

A clinico-etiological evaluation of hair loss in rural Indian children – A cross sectional study

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Abstract

Introduction: Hair loss in children is relatively less common when compared to adults but is associated with significant psychological stress that may affect the growth and development of the child. The type of alopecia is influenced by the age group, ethnicity, hair type, nutrition, environment and cultural factors also play a significant role in hair loss. This study aims at appraising our knowledge on the clinical presentations and various etiologies of alopecia in children.

Materials and Methods: 1574 patients less than 18 years were screened, out of which 75 children fulfilling the criteria were enrolled for the study. A written informed consent was taken from the patient's parents or guardian. A detailed hair and scalp examination along with necessary investigations to establish the definitive diagnosis was done. The collected data were analyzed by the SPSS 22 version software.

Results: In the present study, school going children (6-10 years) and adolescents (10-18 years) were commonly involved, almost equally affecting males and females. Majority of the cases were acquired non-scarring alopecia. Malnutrition, poor grooming habits, associated systemic diseases and stress were common risk factors. The most frequent etiologies were tinea capitis, alopecia areata, telogen effluvium, trichotillomania, nevus sebaceous and scarring following infections.

Conclusion: The present study highlights the various acquired and congenital causes of hair loss in children. Early diagnosis and treatment can alleviate the anxiety. The study emphasizes on the importance of addressing underlying malnutrition and poor grooming habits among the patients.

Keywords: Hair loss in children, Malnutrition, Tinea capitis, Scalp disorders.

Introduction

Hair loss or alopecia is a common complaint in dermatology OPD and associated with significant cosmetic concerns.¹ Most cases of hair loss are reported in adults and are a relatively rare event in children.²

Hair loss in children may be caused by a number of conditions, according to its mode of presentation, can be broadly grouped as congenital or acquired.² The causes of alopecia vary according to the age group.² In addition ethnicity,¹ hair type,¹ environment³ and cultural factors³ also play a significant role in hair loss.

Hair loss in children is associated with significant psychological stress which may affect the growth and development of the child.⁴ Certain cases of alopecia may be associated with unexplored systemic anomalies and nutritional deficiencies.⁵

Though there are many studies on alopecia in adults, there is paucity in literature and research for causes of hair loss in children. This study is an attempt to appraise our knowledge on the clinical presentations and various etiologies of alopecia in children. This study creates awareness for clinicians to evaluate hair loss in children.

Materials and Methods

Out of 1574 children visiting the Dermatology outpatient department over a period of one year, 75 of them presenting with hair loss were enrolled in the study. Cases of neonatal telogen effluvium and hair loss secondary to trauma were excluded from the study. A

written informed consent was taken from the patients' parents or guardian. This study was approved by the Institutional Ethical Committee.

A detailed history of the patient including history of presenting complaint, hair grooming patterns, hair plucking habits & tics along with nail and skin changes. History of systemic diseases, birth history, developmental history, family history of similar complaints and drug intake were also elicited.

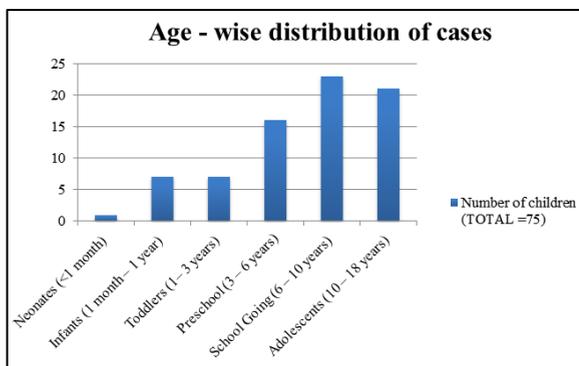
General physical examination, scalp examination, examination of hair shaft and root, tests for hair anchorage and fragility were done in all cases. In addition, wood's lamp examination, microscopic examination of hair and dermatoscopy were done when indicated. Relevant laboratory investigations were done.

The data thus documented was analyzed by the SPSS 22 version software. Chi-square test was used as test of significance for qualitative data.

Results

A total of 1574 children presented to the Dermatology outpatient department during the study period out of which 75 children complaining of hair loss were enrolled in the study, showing a prevalence of 4.76%. Males (50.7%) and females (49.3%) were almost equally affected.

The age-wise distribution of hair loss is described in bar diagram 1. The children ranged from four days old to eighteen years old.



Bar diagram 1: Age – wise distribution of the cases

Most children (61.3%) complained of onset of hair loss of less than one month duration. Though in majority of patients (74.7%) the hair loss was asymptomatic, few presented with following symptoms as described in Table 1.

Table 1: Associated symptoms with hair loss

Symptoms	Number of Cases	Percentage
Asymptomatic	56	74.7%
Itching	15	20%
Scaling	7	9.3%
Pain	3	4%
Swelling	3	4%
Total	75	100%

The hair loss patterns were diffuse in 80% and localised in 20%. Based on the mode of onset of hair loss, the children were grouped under congenital alopecia (10.7%) and acquired alopecia (89.3%). In acquired alopecia (89.3%), majority (94.1%) of the cases were of non-scarring type.

The various etiologies of hair loss encountered in present study is` described in Table 2, Fig. 1, Fig. 2, Fig. 3.



Fig. 1: A case of keratosis follicularis spinulosa decalvans in an eight year old child



Fig. 2: Hair loss in a patient with X – linked ichthyosis



Fig. 3: Trichotillomania

Table 2: Various etiologies of hair loss in the study

Type of hair loss	Etiology	Number of cases	Percentage
Congenital	Nevus Sebaceous	4	5.3%
	Keratosis Follicularis Spinulosa Decalvans	1	1.3%
	X Linked Ichthyosis	1	1.3%
	Aplasia Cutis	1	1.3%
	Darriers Disease	1	1.3%
Acquired Non Scarring	Tinea Capitis	23	30.6%
	Alopecia Areata	19	25.3%
	Telogen Effluvium	7	9.3%

	Tractional Alopecia	5	6.7%
	Seborrheic Dermatitis	4	5.3%
	Trichotillomania	3	4.0%
	Scalp Candidiasis	1	1.3%
	Androgenetic Alopecia	1	1.3%
Acquired Scarring	Physical/Chemical Trauma	3	4.0%
	Discoid Lupus Erythematosus	1	1.3%
	Total	75	100%

Tinea capitis, the most common cause of alopecia in our study, showed the highest incidence in school going children (43.5%) followed by 21.7% in preschool children, 17.4% in toddlers, 13.1% in adolescents and 4.3% in infants. Male preponderance (72.7%) was present. 78.2% were inflammatory type and 21.8% were non-inflammatory type. Predisposing factors like tonsuring (26.1%), frequent oil application (47.8%) and poor grooming practices (39.3%) were noted. The clinical types of tinea capitis encountered are described in Table 3, Fig. 4.



Fig. 4: Black dots seen on dermatoscopy in a case of tinea capitis

Table 3: Clinical types of tinea capitis in the study

Clinical type of tinea capitis	Number of cases	Percentage
Black Dot	4	17.4%
Grey Patch	12	52.2%
Kerion	5	21.7%
Mixed	2	8.7%
Favus	Nil	Nil
Total	23	100%

Of the total number of nineteen patients diagnosed as alopecia areata, most children were in the adolescent age group (47.8%). The clinical patterns noted were patchy (84.2%), ophiasis (10.5%) and reticulate (5.3%). Nail changes included patchy leuconychia in 15.8%, longitudinal ridging in 5.3% and pitting in 5.3%. Positive history of atopy was seen in 26.3%. History of preceding psychological stress and fever were noted in 10.5% and 5.3% of the cases respectively.

All seven cases of telogen effluvium were females in our study, with majority (71.4%) of them in

adolescent age group. About 57.1% had acute telogen effluvium and 42.9% had chronic telogen effluvium. The precipitating factors in our study were fever (42.8%), stress (28.6%) and surgery (14.3%). In 14.3% of the cases, triggering factor could not be elicited.

Other risk factors for hair loss like malnutrition (17.8%), hypothyroidism (4%), anaemia (2.6%) and PCOS (1.3%) were noted in this study. Autoimmune conditions like vitiligo (2.6%) and lichen planus (1.3%) were associated with alopecia areata. One case of tinea capitis also had tinea corporis.

Discussion

Scalp hair shows synchronous hair growth activity until the end of the first year of life, with increased physiological shedding at the end of this period due to initiation of individual cycling and asynchronous hair growth activity. Pathological hair loss rarely occurs during the first year of life but may be a leading symptom of congenital diseases. For the classification of pathological hair loss in children, the three major groups that should be differentiated are congenital hair loss, acquired scarring hair loss and acquired non-scarring hair loss.⁵

Majority of the children with hair loss were in school going age group (6–10 years) contributing to 30.7 % of the children and the youngest case was four days old, similar to another study where their youngest case was three months of age.¹ This may be attributed to the large number of tinea capitis cases in this age group. There was an equal gender distribution in this present study whereas female preponderance was seen in another study.³

Asymptomatic hair loss was seen in majority (74.6%) of patients, similar to other studies.^{2,4} Itching was the most common associated complaint (20%) unlike another study that had scaling (36.3%) as the most frequent symptom.¹

The duration of hair loss ranged from three days to more than a year. About 61.3% of the children complained of hair loss within one month of onset, in accordance with another study.³ This reflects on the anxiety and concern of the parents and guardians about their children's health.

In 94.1% of the cases, the hair loss was acquired and non-scarring, whereas 5.9% had scarring alopecia, similar to another study which showed 89.9% of non-scarring alopecia and 1.7% of scarring alopecia.¹ This

highlights the fact that acquired non-scarring alopecia is the commonest cause of hair loss in children which may be attributed to the high number of scalp infections.

Tinea capitis was the most common cause of hair loss accounting for 30.6% of overall cases. This was commonly seen in preschool and school going children in our study contributing to 21.7% and 43.5% of the cases respectively. This is partially explained by the fact that sebum, a natural fungistatic, is minimally present in prepubertal children.⁶ Also, children in these age groups engage in several activities of close contact such as rubbing of heads while playing, sharing of hair combs and caps which favours spread of tinea.⁷ Though it is said that tinea capitis is rare after puberty,⁶ 13% of tinea capitis cases belonged to the adolescent age group.

In our study, males were more commonly affected with tinea capitis (72.7%) which shows that short hair facilitates easier mode of spread of spores compared to long hair in females. The clinical types observed were grey patch (52.2%), kerion (21.7%), black dot (17.4%) and mixed pattern (8.7%). This is in contrast to another study on tinea capitis that reported black dot to be the most common type.⁷ Favus type of tinea capitis was not observed in our study.

Frequent application of oil, history of recent tonsuring and poor grooming habits like sharing of combs and infrequent washing of hair was significantly associated with tinea capitis. Concurrent dermatophytosis affecting other parts of the body was seen in only one case (4.3%) that was much lower compared to 30.2% of cases affected in another study.¹

In contrast to our study, alopecia areata was reported to be the most common cause of hair loss in children in another study.³ This was probably because of more frequent follow up in alopecia areata. 16 patients (84.2%) of alopecia areata presented with the patchy clinical pattern, followed by two cases (10.5%) of ophiasis and one case (5.3%) of reticulate pattern. No cases of sisaphio, alopecia totalis or alopecia universalis were noted in our study. Another study reported similar incidence of the various clinical patterns.⁸ But nail involvement (26.3%) was much higher in our study in comparison to the above mentioned study which showed only 10% of the cases affected.⁸

A positive history of atopy was seen in 26.3% of the alopecia areata cases, similar to another study.⁹ It has been hypothesized that is atopic dermatitis increases the risk for cutaneous autoimmune conditions like vitiligo and alopecia areata by activation of common inflammatory pathways like thymic stromal lymphopoietin.¹⁰ One case of alopecia areata (5.3%) had multiple associated autoimmune conditions like vitiligo, lichen planus and autoimmune thyroiditis.

Anxiety and psychological consequences of alopecia areata and tinea capitis can interfere with child's growth and development. Moreover parents often

project their own concerns about alopecia areata and tinea capitis, which maybe expressed as guilt.

Out of seven cases of telogen effluvium, 5 (71.4%) were observed in adolescent age group, one case between 3-6 years and one case between 6-10 years. All seven patients were females and none were male in our study. Higher incidence in females has been reported in various other studies.³ This is probably because females find the hair shedding more troublesome and seek medical attention earlier. The common triggers in our study were fever, stress and surgery. On investigating further, moderate anaemia and hypothyroidism were diagnosed in one case each.

Tractional alopecia was seen in the occipital area in two infants, due to prolonged friction of scalp when in supine position. The remaining three cases were as a result of tight braiding of hair and use of hair clips. Seborrheic dermatitis was more common in infants followed by adolescents. The other uncommon causes of acquired non-scarring alopecia in our study were trichotillomania, scalp candidiasis and androgenetic alopecia.

Acquired scarring alopecia was seen only in four cases. Three cases (75%) were scarring following infections and one was a case (25%) of discoid lupus erythematosus. Folliculitis de calvans and lichen planopilaris were reported in other studies, but both these conditions were not encountered in our study.⁴

The congenital alopecia cases noted in our study were nevus sebaceous, congenital aplasia cutis, keratosis follicularis spinulosa decalvans, X – linked ichthyosis and Darier's disease. A similar study showed hamartomas and hemangiomas as the commonest causes of congenital hair loss.¹¹

All children less than 10 years of age were evaluated for malnutrition using the WHO weight for age charts. 13.3% had grade 1 and 4% had grade 2 malnutrition. Nutritional deficiency is an important contributing factor for hair loss in children, particularly iron and zinc deficiency.

Conclusion:

The present study highlights the various acquired and congenital causes of hair loss in children. Early diagnosis and treatment can alleviate the anxiety. Careful guidance of parents and guardians is needed to support coping with the hair loss. The study also emphasizes on the importance of addressing underlying malnutrition and poor grooming habits among the patients with hair loss.

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