dorsal surfaces of the hands	Elbows , Knee Other site:Dorsal of Hands
Symptoms	Usually pruritic	Usually asymptomatic
Morphology	Grouped, erythematous or skin-colored papules of varying sizes, not infrequently coalescing into large, smooth or unevenly surfaced plaques Rare: Vesicles, bullae, papulovesicles, EM like , haemorrhagic PMLE, PMLE sine eruptione and confluent edematous plaques	Lichenoid grouped papules Or Faintly depigmented , pityriasisiform lesions, pinhead sized, imperceptibly raised on a dark background
Course	Severity becomes less with 'photohardening " but in most some form therapy is required	Tends to disappear spontaneously , occasionally therapy is required

FLE: Frictional lichenoid dermatitis, UVB: Ultraviolet B UVB, DTH: Delayed Type Hypersensitivity, EM: Erythema Multiforme, PMLE: Polymorphic Light eruption, BB: Broad band

A overview of the salient features of polymorphic light eruption and frictional lichenoid dermatitis[[1](#),[2](#),[3](#),[4](#),[5](#),[6](#),[7](#),[8](#),[9](#),[10](#),[11](#),[12](#),[13](#),[14](#),[15](#),[16](#),[20](#),[25](#),[26](#)]

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