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A Clinical Study on Linear Dermatoses Occuring in Paediatric Age Group

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Abstract
Introduction: *Dermatoses affecting the skin exhibit various morphologies such as annular, arcuate, discoid, polycyclic, reticulate, target, confluent, guttate, stellate, digitate, linear, whorled, etc. Majority of the linear lesions follow the lines of Blaschko. The appearance of these conditions is helpful in clinching the diagnosis in various disorders. This study is an observational study based on dermatoses that occur in a linear pattern in paediatric age group as linearity allures the attention of the patients and their immediate family.*
Materials and Methods: *Inclusion criteria included patients in both sexes and those who are 17 and below 17 years of age. Exclusion criteria included Koebner's phenomenon and all patients above 17 years of age. They were clinically evaluated with detailed history including family history, history of presenting illness with complete physical examination and relevant investigations. Patients who fulfilled both the inclusion and exclusion criteria were included in this study after proper counselling and recording the assent and consents.*
Results: *A total number of 30 patients showing evidence of linear dermatoses were taken up in this study. There was no sex predilection observed in this study, as it occurred equally in both sexes [Figure 3]. The youngest age recorded was in a 10-month-old boy and the highest age was 17 years. Most commonly observed linear condition in this study was Lichen striatus [Figure 1]. Majority of patients showed unilateral distribution in a linear pattern, more often on the extremities, mainly the upper extremity [Figure 2]. These lesions were normally asymptomatic. There were no underlying defects or any other associated systemic abnormalities observed in this study. Other dermatoses observed in this study were Lichen striatus, Linear Lichen planus, inflammatory Linear verrucous epidermal nevus, Lichen nitidus, Paederus dermatitis, Hypomelanosis of Ito, Linear and Whorled nevoid hypermelanosis.*
Conclusion: *In this study the incidence, distribution and associated conditions of various linear dermatoses were assessed. Among them lichen straitus was the most common condition encountered. In most of the cases they were asymptomatic except for itching in some. The lesions were most of cosmetic concern in most of the children in this study. To the best of my knowledge, there are much lesser case studies of linear lesions occurring in children as compared to the studies conducted in adults.*
Key Words: *Linear lesions, Lichen nitidus, hypermelanosis*

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I. Introduction

Dermatoses affecting the skin exhibit various morphologies such as annular, arcuate, discoid, polycyclic, reticulate, target, confluent, guttate, stellate, digitate, linear, whorled, etc. Majority of the linear lesions follow the lines of Blaschko. The appearance of these conditions is helpful in clinching the diagnosis in various disorders. This study is an observational study based on dermatoses that occur in a linear pattern in paediatric age group as linearity allures the attention of the patients and their immediate family.

Blaschko's lines are imaginary lines on the skin. They were first described by Alfred Blaschko in 1901. They are distinct from dermatomes. The widely accepted theory for these lines is genotypic mosaicism ie., presence of more than one type of cell lines with in the body. Half chromatid mutation, lyonization, post zygotic mutation, chromosomal non disjunction and chimerism can result in mosaicism. Linearity is determined by several other mechanisms or anatomical factors like linear configuration of developmental origin, lesions along the course of blood vessels, lymphatics and dermatomes. External factors like plant irritants allergens chemicals and physical trauma also produce linear pattern. But most of the linear dermatoses follow blaschko's lines.

II. Materials And Methods

Study Design

The present study was an observational study.

Study Setting

Dermatology OP, GVR Children Hospital, Kurnool.

Data Collection

Inclusion criteria included patients in both sexes and those who are 17 and below 17 years of age. Exclusion criteria included Koebner's phenomenon and all patients above 17 years of age.[1] They were clinically evaluated with detailed history including family history, history of presenting illness with complete physical examination and relevant investigations. Patients who fulfilled both the inclusion and exclusion criteria were included in this study after proper counselling and recording the assent and consents.

III. Results

A total number of 30 patients showing evidence of linear dermatoses were taken up in this study. There was no sex predilection observed in this study, as it occurred equally in both sexes [Figure 3]. The youngest age recorded was in a 10-month-old boy and the highest age was 17 years. Most commonly observed linear condition in this study was Lichen striatus [Figure 1]. Majority of patients showed unilateral distribution in a linear pattern, more often on the extremities, mainly the upper extremity [Figure 2]. These lesions were normally asymptomatic. There were no underlying defects or any other associated systemic abnormalities observed in this study. Other dermatoses observed in this study were Lichen striatus, Linear Lichen planus, inflammatory Linear verrucous epidermal nevus, Lichen nitidus, Paederus dermatitis, Hypomelanosis of Ito, Linear and Whorled nevoid hypermelanosis.

Picture 1: Inflammatory Linear Verrucous Epidermal nevi

Picture 2: Paederus Dermatitis

Picture 3: Linear Lichen Planus

Picture 4: Lichen Striatus

Picture 5: Lichen Nitidus

Picture 6: Hypomelanosis of Ito

Picture 7: Linear and Whorled Hypermelanosis

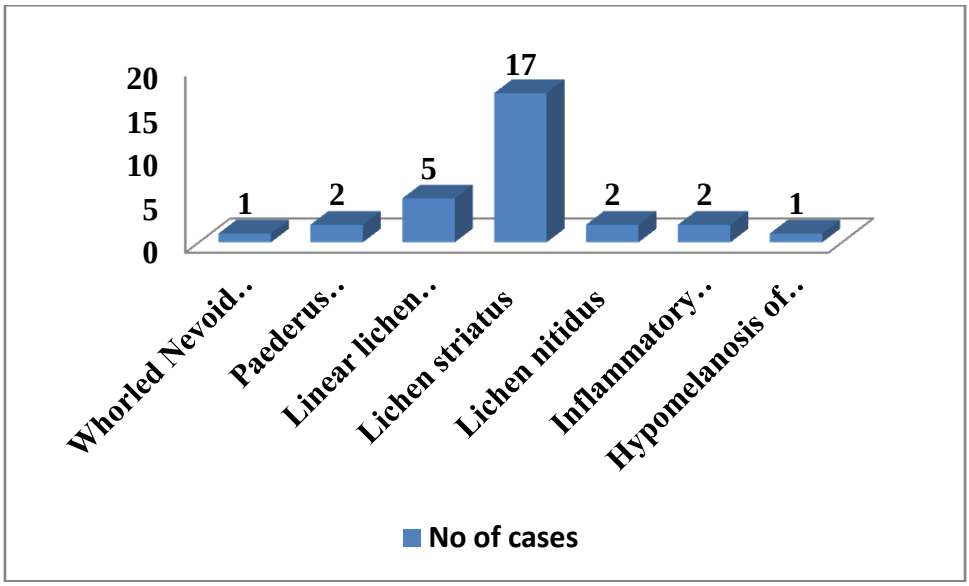

Figure 1: Prevalence Chart

IV. Discussion

In this study of 30 cases, most of the lesions were observed following the lines of Blaschko. It was observed equally in all divisions under paediatric age groups and it was observed more commonly in boys. 57% of patients were boys and the remaining 43% were girls. Most of the patients were asymptomatic with an exception being linear lichen planus patients who presented with complaints of itching. 17 cases of Lichen striatus, 5 cases of Linear Lichen planus, 2 cases of inflammatory linear verrucous epidermal nevus, Paederus dermatitis, Lichen nitidus and 1 case of Hypomelanosis of Ito and Linear and whorled nevoid hypermelanosis were encountered.

Most common site of involvement was the upper limb (12 cases) followed by the trunk, lower limbs and face. The most common linear dermatological condition encountered was Lichen striatus. Lichen striatus is an uncommon self-limiting linear dermatosis with unknown aetiology and spontaneous regression. It primarily occurs in children from 5 - 15 years of age. The average age at diagnosis is 3 years.[6] Females are affected more than males. Hauber et al reported a male predominance with male-to-female ratio of 3:1. They are usually asymptomatic with no predisposing factors. Though atopic diathesis is associated in 85% of these conditions, in this study none had any history or any family history of atopy. There were no associations with any other dermatoses. These lesions occur commonly on one arm or leg or on the neck, but may develop on the trunk, abdomen, buttocks or thighs.[7]

In this study, it was commonly seen on the upper limbs. Linear lichen planus was the second most common linear condition in this study with a total number of 5 cases. Lichen planus is a papulosquamous disease, in its classical presentation is characterised by pruritic violaceous papules, most commonly seen on the extremities. In this study they were usually symptomatic, itching being the most common symptom. They initially developed as small, violaceous, hyperpigmented papules and plaques that progressed in a linear fashion following the Blaschko's lines. Most common site of distribution was the upper limb, similar to the other studies by Shankar Gouda Ireddy et al and Lakshmipriya Gurusamy et al.[8] Lichen planus is a commonly encountered dermatosis in clinical practice. Amongst the various morphological variants, linear lichen planus occurring along lines of Blaschko seems to be the uncommon mode of presentation. Inflammatory Linear Verrucous Epidermal Nevus was observed in 2 patients. They are a subset of epidermal nevi that were erythematous, inflamed and pruritic. These nevi is an unique variety of keratinocytic epidermal nevus, which exhibit both psoriasiform and inflammatory features. These lesions presented as hyperpigmented, verrucous papules and plaques distributed in a linear pattern. They were not present since birth, but became apparent later in life. Also, 2 cases of lichen nitidus were documented in this study. The lesions were asymptomatic, although one patient had pruritus.[9] They developed as small pinpoint skin-coloured papules coalescing to form a plaque arranged in a linear distribution. Two cases of paederus dermatitis, a case of hypomelanosis of Ito and linear and whorled nevoid hypermelanosis were also documented. Hypomelanosis of Ito present as hypochromic unilateral or bilateral lesions in whorls, patches and streaks.[10]

Neurological involvement is seen in 76% of patients, which present as seizures and mental retardation. Other associated features include ataxia, neuropathy, distal spinal muscular atrophy, torticollis, deafness, spina bifida occulta. In this study, there were no underlying defects or any other associations with hypomelanosis of Ito. Paederus dermatitis is a unique type of irritant contact dermatitis characterised by erythematous, vesicular or

bullous lesions of sudden onset on exposed areas of the body. It is due to an insect belonging to the genus Paederus. This rove beetle neither bites or stings, but accidental brushing against or crushing the beetle on the skin on contact provokes the release of its fluid, which contains paederin, a potent vesicant. Diffuse erythematous and desquamative lesions, which predominantly occur on the upper body and face have been reported.[12] In this study it was seen on the face and the patient gave an acute history with complaints of burning sensation. Linear and whorled nevoid hypermelanosis is characterised by hyperpigmented macules along the Lines of Blaschko without preceding inflammation or atrophy. Lesions are distributed on the trunk and extremities sparing palms, soles and mucosae. The usual age of onset of hyperpigmentation occurs within the first few weeks of life, continues to progress for a year or two before stabilisation. There are very few case reports from India. In this study, this condition was seen in a 2-year-old boy with the lesion occurring on the trunk.[12]

V. Conclusion

In this study the incidence, distribution and associated conditions of various linear dermatoses were assessed. Among them lichen straitus was the most common condition encountered. In most of the cases they were asymptomatic except for itching in some. The lesions were most of cosmetic concern in most of the children in this study. To the best of my knowledge, there are much lesser case studies of linear lesions occurring in children as compared to the studies conducted in adults.

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