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LICHEN AMYLOIDOSIS;

EVALUATION OF THE EFFICACY OF TOPICAL DIMETHYL SULFOXIDE (D.M.S.O) 70% IN ABBASI SHAHEED HOSPITAL, KARACHI.

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ABSTRACT… Introduction: Lichen amyloidosus (LA) is the major variant of the primary cutaneous amyloidoses which present with severe and therapy resistant itching. Various therapeutic modalities such as antihistamines, intralesional injection or topical application of corticosteroids, etretinate, UVB irradiation and dermoabrasion have been employed with variable success. Some authors have observed encouraging beneficial clinical effects by using topical dimethyl sulphoxide (DMSO). **Objectives:** The objective of the study was to: evaluate the efficacy of topical Dimethyl sulfoxide (D.M.S.O) 70% in Lichen Amyloidosis. **Study Design:** Case series. **Settings:** This study was conducted at dermatology department, Abbasi Shaheed Hospital in outpatient department (OPD). **Duration of Study:** The data collection was done in 06 months after approval of synopsis. From: 2nd June 2013 to 2nd December 2013. **Results:** In this study, out of 71 cases, 42.25%(n=30) were between 16-40 years while 57.75%(n=41) were between 41-80 years of age, mean±sd was calculated as 41.79±10.87 years, 26.76%(n=19) were male and 73.24%(n=52) were females, 36.62%(n=26) had <6 months and 63.38%(n=45) had ≥6 months of duration, frequency of efficacy of topical dimethyl sulfoxide (D.M.S.O) in lichen amyloidosis reveals 66.20%(n=47) while 33.80%(n=24) did not show efficacy. **Conclusion:** We concluded that the efficacy of topical Dimethyl sulfoxide (D.M.S.O) 70% in Lichen Amyloidosis is higher and in accordancde with other studies. It may be utilized in future for such cases.

Key words: Lichen Amyloidosis, management, topical Dimethyl sulfoxide (D.M.S.O) 70%, efficacy.

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INTRODUCTION

Primary Localized Cutaneous Amyloidosis (P.L.C.A) is a rare condition in which deposition of amyloid occurs in apparently normal skin with no deposition in internal organs. Amyloid is extracellular proteinaceous accumulation which is resistant to proteolytic digestion.[1,2] The etiology is not known, but some suggest that frictional trauma to the epidermis causes necrosis of keratinocytes and formation of amyloid in the papillary dermis.[1,2,3] P.L.C.A may be associated with autoimmune disorders.[4]

P.L.C.A is reported in China, India & South America. Incidence in Saudi Arabia is 0.15% and in India is 0.27%.[5,6,7] Another study in India shows incidence of lichen amyloidosis to be 65.63%.[2] Most cases are sporadic but 10% are Autosomal dominant. Although Oncostatin M Receptor (OSMR) gene and IL3IRA mutations has been reported.[1,6,8]

P.L.C.A consists of macular and lichen amyloidosis, and sometimes both forms may co-exist. Rare forms are bullous, vitiliginous or ichthyosiform amyloidosis.[1,2,9] Clinically Lichen amyloidosis (L.A) presents as closely set, discrete, brown-red hyperkeratotic papules or plaques with slight scaling which are intensely itchy, located more commonly on the trunk or extremities especially the shins.[1,2] Histopathology of amyloid shows hyperkeratosis, irregular acanthosis and dermal

papillae expansion by amyloid deposits. Amyloid gives apple-green birefringence with congo red stain under polarized light. Other stains used are hematoxylin and eosin, crystal violet, Sirius red and thioflavin T.[2,5,10]

Treatment of P.L.C.A is disappointing. Many modalities have been used with variable success like topical application of steroids, retinoid acid derivatives, D.M.S.O (Dimethyl Sulfoxide), PUVA are on the list, cyclophosphamide has shown promising results. Also dermabrasion may be effective especially in L.A.[1,9]

D.M.S.O is an odorless, colorless, hygroscopic liquid a strong solvent for organic and inorganic substances. It has a membrane penetrating effect and also shows anti-inflammatory, mast cell stabilizing, OH binding anti-oxidant effects.[12] P.L.C.A is an unaesthetic disease with much stress for the patient. Over the counter products for its relief are available but with no proven success as yet. D.M.S.O application in P.L.C.A has been studied in limited settings. Two studies by the same researchers one year apart were done at Turkey showed efficacy of 72% (intermittent use of D.M.S.O 50%)[11] and 90% (daily use of D.M.S.O 50%).[13] These studies were done in 1997 and 1998, and no study was conducted after that. Data on our population is not available, therefore the present study is designed to assess the efficacy of D.M.S.O 70% and if found to be higher, then it will be utilized in future for such cases.

MATERIAL & METHODS

Study Design

Case series

Settings

This study was conducted at dermatology department, Abbasi Shaheed Hospital in outpatient department (OPD).

Duration of Study

The data collection was done in 06 months after approval of synopsis.
From 2nd June 2013 to 2nd December 2013.

Sample Size

Sample size of 71 adult subjects meeting inclusion criteria was required for this study, on the basis of previous study by Ozkaya.[13] With efficacy of 90%, confidence interval 95%, and 7% precision using computer program "OpenEpi version 2" for calculation of sample size.
http://www.openepi.com/samplesize/SSpropor.htm

Sampling Technique

Non probability consecutive sampling.

SAMPLE SELECTION

Inclusion Criteria

1. Patients of either gender.
2. More than 06 months duration of illness.
3. Clinically diagnosed case of Lichen Amyloidosis (according to operational definition was included).
4. Age 16 years to 80 years.

Exclusion Criteria

1. Pregnant ladies and lactating mothers.
2. Presence of other skin disease like lichen planus, psoriasis.
3. Hypersensitivity to the drug.
4. Patients who have not given the consent.
5. Less than 06 months duration of illness.

Data Collection Procedures

After approval from ethical committee of hospital, the study was conducted in Dermatology O.P.D, Abbasi Shaheed Hospital, 71 patients meeting the inclusion criteria were included after taking an informed consent. A detailed history regarding the duration of illness, papules or plaques, itching sites involved were taken. Pruritis as subjective symptoms were graded by patient individually on a 10 cm visual analog scale (0-10), 0 being absent and 10 means maximum itching. Patients were advised to apply a thin layer on affected area twice daily, 70% D.M.S.O in aqueous base available by name of Amyloidosis cream (Merck marker Private Limited cat no:802912 synthetic grades, formulated by Nigehban pharmacy). Presence of papules was observed clinically and

after 3 months of topical application of D.M.S.O lesions were assessed again for absence or presence of papules. Disappearance of papules and no to mild pruritis was considered as efficacy positive

OPERATIONAL DEFINITIONS

Lichen Amyloidosis

Presence of pruritic eruption of multiple discrete hyperkeratotic papules, predominantly on the anterior leg, upper back, forearms and thigh was considered as Lichen Amyloidosis.

Papule

A solid rounded growth that is raised from the skin and was less than 1 cm (0.5 inches) across. It was diagnosed clinically.

Plaque

A well-circumscribed, raised, superficial, solid lesion, greater than 1 cm in diameter, usually "plateau-like" with a flat top was considered a plaque.

Pruritis

The subjective sensation of lesional itch was considered as pruritis positive. As it was a subjective symptom it was graded by patient individually on a 10 cm visual analog scale (VAS) (0-10), 0 being absent, mild 1-3, moderate 4-7, severe 8-10.

Efficacy

Disappearance of papules and no to mild pruritis was considered as efficacy positive, at the end of three months.

RESULTS

A total of 71 cases fulfilling the inclusion/exclusion criteria were enrolled to evaluate the efficacy of topical Dimethyl sulfoxide (D.M.S.O) in Lichen Amyloidosis.

Age distribution of the patients was done which shows that 42.25%(n=30) were between 16-40 years while 57.75%(n=41) were between 41-80 years of age, mean±sd was calculated as 41.79±10.87 years. (Table-I)

Age (in years)	No. of patients	%
16-40	30	42.25
41-80	41	57.75
Total	71	100
Mean ± sd	41.79±10.87	

Table-I. Age distribution (n=71)

Gender distribution of the patients was done which shows that 26.76%(n=19) were male and 73.24%(n=52) were females. (Table-II)

Gender	No. of patients	%
Male	19	26.76
Female	52	73.24
Total	71	100

Table-II. Gender distribution (n=71)

Duration of disease (in months) was calculated which shows that 36.62%(n=26) had <6 months and 63.38%(n=45) had ≥6 months of duration. (Table-III)

Duration of disease (in months)	No. of patients	%
<6	26	36.62
≥6	45	63.38
Total	71	100

Table-III. Duration of disease (n=71)

Family history of lichen amyloidosis was calculated which shows that 21.1%(n=15) had a family history of lichen amyloidosis and 78.9%(n=56) did not have family history of lichen amyloidosis. (Table-IV)

Family History	No. of patients	%
YES	15	21.1
NO	56	78.9
Total	71	100

Table-IV. Family history of lichen amyloidosis (n=71)

Frequency of efficacy of topical dimethyl sulfoxide (D.M.S.O) in lichen amyloidosis reveals 66.20%(n=47) while 33.80%(n=24) did not show efficacy. (Table-V)

Efficacy	No. of patients	%
Yes	47	66.20
No	24	33.80
Total	71	100

Table-V. Frequency of efficacy of topical dimethyl sulfoxide (D.M.S.O) in lichen amyloidosis (n=71)

Stratification for frequency of efficacy of topical dimethyl sulfoxide (D.M.S.O) in lichen amyloidosis with regards to age was recorded which shows that out of 71 cases, 42.6%(n=20) and 41.7%(n=20) were between age group 16-40 years, achieved and did not achieve efficacy respectively. Whereas, 57.4%(n=27) and 58.3%(n=14) were between age group 41-80 years, achieved and did not achieve efficacy respectively. P value was calculated as 0.57. (Table-VI)

Stratification for frequency of efficacy of topical dimethyl sulfoxide (D.M.S.O) in lichen amyloidosis with regards to gender was recorded which shows that out of 71 cases, 27.7%(n=13) and 25%(n=06) were males, achieved and did not achieve efficacy respectively. Whereas, 72.3%(n=34) and 75%(n=18) were females, achieved and did not achieve efficacy respectively. P value was calculated as 0.52. (Table-VII)

Stratification for frequency of efficacy of topical dimethyl sulfoxide (D.M.S.O) in lichen amyloidosis with regards to duration of disease was recorded which shows that out of 71 cases, 40.4%(n=19) and 29.2%(n=07) had <6 months of duration of disease, achieved and did not achieve efficacy respectively. Whereas, 59.6%(n=28) and 70.8%(n=17) had ≥6 months of duration of disease achieved and did not achieve efficacy respectively. P value was calculated as 0.25. (Table-VIII)

Stratification for frequency of efficacy of topical dimethyl sulfoxide (D.M.S.O) in lichen amyloidosis with regards to family history was recorded which shows that out of 15 cases with a family history of lichen amyloidosis, 19.1%(n=09) and 25%(n=06) achieved and did not achieve efficacy respectively. Whereas, out of 56 cases with no family history of lichen amyloidosis 80.9%(n=38) and 75%(n=18) achieved and did not achieve efficacy respectively respectively. P value was calculated as 0.38. (Table-IX)

Age (in years)	Efficacy		Total	P Value
	Yes	No		
16-40	20(42.6%)	10(41.7%)	30(42.3%)	0.57
41-80	27(57.4%)	14(58.3%)	41(57.7%)	
Total	47(100%)	24(100%)	71(100%)	

Table-VI. Stratification for frequency of efficacy of topical dimethyl sulfoxide (D.M.S.O) in lichen amyloidosis with regards to age (n=47)

Gender	Efficacy		Total	P Value
	Yes	No		
Male	13(27.7%)	06(25%)	19(26.8%)	0.52
Female	34(72.3%)	18(75%)	52(73.2%)	
Total	47(100%)	24(100%)	71(100%)	

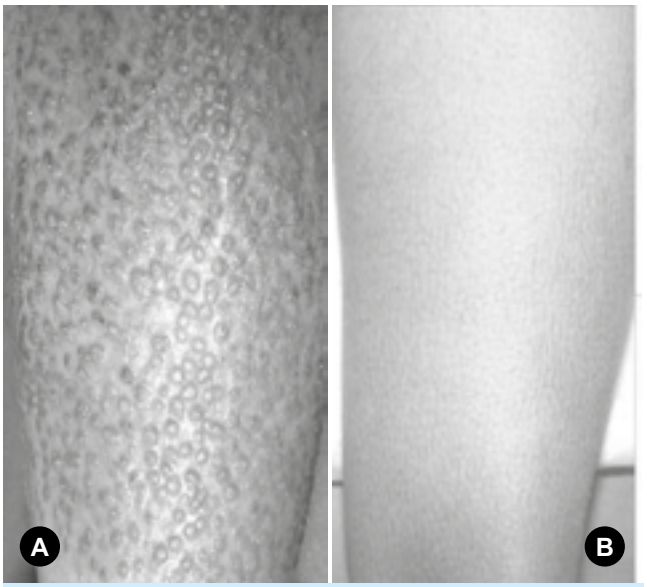
Table-VII. Stratification for frequency of efficacy of topical dimethyl sulfoxide (D.M.S.O) in lichen amyloidosis with regards to gender (n=47)

Duration of Disease (in months)	Efficacy		Total	P Value
	Yes	No		
<6	19(40.4%)	07(29.2%)	26(36.6%)	0.25
≥6	28(59.6%)	17(70.8%)	45(63.4%)	
Total	47(100%)	24(100%)	71(100%)	

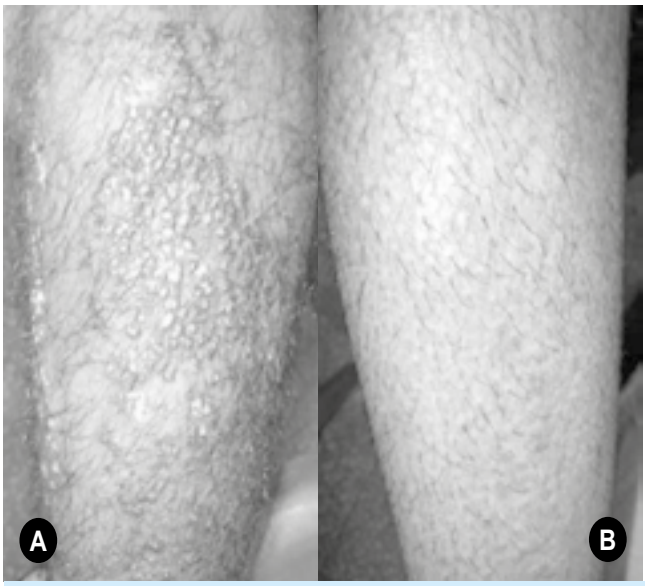
Table-VIII. Stratification for frequency of efficacy of topical dimethyl sulfoxide (D.M.S.O) in lichen amyloidosis with regards to duration of disease (n=47)

Family History	Efficacy		Total	P Value
	Yes	No		
Yes	09(19.1%)	06(25%)	15(21.1%)	0.38
No	38(80.9%)	18(75%)	56(78.9%)	
Total	47(100%)	24(100%)	71(100%)	

Table-IX. Stratification for frequency of efficacy of topical dimethyl sulfoxide (D.M.S.O) in lichen amyloidosis with regards to family history (n=47)



(Fig.1a) case no.1 Before application of D.M.S.O
(Fig.1b) case no.1 After application of 70% D.M.S.O



(Fig.2a) case no.2 Before application of D.M.S.O
(Fig.2b) case no.2 After application of 70% D.M.S.O

CONCLUSION

We concluded that the efficacy of topical Dimethyl sulfoxide (D.M.S.O) 70% in Lichen Amyloidosis is higher and in accordance with other studies. It may be utilized in future for such cases. However we recommend that in our population further study trials are also needed to establish the positive efficacy of D.M.S.O in Lichen Amyloidosis.

DISCUSSION

Lichen amyloidosus (LA) is the major variant of the primary cutaneous amyloidoses which present with severe and therapy resistant itching. Various therapeutic modalities such as antihistamines, intralesional injection or topical application of corticosteroids, etretinate, UVB irradiation and dermoabrasion have been employed with variable success. Some authors have observed encouraging beneficial clinical effects by using topical dimethyl sulphoxide (DMSO).[13]

We planned this study considering the fact that the studies are done in 1997 and 1998, and no study was conducted after that. Data on our population is not available, therefore we assessed the efficacy of D.M.S.O 70% in our study and on the basis of higher efficacy it may be utilized in future for such cases.

In this study, out of 71 cases, 42.25%(n=30) were between 16-40 years while 57.75%(n=41) were between 41-80 years of age, mean$\pm$sd was calculated as 41.79$\pm$10.87 years, 26.76%(n=19) were male and 73.24%(n=52) were females, 36.62%(n=26) had <6 months and 63.38%(n=45) had ≥6 months of duration, frequency of efficacy of topical dimethyl sulfoxide (D.M.S.O) in lichen amyloidosis reveals 66.20%(n=47) while 33.80%(n=24) did not show efficacy.

Preponderance of the patients was found to be in the age group of 40 - 60 years, which was similar

to studies done by Djuanda et al. and Looi.[14,15] The age of onset of the disease was also 30 - 50 years, and the patients seemed to report within a short period of onset of the disease. The disease seemed to be more prevalent among the married and patients belonging to the lower class. Age could act as a confounder in the association found between marriage and cutaneous amyloidosis.

Our findings are in accordance with the above studies, we computed the common age in our patients as 41.79±10.87 years.

Our results are comparable with two studies by the same researchers done at Turkey showing the efficacy of 72% (intermittent use of D.M.S.O 50%) [11] and 90% (daily use of D.M.S.O 50%).[13]

A recent trial[16] evaluated the effect of dimethylsulphoxide on cutaneous amyloidosis and recorded its effect on pruritus, pigmentation, and papules was excellent in the initial one month (P value < 0.0001). Thereafter, the symptoms improved, but not as significantly as compared to the previous month.

Pandhi R et al. observed a decrease in pruritus score, but not a complete disappearance in any of the patients treated with 100% DMSO after 12 weeks of treatment. Also, complete remission of pigmentation was observed in only 24% of the patients and flattening of papules in only 16.6% of the cases.[17]

The studies are very limited recording the efficacy of DMSO for the management of lichen amyloidosis, however, our findings are in accordance with the above studies and on the basis of its higher efficacy it may be utilized in future for such cases.

REFERENCES

1. Breathnach S M. **Amyloid and the amyloidosis of the skin. In: Burns T, Breathnach S, COX N, Griffiths C.** Rook's Textbook of Dermatology, Blackwell Publishing, 2004; 57:36-51.

2. Vijaya B, Dalal BS, Sunila, Manjunath GV. **Primary cutaneous amyloidosis: a clinico-pathological study with emphasis on polarized microscopy.** Indian J Pathol Microbiol. 2012; 55:170-4.

3. Weyers W, Weyers I, Bonczkomitz M, Diaz-Cascajoe C, Shill WB. **Lichen amyloidosis;a consequence of scratching.** J Am Acad Dermato.1997; 37(6):923-8.

4. Dahdah MJ, Kurban M, Kibbi AG, Ghosn S. **Primary localized cutaneous amyloidosis: a sign of immune dysregulation?** Int J Dermatol. 2009; 48:419–21.

5. TJ, Ratrout A, Satti MB. **Primary localized cutaneous amyloidosis: a clinicopathological study from Saudia Arabia.** Int J Dermatol. 1997; 36:428-34.

6. Lin MW, Lee DD, Liu TT, Lin YF, Chen SY, Huang CC. **Novel IL31RA gene mutation and ancestral OSMR mutant allele in Familial primary cutaneous amyloidosis.** Euro J Hum Genet. 2010; 18:26-32.

7. Sakuma TH, Hans-Filho G, Arita K. **Familial Primary Localized Cutaneous Amyloidosis in Brazil.** Arch Dermatol. 2009; 145(6):695-99.

8. Arita K, South KP, Han-Filho G, Sakuma TH, Lai-cheong J, Clements S. **Oncostatin M Receptor-β Mutations Underlie Familial Primary Localized Cutaneous Amyloidosis.** Am J Hum Genet. 2008; 82:73-80.

9. Das J, Gogoi RK. **Treatment of primary localised cutaneous amyloidosis with cyclophosphamide.** Indian J Dermatol Venereol Leprol. 2003; 69:163-64.

10. Salim T, Shenoi SD, Balachandran C, Mehta VR. **A study of clinical, histopathologic and immunofluorescence findings in 30 cases.** Indian J Dermatol Venereol Leprol. 2005 May-Jun; 71(3):166-9.

11. Ozkaya-Bayazit E, Kavak A, Gungor H, Ozarmagan G. Intermittent use of topical dimethylsulfoxide in macular and papular amyloidosis. Int J Dermatol.1998; 37:949-54.

12. Reynolds JEF, Martindale. **The extra pharmacopoeia, 30th ed. London.** The Pharmaceutical Press, 1993. 1101-02.

13. Ozkaya-Bayazit E, Baykal C, Kavak A. **Topical D.M.S.O treatment of macular and popular amyloidosis.** Hautarzt. 1997; 48:31-7.

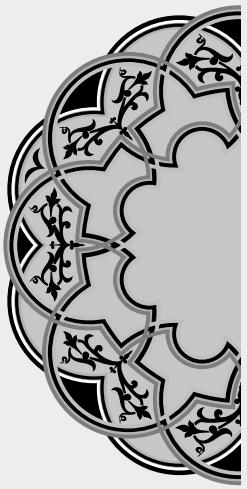
14. Djuanda A, Wiryadi BE, Sularsito SA, Hidayat D. **The epidemiology of cutaneous amyloidosis in Jakarta.** Ann Acad Med Singapore 1988; 17:536-40.

15. Looi LM. **Primary Localized cutaneous Amyloidosis in Malaysians.** Australas J Dermatol 1991; 32:39-44.

16. Krishna A, Nath B, Dhir GG, Kumari R, Budhiraja

V, Singh K. **Study on epidemiology of cutaneous amyloidosis in northern India and effectiveness of dimethylsulphoxide in cutaneous amyloidosis.** Ind Derm Online J 2012; 3:182-6.

17. Pandhi R, Kaur I, Kumar B. **Lack of effect of dimethylsulfoxide in cutaneous amyloidosis.** J Dermatolog Treat 2002; 13:11-4.



"My attitude is based on how you treat me."

Unknown

AUTHORSHIP AND CONTRIBUTION DECLARATION

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