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A NOTE ON MAIN LINE TERMINATIONS IN PALMAR DERMATOGLYPHICS

ABSTRACT — The paper presents the palmar main line termination of the Koch population of Assam.

KEY WORDS: Dermatoglyphics — Palmar main line — Koch — Assam.

INTRODUCTION

The present paper aims to study the distribution of different modal types of four main line terminations (D, C, B and A) in palmar dermatoglyphics among the Koch population of Assam. The Koch, which is synonymous with Rajbansi, is a major caste population of Assam. The works of various researchers have revealed that the Koch or Rajbansi represent the end product of a process of detribalization. The population is distributed in the different ecological setting of Assam and consists of people of different tribal groups who have been converted to Hinduism (Waddel, 1901; Gait, 1905; Mazumder 1972). Conversion started in time immemorial but it is an ongoing process.

MATERIAL AND METHOD

A total of 254 unrelated Koch male individuals were studied from five different districts of the Brahmaputra valley of Assam using Cummins and Midlo's method (1961). The sample comprises (individuals): Goalpara = 51, Kamrup = 56, Darrang = 49, Nowgong = 49 and Dibrugarh = 49. The modal type of line D was determined according to Cummins and Midlo (1926). The classification of C-line termination of palm, established by Plato (1970), was followed. Similarly, the frequency of the basic types of line B (distal, ulnar and absent) and A (1,3 and 5) has been also determined. The difference between and among the samples has been determined by chi-square test.

RESULTS

The modal types based on the endings of the four main lines D, C, B and A are presented in *Table 1.* The chi-square values calculated for bimanual and group variations are presented in *Tables 2* and *3* respectively.

Line D: It is clear from the table that the type 9 occurs most frequently in the Koch of Goalpara district while type 11 does so in the Koch of Kamrup. The Koch of Nowgong and Dibrugarh are seen to differ in the high occurrence of type 7, whereas both type 7 and 11 occur exactly in the equal frequencies among the Koch of Darrang. It also reveals that for termination at type 7, right hand shows lower frequency than the left hand, whereas, for ending at 11, right hand shows higher frequency than left hand. This bilateral variation is quite evident on the application of chi-square test (*Table 2*), but with the exception of the Koch of Darrang. However, barring the case of Goalpara × Kamrup, the other values for intragroup variation are not at all statistically significant (*Table 3*).

TABLE 1. *Percentile distribution of modal type of palmar main line D, C, B and A*

Modal type	Hand	GO (N = 51)	KA (N = 56)	DA (N = 49)	NO (N = 49)	DI (N = 49)	Pooled (N = 254)
Line D							
7	Right	15.69	17.86	28.57	32.65	14.28	21.65
	Left	37.25	41.07	40.82	44.90	57.14	44.09
	R + L	26.47	29.46	34.69	38.77	35.71	32.87
9	Right	43.14	30.36	28.57	20.41	42.85	33.07
	Left	47.06	28.57	32.65	40.82	24.49	34.65
	R + L	45.10	29.46	30.61	30.61	33.67	33.86
11	Right	41.18	51.79	42.85	46.94	42.85	45.28
	Left	15.69	30.36	26.53	14.29	18.37	21.26
	R + L	28.43	41.07	34.69	30.61	30.61	33.27
Line C							
Ulnar	Right	54.90	44.64	42.86	46.98	55.10	49.21
	Left	68.62	51.78	57.14	69.39	59.18	61.02
	R + L	61.76	48.21	50.00	59.18	57.14	55.12
Radial	Right	35.29	48.21	44.90	36.73	40.82	41.33
	Left	15.68	32.14	22.45	14.29	30.61	23.23
	R + L	25.49	40.18	33.67	25.51	35.71	32.28
Proximal	Right	7.84	0	2.04	12.24	2.04	4.72
	Left	15.68	5.36	10.20	12.24	8.16	10.24
Absent	Right	1.96	7.14	10.20	2.04	2.04	4.72
	Left	0	10.71	10.20	4.08	2.04	5.51
	R + L	0.98	8.93	10.20	3.06	2.04	5.12
Line B							
Distal	Right	41.18	51.79	42.86	53.06	44.89	46.85
	Left	17.64	30.36	26.53	18.37	18.36	22.44
	R + L	29.41	41.07	34.69	35.71	31.63	34.65
Ulnar	Right	58.82	48.21	57.14	46.94	55.10	53.15
	Left	82.35	69.64	73.47	81.63	81.63	77.56
	R + L	70.59	58.93	65.31	64.29	68.36	65.35
Line A							
1	Right	1.96	0	0	2.04	0	0.78
	Left	45.10	33.93	12.24	38.78	30.61	32.26
	R + L	23.53	16.96	6.12	20.41	15.31	16.54
3	Right	60.78	60.71	53.06	59.18	53.06	57.48
	Left	47.06	57.14	75.51	51.02	61.22	58.28
	R + L	53.92	58.93	64.29	55.10	57.14	57.8.
5	Right	37.25	39.28	46.94	38.78	46.94	41.73
	Left	7.84	8.92	12.24	10.20	8.16	9.45
	R + L	22.55	24.10	29.59	24.49	27.55	25.59

Line C: Distribution of four modal types (of Plato 1970) among Koch population indicate that the radial type is observed to be associated more with the right palm, whereas, ulnar, proximal and absent type are associated more with the left palm. It is also apparent that the distribution of C-line termination in the Koch population of Goalpara, Nowgong and Dibrugarh conforms to the order of preponderence type I > II > III > IV, but the Koch population of Kamrup and Darrang deviates from the above decreasing trend in frequencies, where the sequence is I > II > IV > III. The test of significance reveals that both the Koch population of Kamrup and Darrang differ significantly from the Koch population Goalpara. The chi-square values for Kamrup × Nowgong and Kamrup and pooled sample are also significant (*Table 3*). Test of significance with regard to bilateral variation of this trait (*Table 2*) reveals that only pooled sample differs significantly bilaterally.

TABLE 2. *Bilateral variation for modal type of palmar main line*

Area	Palmar main line			
	D (d.f. = 2)	C (d.f. = 3)	B (d.f. = 1)	A (d.f. = 2)
Goalpara	10.395+	6.956	6.800+	30.840++
Kamrup	8.281**	5.496	5.321*	29.764++
Darrang	3.074	7.333	2.882	17.886++
Nowgong	12.813+	6.897	12.844++	24.662++
Dibrugarh	19.854++	2.585	7.973+	28.655++
Pooled	41 565++	21 428++	33.419++	127.927++

*Explanation of * and + signs are given at the end of table 3.*

The other values are not significant suggseting bilateral symmetry among them.

Line B: The distribution of palmar main line B

indicates that the ulnar type (3, 4 and 5) are the most common type in the present series. Bimanual contrast is characteristic. The ulnar type occurs in maximum in left palm, whereas, distal type in the case of right palm. The test of significance fails to record any intra-group variation as far as the distribution of palmar B-line termination is concerned (*Table 3*). However, the bilateral variation in all the samples (except the Koch of Darrang) is significant.

Line A: Line A terminates most preponderantly in the position 3. The left hand shows a higher value than right hand for the ending at 1, whereas, for 5 it is right hand which shows higher value than left. This bimanual difference is found to be significant in all the samples as indicated by chi-square values (*Table 2*). The Koch population of Darrang shows higher value than the others for types 3 and 5, while for 1 the situaton is reverse. Thus, excepting the Koch population of Dibrugarh, all the other samples show statistically significant differences (*Table 3*) with them.

On the basis of the foregoing discussion we can say the following few lines. Bimanual contrast is characteristic in respect of all these traits. Exception is limited only to the termination of palmar main line C. It is also apparent from this investigation that the Koch population of one area shows homogeneity with their counterparts of other area, in respect of one trait or other.

TABLE 3. *Intra-group variation in respect of modal type of palmar main line*

Groups compared	Line D	Line C	Line B	Line A
Goalpara × Kamrup	6.139*	18.123++	3.169	1.437
Goalpara × Darrang	4.490	11.868+	0.640	11.959+
Goalpara × Nowgong	5.168	1.146	0.904	0.313
Goalpara × Dibrugarh	3.109	4.876	0.116	2.326
Kamrup × Darrang	1.028	2.164	0.901	5.995*
Kamrup × Nowgong	2.943	14.158+	0.632	0.470
Kamrup × Dibrugarh	2.505	6.214	2.005	0.358
Darrang × Nowgong	0.472	7.629	0.022	8.702**
Darrang × Dibrugarh	0.407	5.949	0.207	4.340
Nowgong × Dibrugarh	0.266	4.783	0.365	0.926
Goalpara × Pooled	4.710	7.115	1.040	2.892
Kamrup × Pooled	2.478	8.006*	1.648	0.107
Darrang × Pooled	0.391	4.231	0	7.073*
Nowgong × Pooled	1.281	4.440	0.041	0.867
Dibrugarh × Pooled	0.375	2.696	0.331	0.205

* indicates statistically significant at 5 % probability level
** indicates statistically significant at 2 % probability level
\+ indicates statistically significant at 1 % probability level
++ indicates statistically significant at 0.1 % probability level

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