

DERMATOGLYPHICS IN ICHTHYOSIS AND ALOPECIA AREATA

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Summary

A total of 80 cases comprising of 40 controls and twenty each of ichthyosis and alopecia areata were studied for dermatoglyphic patterns and ridge count. Statistically significant increased incidence of whorl pattern was observed in female cases of autosomal dominant and sex linked ichthyosis. Significant change in the distribution of patterns was found in female cases of alopecia areata.

In skin disorders such as ichthyosis, psoriasis, alopecia areata and vitiligo where inheritance is thought to be a major factor in causation of these disorders dermatoglyphic patterns have been studied by various workers^{1,2,3}.

Present study has been undertaken with a view to detect any qualitative or quantitative differences in dermatoglyphic patterns in cases of ichthyosis and alopecia areata as compared to normal controls.

Material and Methods

A total of 80 cases comprising of 40 controls and 20 each of ichthyosis and alopecia areata were taken. Criteria of diagnosis were mainly clinical.

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Received for publication on 26—2—1979

In each case, rolled finger prints were taken with the printer's ink and studied for their patterns and ridge counts.

Observations

Patterns

Control subjects : Male controls had loops in 54.5 per cent of fingers, whorls in 40.5 per cent and arches in 5 per cent while normal females had loops in 62 per cent, whorls in 34 per cent and arches in 4 per cent (Table 1). 4th and 5th fingers did not show any arch pattern in either sex. Loop pattern was more commonly seen on the 3rd and 5th digits. Whorl pattern was common on the 4th digit. On 2nd digit, ulnar loops were present in 9 per cent.

Ichthyosis

In 3 female cases of autosomal dominant type ichthyosis, loops were present in 36.7 per cent of fingers and whorls in 63.3 per cent, with complete absence of arches. In 15 male autosomal dominant cases, loops were present in 56 per cent, whorls in 40 per cent and arches in 4 per cent. In 2 cases of the sex linked type, loops were seen in 10 per cent and whorls in 90 per

TABLE 1
Distribution of various dermatoglyphic patterns

	Loop			Whorl			Arch			Statistical evaluation (p value)	
	Female %	Male %	Total %	Female %	Male %	Total %	Female %	Male %	Total %	Female %	Male %
Normal	62	54.5	58.25	34	40.5	37.25	4	5	4.5	—	—
Alopecia areata	52	54	53.5	34	40	38.5	14	6	8	> .05 Significant	7 .05 not significant
Ichthyosis											
Autosomal dominant type	36.6	56	52.7	63.33	40	43.8	—	4	3.4	< .01 Significant	7 .05 not significant
Sex linked type	0	10	10	0	90	90	0	0	0	—	< .001 Significant

cent (Table 1). Fourth finger had high incidence of whorl pattern in both the sexes of dominant type while 3rd and 5th fingers had a high incidence of loop pattern. Significant findings were increase of whorl pattern in sex linked cases and in female cases of autosomal dominant type with complete absence of arches in the latter group.

Alopecia areata

In 15 male cases of alopecia areata, loops were present in 54 per cent of fingers, whorls in 40 per cent and arches in 6 per cent, while in 5 female cases, loops were present in 52 per cent, whorls in 34 per cent and arches in 14 per cent (Table 1). 1st, 3rd and 5th fingers had a high incidence of loop pattern. 2nd and 4th fingers had a high incidence of whorl pattern. On 2nd digit, ulnar loops were present in 6 per cent. Change in the distribution of patterns in female cases was found to be statistically significant.

Total ridge count

Males had a higher total ridge count than females as shown in table 2.

Discussion

There is paucity of reports on the dermatoglyphics in ichthyosis. In our study of 3 female cases of autosomal

dominant type, there was a significant increase in the incidence of whorl pattern (63.33%) being nearly double than that in the normals (34%). In two cases having sex linked ichthyosis, the incidence of whorl pattern was 90 per cent as compared 40.5 per cent in the normals. In females, the arch pattern was completely absent. Absence of arches in the female patients has also been reported by Sharma et al¹. No significant change in the incidence of arch pattern was observed in the males, though incidence was reported to be high by Sharma et al¹. Saha⁴ in 13 cases of autosomal dominant type and 2 cases of congenital ichthyosiform erythroderma, have reported just mixed whorl and loop pattern.

High incidence of whorl pattern in female having autosomal dominant type of ichthyosis and also in sex linked cases of ichthyosis was statistically significant.

Alopecia areata

Although alopecia areata is not generally considered to be an inherited disease, Verbov⁵ in a study of 104 cases reported a decreased incidence of ulnar loop on the second digit in both the sexes with alopecia areata as compared to normal. Sharma et al¹

TABLE 2
Average ridge count

	Female			Male		
	Right hand	Left hand	Total	Right hand	Left hand	Total
Normal	63	60	123.0	70.00	72.25	142.25
Alopecia areata	65.4	62.6	128.0	66.00	62.9	128.9
Ichthyosis	65.0	63.3	128.3	75.5	79.5	155.0

also observed similar decrease in the incidence of loop pattern on 2nd finger in both the sexes. But in addition they also reported increased incidence of whorl patterns in female cases and increased incidence of loop pattern in male cases. In our series of 20 cases of alopecia areata, decrease in the incidence of loops was observed in 2nd digit in both the sexes (6% as compared to normal 9%), which is similar to the observation of other workers. In addition, it was also observed that arch pattern was present in 14 per cent of female cases as compared to 4% in the normal females. Significance of the alterations in the distribution of patterns in female cases of alopecia areata, is yet to be assessed by more work. In dermatoglyphic study in various dermatoses, Saha⁴ has included only one case of alopecia in which no significant change has been reported.

Total ridge count

No significant change was observed in TRC in cases of ichthyosis and

alopecia areata. Sharma et al¹ have also observed similar finding.

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