Original Research Paper

Volume - 11 | Issue - 12 | December - 2021 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Medicine

SIGNIFICANCE OF DERMATOGLYPHIC 'ATD' ANGLE IN MAJOR DEPRESSIVE DISORDER PATIENTS WHEN COMPARED TO NORMAL PERSONS.

Dr. Sayma Samoon Tutor demonstrator, SKIMS Medical College and Hospital, Srinagr, J&K, India.

Dr. Neelofer Jan* Tutor demonstrator, SKIMS Medical College and Hospital, Srinagr, J&K, India.
*Corresponding Author

ABSTRACT **Aims and Objective:** Dermatoglyphics serves as a tool to describe, compare and contrast, and at times predict occurrences and risks for biomedical events. The present study was designed to highlight the significance of dermatoglyphics 'atd' angle in major depressive disorder patients compared to the 'atd' angle of normal persons.

Material and methods: This study was designed to collect the dermatoglyphic fingerprints of the known cases of major depressive disorder and normal healthy subjects. Participants were divided into two equal groups, 100 subjects in each group as Group D (Major depressive disorder group) and Group C (control group). The method used to collect the data for the resent study was standard ink method. The 'atd' angle was marked with lead pencil and measured by using transparent protractor of the variety which is constructed of semicircle of plastic material.

Results: The age and gender among the two groups were comparable and statistically non-significant between the two groups. The values of mean 'atd' angle' in both palms are higher in Group D as compared to control Group. These difference are statistically significant in right as well as significant in left hand ($p < 0.05$) in Group D when compared to control Group. **Conclusion:** This study attempts to analyse, whether there exists any specific pattern in major depressive disorder patients, and we found, 'atd' angle was significantly increased major depressive disorder patients when compared to their controls.

KEYWORDS : Dermatoglyphics, 'atd' angle, major depressive disorder.

INTRODUCTION

Dermatoglyphics is the study of the patterns of skin ridges (epidermal ridges) present on the human fingers, palm, toes and the soles. [1] Importance of finger print in modern world is not restricted to the field of forensic and criminal application only. Because of unveiling various unknown aspects of dermatoglyphics, the subject is developing its importance in every-day life. Nowadays in biology, anthropology, genetics and medicine, dermatoglyphics serves as a tool to describe, compare and contrast, and at times predict occurrences and risks for biomedical events studied by these major disciplinary areas. Fingerprints are an easily accessible, lifelong marker referable to early gestation. This is one of the best and most widely used methods for personal identification. Dermatoglyphic pattern is unique to an individual and is a classic model of polygenic inheritance. In the last few decades quite a large number of congenital and hereditary diseases are being investigated for dermatoglyphic markers. Cummins (1926) was the first to demonstrate the existence of characteristic dermatoglyphics features associated with Down's syndrome. [2] Milton Alter (1966), Holt (1968), Schauman and Alter (1976) have, among others, reviewed in detail the existing literature on this subject. [3,4] Contemporary dermatoglyphics research has shown a large number of behavioral abnormalities to be associated with typical dermatoglyphic characteristics. Mental retardation of unknown origin also shows significant frequent patterning of the palmer fields, particularly on the hypothenar, thenar and distally located axial triradii. The '*atd*' angle is a dermatoglyphic trait formed by drawing lines between the triradii below the first and last digits and the most proximal triradius on the hypothenar region of the palm. This trait has been widely used in dermatoglyphic studies. The present study was designed to highlight the significance of dermatoglyphics 'atd' angle in major depressive disorder patients compared to the 'atd' angle of normal persons.

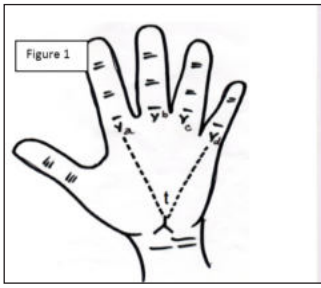
METHODS

This study was carried out in Department of Anatomy and Department of Psychiatry, Government Medical College, Srinagar. The study was designed to collect the dermatoglyphic fingerprints of the known cases of major depressive disorder and normal healthy subjects. This study consisted of 200 subjects and these were divided into two equal groups,

100 subjects in each group as follows:- **Group D (Depressive group):** this group was consisted of 100 diagnosed patients of Depressive disorders based on the diagnostic and statistical manual of mental disorders (DSM) diagnostic criteria [5], attending outpatient department at Government Medical College and hospital

Group C (control group): the controls were consisted of 100 normal persons, selected randomly from general population with no psychiatric disorders in them or in their family.

The method used to collect the data for the resent study was standard ink method. The person whose fingers and palm prints were to be recorded was made to wash Palm & Fingers with soap and water. So that both hands were made free of oil, sweat and dirt, and wiped with clean towel. A small amount of Kores duplicating ink was spread over it with help of cotton guage ball to obtain a thin uniform film of ink on the tile. Palm prints of both hands obtained after inking with the help of cotton guage ball. A uniform film of ink was obtained on the tile with cotton guage ball. Then with help of same cotton guage ball ink was spread uniformly on right hand. Then first the hand is extended at wrist joint and touched the paper kept on the table and then slowly whole of the hand is kept on the paper. Pressue is applied on the interphalangeal joints, head of metacarpals and dorsum of hand. With the help of fingers or blunt end of pencil little pressure is applied on the webspace between the fingers. Complete palm impression including the hollow of space was obtained over the paper. Same procedure was applied to left hand and palm prints of both hands were obtained and recorded. The prints obtained were immediately examined with hand lens and care was taken to include all essential details. The 'atd' angle (Figure 1) and Palm Print showing 'atd' angle (Figure 2). The 'atd' angle is measured by taking reference of three points- a, t, and d. Triradius is formed by the consequence of three ridge systems. Ideally the Triradius is the meeting point of three ridges that form angles of 0□ approximately 120□ with one another . It is present no rmally near the proximal margin of palm and separates the thenar and hypothenar emienences. The 'atd' angle was marked with lead pencil and measured by using transparent protractor of the variety which is constructed of semicircle of plastic material.



RESULTS

The comparisons of gender in these two Groups with normal participants (Group C) were statistically non-significant (>0.05) (table: 1). Age distribution of the patients ranged from 20- 66 years. The mean age of patients was 32.32±9.26 years in Group C and in Group D it was 32.71±8.92 years. The age was comparable in the study Groups (table: 2) and statistically non-significant between two Groups.

Atd'Angle:

The values of mean 'atd angle' in both palms are higher in Group D as compared to control Group (table 3). These difference are statistically significant in right as well as significant in left hand ($p < 0.05$) in Group D when compared to control Group.

Table 1: Gender distribution

Sex	Group C (n=100)	Group D (n=100)	%	P value	Results
Male	55	61	58.66	0.6530	NS
Female	45	39	41.34		

Values are expressed in numbers (n), NS=non-significant

Table : Age distribution of the participants in two Groups

Group	Max. Age	Min. age	Mean	SD	P Value	Result
C	60	20	32.32	9.26	0.138	NS
D	59	23	32.71	8.92		

Values are expressed in mean ±standard deviation (SD), NS=non-significant

Table 3 : Mean 'atd angle' in both palms in two Groups.

Pattern	Group	Mean	Std. Deviation	P-Value	Result
'atd' angle in right hand	C	39.98	5.13	0.0001	S
	D	43.61	4.93	<0.0005	S
'atd' angle in left hand	C	40.20	4.36	0.0001	S
	D	42.98	5.48	0.0059	S
Mean 'atd' angle of both hands	C	40.09	4.73	<0.0001	S
	D	43.29	5.20	0.0001	S

Values are expressed in mean and standard deviation, NS=non-significant, S=Significant

DISCUSSION

In the present study, values of palmar 'atd' angle of both palms were significantly higher in major depressive disorder patients as compared to controls. These difference are statistically significant in right as well as significant in left hand ($p < 0.05$). our results were comparable with the study conducted by **L.U Guo- Fang** [6] Using anthropometry and analyzed a number of the dermatoglyphic characteristics in 202 patients suffering from depression (140 females, 62 males), compared with 310 normal (or control) cases (231 females, 79 males) from the Tianjin-based Han people. atd angle enlarged ($P < 0.01$), variation I type of simian line and wrinkles-palm were more common ($P < 0.01$) in patients with depression. Similarly, **Mahima shrivastava et al.** [7] conducted dermatoglyphic study on fifty males and fifty females in the age group of 18-60 years, diagnosed depression patients. The mean 'atd' angle on both the hands considered together was found to be greater in the depressive cases compared to the normal i.e. 90.22º in males and 92.46º in females depressive cases compared to the control with mean angle 80.46º and 82.46º respectively in males and females (in males $p = 0.0001$, in females $p = 0.0002$). However, Chakraborty et al. [8] found non-significant difference in mean atd angle between normal and bipolar mood disorder patients.

There is a growing body of research investigating potential diagnostic applications for dermatoglyphic measurements across varied medical conditions, though findings are more limited with psychiatric conditions and major depressive disorder in particular. To date, dermatoglyphic deviations have been detected in a range of metabolic, neurologic, dermatologic, oncologic, cardiac, autoimmune, developmental, and oral conditions, including type II Diabetes Mellitus , aphthous stomatitis, sickle cell anemia, psoriasis, epilepsy, tumors, congenital heart disease, cervical cancer, and lupus erthematodes (for reviews see Ahmed-Popova et al., 2014; Lakshmana et al., 2017).[9,10] Multiple investigations have demonstrated that dermatoglyphics can be diagnostically sensitive in identifying Down syndrome (Langenbeck et al., 1988).[10] As far as psychiatric conditions, a recent study demonstrated that a combination of biomarkers pertaining to the hand, including palmar dermatoglyphics, was able to effectively distinguish patients with schizophrenia from individuals with other mental disorders at a rate of nearly 80%. That said, the results from studies investigating dermatoglyphics alone in schizophrenia are mixed (for review see Golembo-Smith et al., 2012), and there is no demonstration as of yet that dermatoglyphics have adequate sensitivity or specificity in diagnosing schizophrenia or other psychiatric conditions, such major depressive disorder.[11] Rather, investigation of dermatoglyphics in relation to depressive disorders (and risk for depressive disorders) hold implications primarily via heightened understanding of disease pathogenesis. Recognition of the potential effects of neurodevelopment in increasing risk towards depressive experiences may help with identification of individuals who are at risk due to deleterious prenatal conditions.

Future investigations may build on the current study by repeating analyses with larger sample sizes, more even sex distributions, and individuals with a range of racial/ethnic characteristics representative of both urban and non-urban environments. Future work may also assess additional dermatoglyphic measures such as a-b palmar ridge count, and qualitative assessment of patterns, to capture their relative predictive contributions. It would be helpful to include corroborative markers in future analyses to confirm the validity of dermatoglyphic indicators. Finally, it would be important to conduct large-scale follow-up assessments to determine whether dermatoglyphic markers continue to remain predictive of depressive symptoms in individuals who eventually convert to clinically significant levels of major depressive disorder.

REFERENCES

1. Ramani P, Abhilash PR, Sherlin HJ et al. Conventional Dermatoglyphics: A Review. International Journal of Pharma and Bio Sciences 2011; 2(3): 446-458.
2. Holt S B. The genetics of dermal ridges. Charles Thomas, Springfield III (1968).
3. Milton Alter, Heinz H, Bruhl. Dermatyoglyphics in idiopathic mental retardarion. American Journal of Disease in Children 1967; 113:702-706.
4. Alter and Schulenberg R. Dermatoglyphics in congenital heart diseases. Circulation 1970; 41: 49-54.
5. Hersen, Michel, Rosqvist, Johan (2008). Handbook of Psychological Assessment, Case Conceptualization, and Treatment, Volume 1: Adults. John Wiley & Sons. p. 32.
6. LU Guo-fang et al. Research on Characteristics of Dermatoglyphics of the Depressed Patients. Acta Anthropologica Sinic 2012 ;2: 02.
7. Mahima Shrivastava, Rajendra Kumar Mathur, Vineet Dhaneria, Samata Goyal. Dermatoglyphic Study in Bipolar Disorder. Indian Journal of Clinical Anatomy and Physiology 2016; 3(2); 243-247.
8. Chakraborty D , Mazumdar P , Than M , Singh R. Dermatoglyphic analysis in Malay subjects with bipolar mood disorder. The Medical Journal of Malaysia 2001;56(2):223-226
9. Ferihan M Ahmed-Popova , Mladen J Mantarkov , Stefan T Sivkov , Valentin H Akabaliev. Dermatoglyphics--a possible biomarker in the neurodevelopmental model for the origin of mental disorders. Folia Med (Plovdiv) . Jan-Mar 2014;56(1):5-10.
10. Langenbeck, U., Varga, I., & Hansmann, I. (1988). The predictive value of dermatoglyphic anomalies in the diagnosis of fra (X)-positive Martin-Bell syndrome (MBS). American Journal of Medical Genetics, 30(1-2), 169–175.
11. Golembo-Smith, S., Walder, D. J., Daly, M. P., Mittal, V. A., Kline, E., Reeves, G., & Schiffman,J. (2012). The presentation of dermatoglyphic abnormalities in schizophrenia : A metaanalytic review. Schizophrenia Research, 142(1–3), 1–11.