



LINEAR DERMATOSES: CROSS SECTIONAL STUDY IN TERTIARY CARE HOSPITAL

Dermatology

- Dr. Hinal Prajapati** Third year resident, department of dermatology, venereology and leprology, GMERS medical college and civil hospital, sola, Ahmedabad.
- Dr. Kajol Prithiani** Second year resident, department of dermatology, venereology and leprology, GMERS medical college and civil hospital, sola, Ahmedabad.
- Dr. Krina Patel*** Professor and Head, department of dermatology, venereology and leprology, GMERS medical college and civil hospital, sola, Ahmedabad. *Corresponding Author

ABSTRACT

INTRODUCTION: Linear lesions which follow Blaschko's lines are commonly encountered in dermatology. Genetic mosaicism is the probable explanation for lesions to localize in blaschko linear distribution. It can be congenital or acquired; varying in morphology and they can be inflammatory or non-inflammatory; it can be a single lesion which is linear or multiple lesions which are arranged in a linear pattern.

METHOD: A cross-sectional, hospital-based clinical study of patients with linear dermatoses attending the Outpatient Department of tertiary care centre from May 2020 to October 2020. Detailed history including family history, Marital Status, History of trauma documented with clinical examination. After counselling and after recording their consent for the test, skin biopsy done along with routine investigations and the results are evaluated.

RESULTS: Among the 44 cases, Lichen striatus(31.82%) was the most common presentation followed by Linear Lichen planus(20.5%) and linear epidermal naevus(13.6%) in our study. Male preponderance was noted with male to female ratio being 1.2:1. Majority of patients showed unilateral distribution mostly on the extremities.

CONCLUSION: Linear lesions are not so uncommon in dermatology clinics but to differentiate between common to uncommon disorders presenting in linear fashion, clinical accumen and at times histopathological and other diagnostic methods may be needed for better management.

KEYWORDS

linear dermatoses, blaschko's line, lichen striatus.

INTRODUCTION

Linear lesions in dermatology are commonly encountered. They vary in cause; being congenital or acquired; can be present as macules, papules, patches, plaques, vesicles or nodules; they can be inflammatory or non-inflammatory; it can be a single lesion which is linear or multiple lesions which are arranged in a linear pattern. The causes for occurrence in a linear pattern include lesions following Blaschko's lines, blood vessels, lymphatics and dermatomes; due to Koebner's phenomenon and auto-inoculation; external factor such as plants, chemicals, allergens.[1] It is speculated that linear dermatoses following Blaschko's line suggest that the tendency for development of a particular dermatoses is predetermined during embryogenesis. Exposure to an appropriate trigger such as an autoimmune attack may result in the development of linear dermatoses [2].

Most of the linear lesions following Blaschko's lines are characteristic of mosaic conditions of the epidermis [3, 4]. They were defined by Dr. Alfred Blaschko, who drew the common linear distribution patterns of numerous nevus cases he had seen. They are believed to represent the lines of migration of embryonal cells proliferating from the neural crest and are also adopted by abnormal (mutated) cells resulting in the linear appearance of the lesions. [5]. It's a convexly arch-shaped at the chest S-shaped on the abdomen, V-shaped on the central back and slightly curved straight line on the extremities.

Several skin diseases are distributed along Blaschko's lines including various forms of epidermal and adnexal nevi, inflammatory dermatoses (such as Lichen striatus) and genodermatoses expressed in mosaic form (such as Epidermolytic hyperkeratosis, Ito's hypomelanosis, Incontinentia pigmenti, Mibelli's porokeratosis, Leiomyomas) [6]. As there is paucity of studies on this subject, a clinical study of linear dermatoses with special emphasis on their presentation along the Blaschko's line was carried out.

MATERIALS AND METHODS

A Cross-sectional study of patients with linear dermatoses attending the Outpatient Department of tertiary care hospital from May 2020 to October 2020, patients presenting with cutaneous lesions in a linear pattern and along the Blaschko's lines were included after taking the consent. Linear cutaneous lesions secondary to infections and contact dermatitis or koebner phenomenon were excluded from the study. Detailed history taken, complete cutaneous and systemic examinations were done. Routine investigations were performed wherever necessary. Wood's lamp examination and digital

photography of the dermatoses were taken. Skin biopsy for histopathology was done and special stains were used wherever necessary.

RESULTS

Out of 44 patients enrolled, 12(27.3%) patients belonged to 11-20 years of age group. Male outnumbered female with ratio of 1.2:1. The age group in our study was 2 months to 45 years with average of 22.5 years. (TABLE 1)

Table-1: Age and Gender distribution

AGE (YEARS)	MALE	FEMALE	TOTAL
< 1	1	3	4 (9.1%)
1-10	4	7	11 (25%)
11-20	7	5	12 (27.3%)
21-30	6	4	10 (22.7%)
31-40	4	1	5 (11.4%)
41-50	2	0	2 (4.5%)
TOTAL	24	20	44 (100%)

Among the study group of 44 cases, lichen striatus(31.82%) was the most common, followed by linear lichen planus (20.5%) and linear epidermal nevus(13.6%). 3 patients presented with linear morphea. The other dermatoses seen were segmental vitiligo, inflammatory linear verrucous nevus(ILVEN), linear porokeratoses, nevus depigmentosus and single case of each linear psoriasis, Hypomelanosis of ITO, lichen planus(LP)-Psoriasis overlap and incontinentia pigmenti.(TABLE 2)

Table-2: Types of linear dermatoses

CLINICAL DIAGNOSIS	MALE	FEMALE	TOTAL NUMBER OF PATIENTS (%)
LICHEN STRATUS	6	8	14 (31.82)
LINEAR LICHEN PLANUS	7	2	9 (20.5%)
LINEAR EPIDERMAL NEVUS	3	3	6 (13.6%)
LINEAR MORPHEA	2	1	3 (6.8%)
SEGMENTAL VITILIGO	1	1	2 (4.5%)
ILVEN	1	1	2 (4.5%)
LINEAR POROKERATOSIS	1	1	2 (4.5%)
NEVUS DEPIGMENTOSUS	1	1	2 (4.5%)
LINEAR PSORIASIS	1	0	1 (2.3%)
HYPOMELANOSIS OF ITO	0	1	1 (2.3%)

LP-PSORIASIS OVERLAP	1	0	1 (2.3%)
INCONTINENTIA PIGMENTI	0	1	1 (2.3%)
TOTAL	24	20	44 (100%)

LICHEN STRIATUS (LS):

Among the 44 patients, 14 presented LS in the age group between 11 months and 38 years and forming male to female ratio of 1:1.33.

LINEAR LICHEN PLANUS:

In this group 9 patients presented with linear LP, age group was 12 to 30 years. Out of 3 cases, male: female ratio was 3.5:1. Extremities were commonly involved.

LINEAR EPIDERMAL NEVUS:

6 had linear epidermal nevus with age group was 2 months to 28 years and male to female ratio was 1:1. All patient were asymptomatic. (Figure-1)



Figure-1: Linear epidermal nevus above right external ear.

LINEAR MORPHEA:

Among 3 patients of morphea, out of 2 male patients; 1 had En-coup-de sabre (Figure-2) and 1 had linear morphea affecting right lower limb whereas 1 female patient presented with Parry Romberg Syndrome.



Figure-2: En-coup-de sabre.

LINEAR PSORIASIS:

A 17 years old male patient presented with pruritic linear lesion, in whom biopsy were taken with differentials of LS and linear psoriasis where histopathological findings were consistent with psoriasis.

LP-PSORIASIS OVERLAP:

A 45 year old male patient presented with linear violaceous papules coalescing to form plaque over bilateral forearm and abdomen since 1 year without any significant history which showed biopsy findings of LP- Psoriasis Overlap. (Figure-3)



Figure-3: LP-Psoriasis overlap

INCONTINENTIA PIGMENTI (IP):

1 female 1 month old child presented with linear hyperpigmented verrucous papules over right upper limb since birth and history of vesicular lesions. Histopathological findings were consistent with IP.

DISCUSSION

In this study of 44 cases with a linear distribution, following the Lines of Blaschko, happening due to a form of human mosaicism were included. Most of the patients were asymptomatic and mainly came for cosmetic reasons.

Majority cases (31.82%) had lichen striatus. Usually occurs in 5 - 15 years whereas in the present study, majority of patients between 4-35 years. It was more commonly observed in females in this study group with a Male: Female ratio 1:1.33, as also been documented by Hauber et al. [7]. There were no predisposing factors. Most of the patients in the study group had unilateral distribution of lesions over the extremities; few had lesions over the trunk as recorded in the literature. Two of the patients showed nail changes in the form of longitudinal ridging, subungual hyperkeratosis, splitting and onycholysis. Histopathological examination showed a chronic dermatitis, psoriasiform dermatitis and lichenoid dermatitis like picture which was consistent with the variable histological pictures as described in the literature.

Linear lichen planus having 9 cases in the age between 8-44 years. Male: Female ratio of 3.5:1 showing a slight male preponderance in contrary to the literature [8]. 3 patients had nail changes like nail plate thinning and 2 patients had mucous membrane and 1 patient had genital mucosa involvement. 6 patients had lesions on the extremities. On histopathological examination, all showed the classical features of Lichen planus as described in the literature [9]. (Figure-4)

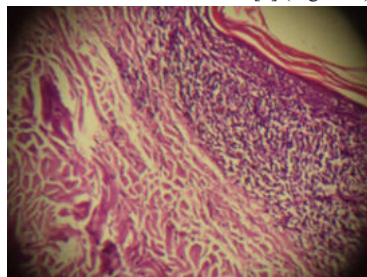


Figure-4: Histopathology of linear LP showing dense inflammatory infiltrate at dermoepidermal junction.

6 patients had linear epidermal nevus, M: F ratio being 1:1. This finding was similar to equal sex incidence given in the literature [10]. All the patients with this disorder mainly came for cosmetic reason. In majority patients lesions were since birth, in this age group 5 patients had lesions involving trunk and extremities, implicating systemized form of verrucous epidermal nevus. Most of the skin biopsies showed the classical features of verrucous epidermal nevus.

There were 3 cases of Linear Morphea. Peak incidence is between 20 and 30 years [10]. Male: Female ratio was 2:1 contrary with the female preponderance of this condition as recorded in the literature [10]. 2 patients had lesions over the head and neck region among this one case was diagnosed as Parry Romberg syndrome and 1 patient had lesions over the lower limb, which is the commonest site of involvement shown in literature [10]. All cases showed ANA positivity and skin biopsies showed the classical features of morphea.

2 patients presented with segmental vitiligo. One patient had leukotrichia over the vitiligo patches. There was no family history of similar lesions or any mucosal or nail involvement. None of them had vitiligo elsewhere in the body. There was no other associated autoimmune disorders. Biopsy of these lesions showed the features consistent with vitiligo.

There were only 1 patient of linear psoriasis. There was no evidence of any trauma preceding the lesion. The patient had fine, regular pitting over the finger nails, salmon patch and oil drop sign. Biopsy was done to confirm the diagnosis.

Lichen planus – psoriasis overlap was diagnosed in a male patient with multiple violaceous papules coalescing to form plaque since 1 year. Biopsy showed features of LP-Psoriasis overlap. Co-occurrence of psoriasis and LP has been rarely reported in literature.

Other rare dermatoses found were hypomelanosis of ITO, porokeratoses, nevus depigmentosus and incontinentia pigmenti.

CONCLUSION

Lichen striatus was found more common with female preponderance. Majority of patients showed unilateral distribution more on the extremities. Histopathological correlation shows the importance of histopathology which ultimately changing the management in any given condition. Very few associations were noted. Linear lesions are not so common entity in dermatology clinics. Clinico-histopathological correlation is necessary to establish definitive diagnosis as many common and uncommon dermatoses may present in linear distribution and produce enigma.

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