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A Study on the Finger-ball Dermatoglyphics of the Patients Afflictedwith Pulmonary Tuberculosis.

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Abstract: Dermatoglyphics is one of the physical stable parameters that we study in Anthropology and many a scientist from time to time evinced a keen interest even from ancient time. Since dermatoglyphics traits never change throughout the life of an individual, it has been utilized to study various clinical disorders and diseases. In the present study, an attempt has been made to know the variation of different finger pattern types of the pulmonary tubercular patients and to determine the association of finger-ball dermatoglyphics with pulmonary tuberculosis. The data for the present study was collected from the TB clinic, RIMS and TB Hospital,Chingmeirong.The data consist of the bilateral finger-ball dermatoglyphics of 250 pulmonary tubercular patients(Male= 125,Female= 125) and 250 normal individuals(Male=125,Female= 125).A higher percentage frequency of whorls has been observed among the tubercular patients(45.3%) as compared to the normal control(42.3%).Loopsare found to be higher among the normal control group(52.3%) as compared to the patients(51.5%).Arches are also more prevalent in the normal control group(5.4%)as compared to the patients(3.2%).A statistically significant difference was observed between the patients and the normal groups when chi-square test and t-test were applied on the basis of W-L-A pattern type and Individual Quantitative Value(IQV) respectively.

Keywords: Finger Dermatoglyphics,PulmonaryTuberculosis and Tuberclebacilli.

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I. INTRODUCTION

Tuberculosis is one of the world's oldest diseases. It is a disease caused by Mycobacterium. Tuberculosis or Mycobacterium bovis,collectively known as mammalian tubercle bacilli(Wolinsky,1994).The initial lesion is usually located in the lungs and from it tubercle bacilli may spread by intra-bronchial dissemination or by direct extension or the bacilli may be carried in the blood using destructive lesions at the time of dissemination or after long indicate that inherited susceptibility is an important risk factor(Comstock,1978).Although tuberculosis is not a hereditary disease, certain characteristics, which predispose one to tuberculosis and render the body unusually vulnerable to attack by tubercle bacilli may be inborn. About one third of the world's population is already infected with tuberculosis. Every year million people die from tuberculosis and eight million people become sick with the disease, mostly in developing countries. In India alone, about 14 million people suffer from tuberculosis out of which, 35 lakhs were infectious (Mukherji, 1995).

The present study is undertaken as an attempt to ascertain the association of finger-ball dermatoglyphics with pulmonary tuberculosis. Since dermatoglyphic traits never change throughout the life of an individual, it provides a unique advantage in defining the characteristic features of the patients.

II. METHODOLOGY

The present study consists of the data on the bilateral finger-ball prints of 250 patients afflicted with Pulmonary Tuberculosis(Male=125,Female=125),collected from Tuberculosis Hospital,Chingmeirong and Tuberculosis Clinic,Imphal.The bilateral finger-ball prints of 250 normal individuals(Male=125,Female= 125) were also collected from the same geographical area. The normal individuals were randomly selected provided they are not closely related. Only normal healthy individuals were taken into account for the normal control. Only the patients who are diagnosed by the qualified doctors were taken into consideration for the present study. The methods employed for the analyses of the data conform to the internationally accepted methods given by Cummins and Midlo in his book, 'Finger prints, Palm and Soles: An introduction to Dermatoglyphics' (1961) with some modifications.

III. RESULTS AND DISCUSSION

Table 1: Distribution of the Percentage frequencies of finger-ball patterns in the males (N=125) and in the Females(N=125) Afflicted with Pulmonary Tuberculosis.

Pattern Types	Male Patients(R+L)		Female Patients(R+L)		Patients(M+F)	
	N	%	N	%	N	%
W	551	44.1	580	46.4	1131	45.3
L	657	52.6	631	50.5	1288	51.5
A	42	3.3	39	3.1	81	3.2
Total	1250	100.0	1250	100.0	2500	100.0

$X^2 = 1.78$ d.f = 2 p>0.05(Non – Significant)

Table 1 shows the percentage frequencies of the consolidated finger-ball patterns of whorl-loop-arch in the right and the left hands together of the pulmonary tubercular patients(Male= 125,Female = 125).In both the male and the female patients, loops(L) are found to dominate the other patterns i.e.52.6% and 50.5% respectively. Applying Chi-square test on the basis of the frequencies of the patterns types, a statistically significant difference is observed between the male and the female patients. Hence it reveals that both the male and the female patients are a homogeneous group and can be clump together.

Table2: Distribution of the percentage frequencies of Finger-ball Patterns in the Normal Male(N=125) and in the Normal Female(N=125) Controls.

Pattern Types	Male Control(R+L)		Female Control(R+L)		Control Group(M+F)	
	N	%	N	%	N	%
W	548	43.8	509	40.7	1057	42.3
L	635	50.8	673	53.8	1308	52.3
A	67	5.4	68	5.5	135	5.4
Total	1250	100.0	1250	100.0	2500	100.0

$X^2 = 2.549$d.f.= 2 p> 0.05(Non-Significant)

Table 2exhibits the percentage frequencies of the consolidated finger-ball patterns of whorl-loop-arch in the right and left hands together of the normal control (Male = 125, Female = 125). Loops are found to predominate in both the normal male and the normal female i.e.50.8% and 53.8% respectively.
On applying Chi-square test, a statistically non-significant difference is observed between the normal male control and the normal female control. Since they are statistically non-significant, they are also a homogeneous group.

Table 3: Distribution of the Percentage Frequencies of Finger-ball Patterns in the Male Patients(N=125) and in the Normal Male Controls(N=125).

Pattern Types	Male Patients(R+L)		Male Controls(R+L)	
	N	%	N	%
W	551	44.1	548	43.8
L	657	52.6	635	50.8
A	42	3.3	67	5.4
Total	1250	100.0	1250	100.0

X^2= 6.164d.f.= 2 p< 0.05(Significant)

The above table indicates the percentage frequencies of the consolidated finger-ball patterns of whorl-loop-arch in the male patients and in the normal male control. In both the groups, loops predominate showing 52.6% in male patients and 50.8% in the normal male. Comparing both the groups, it is found that the percentage frequency of whorls and loops are higher in the male patients (44.1% and 52.6% respectively) than in the normal male control (43.8% and 50.8% respectively) than in the normal male control (5.4%) than in the male patients (3.3%).Applying Chi-square test on the basis of the pattern types, a statistically significant difference was observed between the male patients and the normal male control.

Table 4: Distribution of Percentage Frequencies of Finger-Ball Patterns in the Female Patients(N= 125) and the Normal Female Controls(N=125)

Pattern Types	Female Patients(R+L)		Female Controls(R+L)	
	N	%	N	%
W	580	46.4	509	40.7
L	631	50.5	673	53.8
A	39	3.1	68	5.5
Total	1250	100.0	1250	100.0

X^2= 13.94d.f. = 2 p<0.05(Significant)

Table 4 reveals the percentage frequencies of the consolidated finger-ball pattern types of whorl-loop-arch in the female patients and in the normal female control. Loops were found to predominate the other pattern types in both the groups. Comparatively, the percentage frequency of whorls (W) is found to be higher in the female patients(46.4%) than in the normal female control(40.7%).However, the percentage frequencies of loops(L) and arches(A) are found to be higher in the normal female control(53.8% and 5.5% respectively) than in the female patients(50.5% and 3.1% respectively).

Applying Chi-square test on the basis of the frequencies of the pattern types, a statistically significant difference is observed between the female patients and the normal female control.

Table 5: Distribution of percentage Frequencies of Finger-ball Patterns in the Patients(N=250) and in the Normal Controls(N=250).

Pattern Types	Patients(M+F)		Controls(M+F)	
	N	%	N	%
W	1131	45.3	1057	42.3
L	1288	51.5	1308	52.3
A	81	3.2	135	5.4
Total	1250	100.0	1250	100.0

X^2 = 36112.8295 d.f = 2 p< 0.05(Significant)

Table 5 shows the percentage frequencies of the consolidated finger-ball patterns of whorl-loop-arch in the patients (M+F) and in the normal control (M+F).In both the groups, loops predominate the other pattern types. Comparing the patients and the normal control, the percentage frequency of the whorls(W) is found to be higher in the patients(45.3%) than in the normal control(42.3%).Loops(L) and arches(A) are higher in the normal control(52.3% and 5.4% respectively) than in the patients(51.5% and 3.2% respectively).Applying Chi-square test on the basis of the frequencies of the pattern types, a statistically highly significant difference is observed between the patients and the normal control. The study is in conformity with the study of Jelia, M et al,2016,who found that whorls are higher in the patients whereas loops and arches are higher in the normal control.

Table 6: Distribution of Various Indices of the Patients Afflicted with Pulmonary Tuberculosis(N=250) and the Normal Controls(N= 250)

Indices	Patients	Controls
Furuhata's Index	88	86
Dankmeijer's Index	7.06	11.59
Poll's Index	6.21	10.02
Pattern Intensity Index	14.21	13.89
Delta Index	1.42	1.39

Table 6 indicates the various indices of the patients and the normal control.Furuhata's index is found to be higher in the patients(88) than in the normal control(86).Dankmeijer's index and Poll's index are higher in the normal control(11.59 and 10.02 respectively) than in the patients(7.06 and 6.21 respectively).pattern Intensity Index is found to be higher in the patients(14.21) than in the normal control(13.89).Delta Index is slightly higher in the patients(1.42) than in the normal control(1.39).

Table 7: Distribution of Individual Quantitative Value (IQV) of the Patients Afflicted with Pulmonary Tuberculosis (N=250) and the Normal Controls (N=250)

	Patients			Controls		
	M	F	M+F	M	F	M+F
Mean	12.80	12.77	12.80	12.60	11.50	12.10
S.E.X	0.34	0.35	0.25	0.35	0.36	0.25
S.D	3.83	3.96	3.88	3.88	4.08	4.01
Max.Value	21.10	20.20	21.10	20.40	19.50	20.40
Min.Value	4.50	1.60	1.60	0.60	3.20	0.60

Test ofsignificance (t-test)
Total Patients Vs Total Controls
t = 2.100d.f. = 498 p< 0.05(Significant)

Table 7 shows the distribution of the Individual Quantitative Value (IQV) of the patients and the normal control. Comparing the patients and the normal control on the basis of the Individual Quantitative Value (IQV), some variations are observed. In the patients, the mean is 12.80 whereas in the normal control, it is 12.10.The Standard Error of Mean(S.E.X) is found to be equal in the patients as well as in the normal control(± 0.25 each).The Standard Deviation(S.D) is 3.88 in the patients whereas in the normal control, it is 4.01.The maximum value is 21.10 in the patients whereas in the normal control, it is 20.40.The minimum value is 1.60 in the patients whereas in the normal control, it is 0.60.

Applying t-test on the basis of individual Quantitative Value(IQV), a statistically significant difference is observed between the patients and the normal control.

IV. CONCLUSION

After collecting, analysing, tabulating, statistically significant difference was observed between the patients afflicted with Pulmonary Tuberculosis and the normal control. This statistical variation could presumably be attributed to pulmonary tuberculosis in the absence of any other factors. The present study will fill up the gap of the knowledge of variation of finger-all patterns in association with pulmonary tuberculosis and may at later stage be finely tuned to know about the patients before the onset of the disease.

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REFERENCES

[1]. Comstock, G.W.Tuberculosis in Twins: A Re-Analysis of the ProphitSurvey.Am.Rev.Res.Dis., 117:621-624.Dover Publication,new York.1978
[2]. Cummins,H.andMidlo,C.Fingerprints, Palms and Soles: An introduction to dermatoglyphics.Dover Publications, New York.1961.
[3]. Jelia,M. Masih,W.F., Bansiwal,B.L., et al. Dermatoglyphics study of Tuberculosis Patients and its correlation with normal persons in Southern(Hadoti region),Rajasthan,J.Evolution Med.Dent.Sci.;5(27):1387-1390,DOI:10.14260/jemds/2016/327.2016
[4]. Mukherjee, A.K. Tuberculosis Control Programme in India: Progress and Prospects.Ind.J.Tub.42: 75-85.1995.
[5]. Wolinsky, E.Tuberculosis. In Textbook of Pulmonary Diseases (Eds.,G.L.Baun and E. Wolinsky),Vol.1, Little,Brown and Company,New York.1994.

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