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ORIGINAL ARTICLE

A CLINICAL AND INVESTIGATORY STUDY OF ALOPECIA AREATA WITH SPECIAL REFERENCE TO SYSTEMIC ASSOCIATIONS IN 100 PATIENTS

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ABSTRACT: BACKGROUND: Alopecia areata is an autoimmune condition with a worldwide occurrence. It usually presents as patchy, non-scarring hair loss. There is a paucity of clinical data in Indians. **OBJECTIVES:** To study the clinical profile and to know the association with various systemic and dermatological disorders. **METHODS:** A descriptive study was conducted on 100 cases of alopecia areata after taking informed consent, over a period of 16 months from December 2012 to April 2014. A detailed history of the patient regarding associated systemic and dermatological disorders and various autoimmune disorders were documented, relevant investigations were done. **RESULTS:** Incidence of alopecia areata in patients attending dermatology out-patient department was 1.7%. There was slight male preponderance (51%). Most common age group involved was 20-40yrs. (47%). Alopecia areata was higher among low socioeconomic group (62%). Recurrences of AA was noted in 14% of cases. Stress acting as triggering factor in 12%. Pregnancy and postpartum accounted for 4% of cases. Atopic dermatitis was noted in 1%, seborrheic dermatitis was noted in 1%, lichen planus was noted in 2%, psoriasis noted in 1% cases. Average age of onset of alopecia areata in atopics was 7.9 years. Occiput was the most common site accounting for 39.3% of cases. Nail pitting was noted in 7% of cases. In 2 cases 20 nail dystrophy was noted. Patchy type was the most common type of alopecia seen in 73% of patients. As per IKEDAS classification - 71% cases belonged to common type, 18% to atopic type, 5% to pre hypertensive, 6% to autoimmune type. Bronchial asthma was noted in 3%, Diabetes mellitus in 5%, hypothyroidism noted in 12% of cases.
KEYWORDS: Alopecia areata, Autoimmunity, Systemic disorders.

INTRODUCTION: Alopecia areata is an immunologically mediated disorder characterized by focal to diffuse hair loss. Alopecia areata is hypothesized to be an organ specific autoimmune disease mediated by T-lymphocytes directed to the hair follicles. Although genetic predisposition and environmental factors may trigger the initiation of the disease, the exact cause is still unknown. Other proposed origins reported include infectious agents, emotional stress. AA may be associated with other autoimmune diseases such as atopy, thyroid diseases including Hashimoto's thyroiditis and vitiligo. Epidemiologic studies of alopecia areata (AA) are available from USA, Japan and European countries, but there is a paucity of literature on AA from Asian countries, especially from the Indian subcontinent. Hence an attempt is made to study the epidemiology of AA and its association with atopy, thyroid diseases, and other autoimmune diseases.

METHODOLOGY: The present study was conducted on 100 patients, who were clinically diagnosed as AA, who attended Dermatology outpatient department, King George Hospital, attached to Andhra Medical College, Visakhapatnam from December 2012 to April 2014.

100 cases of clinically diagnosed AA of all age groups were included in the study with informed patients consent (Parental consent was taken in children less than 16 years).

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Patients were asked about the onset of patches, recurrences, duration and family history of similar complaints. History of atopy, thyroid disorders, diabetes, connective tissue disorders and any history suggestive of other autoimmune disorders and HTN in patients or other family members was taken. A detailed general and systemic examination was done. In Dermatological examination, size, surface, number, site of patch/patches, pattern of hair loss and hair changes like exclamatory mark hairs. Pull test, SALT scoring was done in all cases. Nail changes were also considered which include pitting, trachyonychia, koilonychia, beaus lines and others. Examination for other dermatological disorders was done. Patients were examined for caries tooth. Histopathology of alopecia areata were studied in selected.

Following blood investigations were performed - haemogram with peripheral smear, FBS,RFT, LFT, T3, T4,TSH,ANTI-TPO ab, ANTI-TG ab, RA factor, serum IgE. Scalp biopsy was done where the diagnosis was doubtful. Ophthalmological evaluation was done in 40 cases, when the lesions were > 3 in number and also when the size of the lesions >3cm in diameter.
Data was analysed and tabulated.

Inclusion Criteria: 100 patients with new episode of alopecia areata were included in the present study.

Exclusion Criterion: Patients not willing to give written or informed consent and not willing to participate in the study and various types of alopecia, other than alopecia areata.

Statistical Methods: The data was analyzed using ratios and percentages.

RESULTS: The incidence of alopecia areata in patients attending dermatology outpatient department was 1.7% [Table-1]. In the present study there is slight male preponderance (51%) [Table-2]. There was marginally higher incidence among female children (53%). Most common age group involved was 20-40y (47%) [Table-3] and commonest presenting group in children is 7-10yrs. (47%) childhood cases accounting for 34%. Alopecia areata was higher among low socioeconomic group accounting for about 62% of cases [Table-4]. Stress acting as triggering factor in 12%, pregnancy and postpartum accounting for 4% of cases [Table-5]. Recurrences of alopecia areata was noted in 14% of cases, recurrences in childhood cases were 11.7% [Table-6, 7]. Present study showed H/O atopy in 20% cases, diabetes mellitus in 5% cases, thyroid abnormality in 5% cases [Table-8]. Polymorphous light eruption was most commonly associated with AA, atopic dermatitis was noted in 1%, Seborrheic dermatitis was noted in 1%, Lichenplanus was noted in 2%, psoriasis noted in 1% cases [Table-9]. Present study showed family h/o atopy in 13%, diabetes mellitus in 14%, HTN in 6%, vitiligo in 1% and psoriasis in 1% of cases [Table-10]. 44% of child hood cases showed h/o atopy [Table-11]. 14% of patients had family h/o alopecia areata [Table-12], 20 % of childhood cases showed family h/o alopecia areata [Table-13]. Average age of onset of alopecia in atopic children was 7.9 years [Table-14]. occiput was the most common site accounting for 39.3% cases followed by vertex 27%, temporal area 17.2% [Table-15], occiput (48.7%) was the common site in children followed by vertex (38.4%) [Table-16]. Pitting was noted in 7% of cases, in 2 cases 20 nail dystrophy was noted [Table-17]. SALT scoring - 80% of cases showed S1 score, 11% showed S2 score,2% S_3,4%S4,3%S_5 [Table-18]. Patchy type was the most common type seen in 73% of patients [Table-19]. IKEDAS classification - 71% cases belonged to common type, 18% to atopic type, 5% to pre hypertensive, 6% to autoimmune type

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[Table-20]. Bronchial asthma was noted in 3%, Diabetes mellitus in 5%, hypothyroidism noted in 12% of cases [Table-21].

DISCUSSION: Alopecia Areata (AA) is a condition affecting hairy areas of the body, in which hair is lost from some or all areas of the body, usually from the scalp. It is a disease with multi factorial etiology and associations.[1] Prompt recognition of the disease at the earliest and looking for associated conditions are important in treating and counselling the patients.

Outpatient Incidence: In the present study incidence of AA in patients attending the outpatient deprtment was 1.7%, which was comparable to Dawber etal.[2] study which showed 2% incidence. In contrast Sharma etal.[3] study showed 0.7% of AA, Tan etal.[4] study noticed 3.8% of AA in outpatient attendees which was higher than the present study.

The lower incidence in the present study may be attributed to low socioeconomic status, illiteracy, ignorance or use of native medicine.

Age Distribution: In this study most patients belonged to the age group of 20-40 years (47%) which was comparable to Thomas et al.[5] study in which 50.4% of patients belonged to 20-40 years age group.

In present study 40% of patients belonged to <20 years of age, but in Wasserman et al.[6] study 60% cases had AA before 20 years of age so this is at variance with the present study.

In the present study 87% of patients had onset before 40 years of age which was in line with the Sharma et al study.[3] (88%) Tan et al study (85.5%).

In the present study 34% were children (< 16 years of age) in contrast to Sharma etal[3] study in which 24% were children.

47% of childhood cases belong to 7-10years age group which was comparable to viswanath et al study in which 44% of cases belonged to 7-10 years age group.[7]

Sex Incidence: Sex incidence is reported to be equal in UK and USA, but figures from France, Italy and Spain show a considerably higher incidence in males. The present study showed a slight preponderance of AA in males (51%) this was in line with obsevation made by Sharma etal.[3] study. But Tan et al study showed higher incidence (66%) among females.[4] and Wasserman et al study showed equal incidence among both sexes.[6]

In the present study among children there was slight female preponderance (53% were females, 47% males) which was comparable to Viswanath et al.[7] study (54%) and Sharma et al.[3] study (58%). This could be due to more cosmetic awareness among female adolescents.

Socio-Economic status: Most of the patients attending the outpatients at K.G. Hospital Visakhapatnam belonged to low socio economic group (Income group of less than Rs.5,000, per month) Probably anaemia or deficiency of nutrients may play a role in the higher incidence of AA observed in low socioeconomic groups.

History of Triggering Factors: In the present study, stress like examinations, death of a family member were noted as triggering factors in 12% of cases, and 4% showed pregnancy and post-partum as triggering factors. But controlled studies did not show any association, and further studies may be needed to assess the role of stress in the development of AA.

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History of Recurrences: In the present study recurrence was seen in 14% of total cases. In childhood cases 11.7% cases showed recurrence which was in line with Viswanath et al.[7] study (14%).

Family History of Alopecia Areata, Atopy, HTN, DM, Vitiligo and others: In present study family history of alopecia areata was present in 14% of total cases which was correlating with study of Thomas etal[5] study (15%), in contrast to Sharma et al.[3] study (9%) and in Tan et al study (4.6%). In the present study 20% of childhood cases showed family h/o AA which was in contrast to viswanath et al.[7] study and Sharma et al.[8] study where family history was positive in 12% of cases. Higher incidence of AA in family members in the present study may indicate a genetic predisposition Family history of atopy was present in 13% of total cases correlating with Sharma et al.[3] study (18%). In the present study family history of HTN was noted in 6 patients out of which 2 had severe disease. Family history of thyroid disorder was noted in 3% of study population which was in concordance to Wang et al.[9] study where thyroid abnormality noted in family members of 4.7% cases. Family history of DM was noted in 14% of patients which was in concordance with Wang etal.[9] study which showed higher incidence of Type1 DM in the relatives of AA. In the present study family history of vitiligo was noted in 1% of cases in contrast to Sharma et al.[3] study (5.9%). Family history of psoriasis was noted in one case.

History of other Disorders: In the present study disorders like diabetes, hypertension, atopy and thyroid status were assessed. In this study atopy was most commonly associated with alopecia areata, seen in 20% of cases, these observations were comparable with Sharma et al study (18%),[3] but Tan E et al study showed evidence of atopy in 60.7% of study population.[4] In the present study 44% of child hood case showed history of atopy in contrast to Viswanath etal.[7] study (10%). This higher incidence among atopic may be due to alteration in both cell and humoral immunity in atopic patients.

In the present study DM was seen in 5% of total cases which was comparable to Thomas etal[5] study (7.1%), Tan et al study (3.2%) in contrast to Sharma et al.[3] study which showed 0.4% cases of diabetes. Thyroid abnormality was noted in 5% of cases in present study which was comparable to Tan E et al.[4] study (2.3%). In the present study HTN was noted in 2% of cases which was comparable to Thomas et al.[5] (2.8%).

Average Age of Onset of AA In Children With Atopy Compared To Non Atopics: In the present study children with atopy showed earlier age of onset (7.9 years) than non atopics(11.4 years) which was in contrast to Viswanath et al.[7] study (In atopics 5.2 years) and 6.7 years in non atopics. Early age of onset in atopics may indicate association with atopy.

Association with other Dermatological Disorders: Lichen planus was seen in 2% of cases, which was in concordance with Thomas etal[5] study (1.4%), but in Sharma et al study only 0.7% cases had lichen planus.[3] In the present study Seborrheic dermatitis was seen in one case, atopic dermatitis in one case, this is in variance to Thomas et al.[5] study where SD was noted in 5.6%, AD was noted in 14%.

In the present study Scalp psoriasis was noted in 1 case, recurrent pyodermas in one case polymorphous light eruption was present in four cases.

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Site: In the present study most commonly involved site was occiput accounting for 39% of cases, followed by vertex I (27%), temporal area (17%), frontal (6.5%), beard (6%), eyebrows (4%).

In childhood cases occiput was the most commonly involved site accounting for 49, which was comparable to Viswanath et al.[7] study (52%),

Exclamatory mark hairs and pull test: In the present study acutely presented cases showed pull test positive of >6 hair follicles. Exclamatory mark hairs are present in almost all of the cases presented acutely.

SALT Scoring: In the present study S1 score is seen in 80% of cases, S2 in 11%,S3 in 2%,S4 and S5 in 3.5% each. High SALT score may indicate poor prognosis, and rate of spontaneous remission may be more common in low SALT score patients.

Nail Changes: In the present study nail changes are seen in 13% of all cases which was comparable with Thomas et al.[5] study (16%) and in contrast to Sharma et al.[3] study (20%). Out of the nail changes 7% showed pitting which was comparable to Thomas et al.[5] study (7.2%). Twenty nail dystrophy was noted in two cases, two cases showed beaus lines and one showed koilonychia. Out of 13 cases with nail changes 7 cases had severe type of AA accounting for 53% cases of AA with nail changes, which was comparable to Sharma etal[3] study in which 47% of cases.

Oral Cavity: In present study caries tooth are noted in 7% of cases. There were some case reports of AA associated with dental caries.[10] the pathogenesis of AA of dental origin is usually based on a trigemino-sympathetic reflex.[11]

Some studies have demonstrated the presence of systemically circulating immune complexes, especially in acute dental infections.[12]

Ophthalmological Evaluation: In present study 3% of cases showed allergic conjunctivitis. Tortuousity of retinal vessels was noted in 1 case. Immature cataract in 2 cases. Punctate lens opacities, early cataracts, and fundus abnormalities which may occur in 40% to 50% of patients with AA in previous studies.[13] were not noted in the present study.

Haemoglobin and Peripheral Smear: In present study microcytic hypo chromic type of anaemia was seen in 19% of cases which was in variance to Thomas et al.[5] study in which anaemia was present in 8.4% of cases and Trost LB.[14] et al study anemia was present in 24-71% of females with AA.

In the present study peripheral smear examination did not reveal any megaloblstic anaemia (pernicious anaemia) in contrast to Thomas et al.[5] study who reported pernicious anaemia in 2.8% of cases. As B_{12} levels are not available in our laboratory it could not be done.

Absolute Eosinophil Count and Serum IgE levels: In the present study 20% of cases showed AEC > 440 cells/mm3, serum IgE levels were elevated in 19 cases, which indicates an association with atopy.

Hypothyroidism: Hypothyroidism was noted in 12% of cases, which was in concordance with Thomas et al.[5] study (14%), but in contrast Sharma et al study (1%) and Tan etal[4] study (2.8%).

In the present study 50% of hypothyroid patients had chronic and recurrent disease which was comparable to Thomas et al.[5]

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In the present study total number of cases showing positive antithyroid antibodies were 6.

In the present study rheumatoid arthritis factor was negative in all cases in concordance to Tan et al.[4] study which reported only 0.9% of rheumatoid arthritis in the study population.

2 cases in the present study showed infertility.

Biopsy: Punch Biopsy was taken in 29 cases, histopathology report showed both anagen and telogen follicles with peri follicular lymphocytic infiltrate which was in concordance with previous studies.[15,16]

Type of AA: In the present study most common type of AA is patchy type 73%, followed by ophiasis in 7%, sisaphio in 7%, totalise in 4%, universalise in 3%, reticulate in 3%, diffuse in 3% of cases which were comparable to Thomas et al.[5] study.

Ikedas Classification: In the present study 71 % of cases belonged to common type, 18% were atopic type, 5% were pre hypertensive type, 6% were autoimmune type which was in concordance with previous study.[17]

Systemic Associations: The present study showed 16% of allergic rhinitis cases, in contrast to Thomas et al study where it was 4.2%. Association of bronchial asthma in present study (3%) was comparable to Thomas etal[5] (4.2%). DM, HTN, Hypothyroidism were comparable to Thomas et al study.[5] Depression was noted in 20% of total cases out of which 14% of cases had severe alopecia areata.

No. of patients attending dermatology outpatient department from December 2012-april 2014	Total no. of AA cases	Percentage
40320	672	1.7%

Table 1: Outpatient incidence of alopecia areata

MALE	51	51%
FEMALE	49	49%
Total	**100**	

Table 2: Sex Distribution in Total Cases

Age	Number of Cases	Percentage
<20	40	40%
20-40	47	47%
>40	13	13%
Total	100	

Table 3: Age distribution of cases

Socio Economic status	Number of Cases	Percentage
Low (<5000/month)	62	62%
Medium(5000-10000/month)	35	35%
High(>10000/month)	3	3%
Total	**100**	

Table 4: Socio economic status of patients

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	Number of cases	Percentage
Stress like death of family members, examination	12	12%
Pregnancy , postpartum	4	4%

Table 5: Associated triggering factors

Recurrences	Number of cases	Percentage
Present	14	14%
Absent	86	86%

Table 6: Recurrences

Recurrences in childhood	Number of cases	Percentage
Present	4	11.7%
Absent	30	88.2%

Table 7: Recurrences in childhood

Systemic disorder	Number of cases	Percentage
Atopy	20	20%
HTN	2	2%
DM	5	5%
Hypothyroidism/goiter	5	5%

Table 8: Associated H/o atopy, HTN, DM, hypothyroidism

Cutaneous disorder	Present study	Thomas et al study
PMLE	4%	0
AD	1%	14%
SD	1%	5.6%
LP	2%	1.4%
PSORIASIS	1%	0

Table 9: Associated cutaneous disorders

Family history of systemic disease	Number of cases	Percentage
ATOPY	13	13%
DM	14	14%
HTN	6	6%
THYROID	3	3%
OTHERS	Vitiligo – 1 Psoriasis- 1	2%

Table 10: Family H/o ATOPY, DM, HTN, THYROID, OTHERS

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H/o atopy in childhood cases	Number of cases	Percentage
Present	15	44.1%
Absent	19	55.9%

Table 11: H/o atopy in childhood cases

FAMILYH/O AA	Number of cases	Percentage
Present	14	14%
Absent	86	86%

Table 12: Family H/O Alopecia Areata

Family/o AA in childhood cases	Number of cases	Percentage
Present	7	20%
Absent	27	80%

Table 13: Family H/o of AA in childhood cases

	Average age of onset
Atopics	7.9y
Non atopics	11.4y

Table 14: Average age of onset in children with atopy

Site of lesion	Number of cases	Percentage
Occiput	48	39.3%
Vertex	33	27%
Temporal	21	17.2%
Frontal	8	6.5%
Beard	7	5.7%
Eyebrow	5	4%

Table 15: Site of lesion in total cases

Site of lesion	Number of cases	Percentage
Occiput	19	48.7%
Vertex	15	38.4%
Temporal	4	10.2%
Frontal		
Eyebrow	1	2.5%

Table 16: Site of lesion in childhood

Nail change	Number of cases	Percentage
Pitting	7	7%
20 nail dystrophy	2	2%
Longitudinal ridging	1	1%
Bues lines	2	2%
koilonychia	1	1%

Table 17: Associated nail changes

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	Number of Patients	Percentage
S1	80	80%
S2	11	11%
S3	2	2%
S4a&b	4	4%
S5	3	3%

Table 18: SALT score

Type of alopecia	Number of patients	Percentage
Patchy	73	73%
Diffuse	3	3%
Ophiasis	7	7%
Sisaphio	7	7%
Reticulate	3	3%
Totalis	4	4%
Universalis	3	3%

Table 19: Type of Alopecia

IKADAS Type	Number of patients	Percentage
Common	71	71%
Atopic	18	18%
Pre hypertensive	5	5%
autoimmune	6	6%

Table 20: IKEDAS classification

Systemic disease	Present study	Thomas et al study
Allergic rhinitis	16%	4.2%
Bronchial asthma	3%	4.2%
DM	5%	7.1%
HTN	2%	2.8%
Hypothyroidism	12%	14.1%
Hashimoto's thyroiditis	6%	-
Iron deficiency anaemia	19%	8.4%

Table 21: Associated systemic diseases

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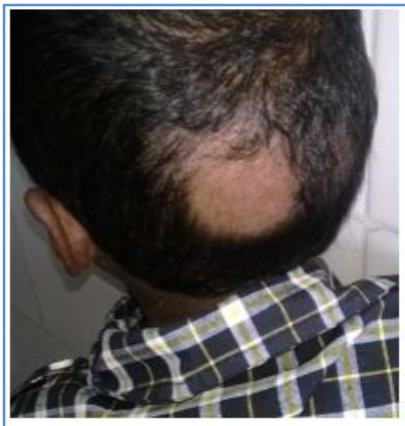

Fig. 1: Patchy Type

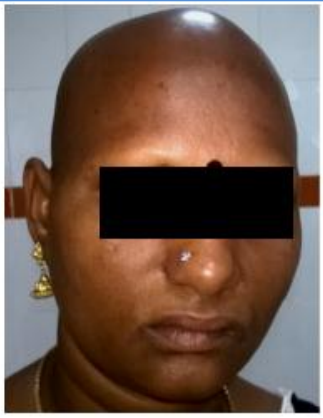

Fig. 2:Alopecia Universalis

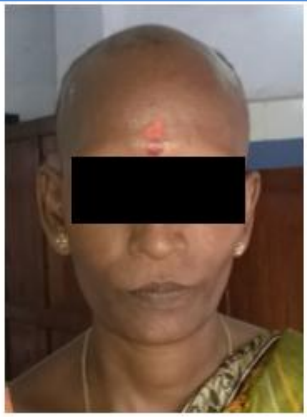

Fig. 3: Alopecia Totalis

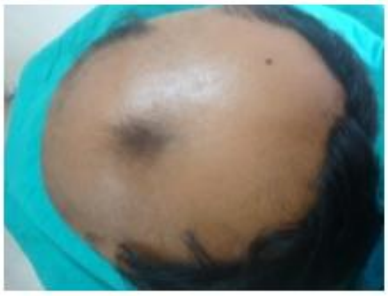

Fig. 4: Sisaphio Patern

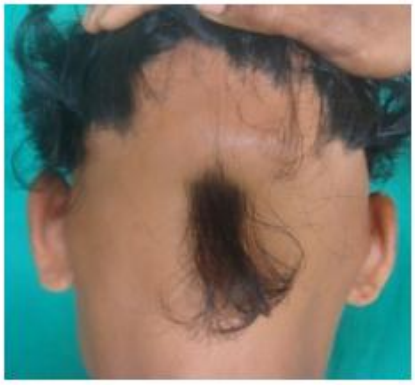

Fig. 5: Ophiasis Pattern

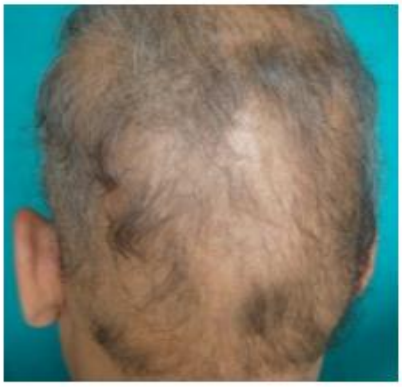

Fig. 6: Diffuse Pattern

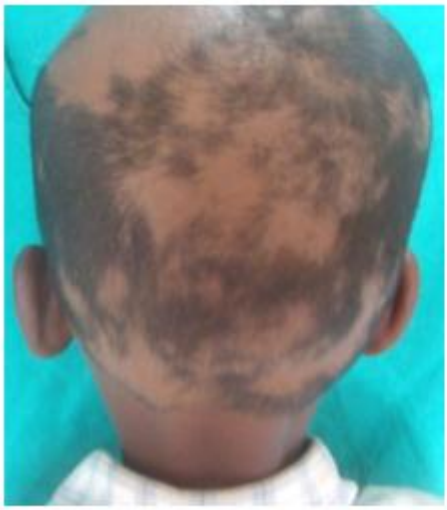

Fig. 7: Reticulate Pattern

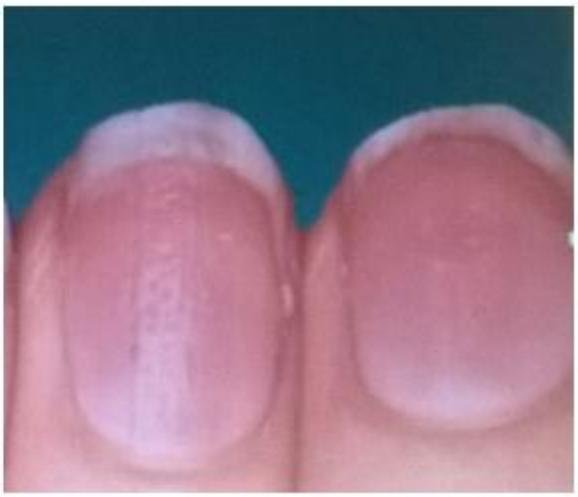

Fig. 8: Pitting

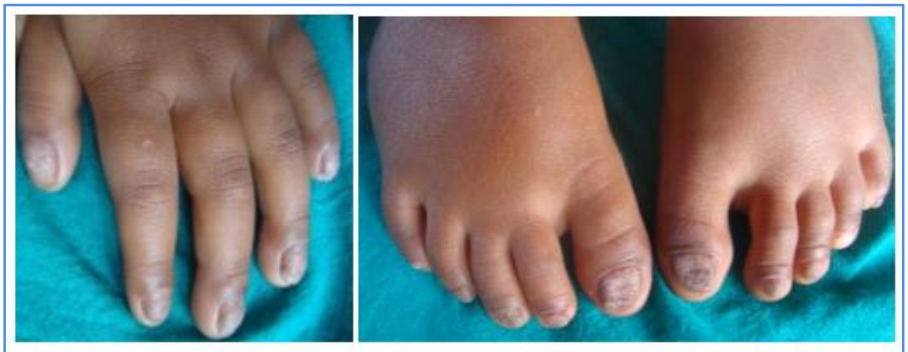

Fig. 9: 20 Nail Dystrophy

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