

Dermatoglyphic Analysis in Malay Subjects with Bipolar Mood Disorder

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Summary

Dermatoglyphic is the study of the epidermal ridges and the pattern formed by them. It may be pointed out that genetic factors have a large share in determining the variations in dermatoglyphics. It is however, suggested by evidence that bipolar mood disorder factors are determined more by genetic factors than by the environmental factors.

The experiment has been undertaken to look for the effects of the bipolar mood disorder on dermatoglyphics. The dermatoglyphic characteristics of subjects with bipolar mood disorder when compared with control group revealed significant differences. The radial loop were increased in bipolar mood disorder, but there were little changes in 'atd' angles between normal and bipolar mood disorder.

Key Words: Dermatoglyphics, Bipolar Mood Disorder, Radial loop

Introduction

Dermatoglyphics is the study of the epidermal ridges and patterns formed by them¹. The ridge patterns get established in the 3rd and 4th months of intrauterine life and they remain unchanged throughout life. It may be pointed out that genetic factors have a large share in determining the variation of dermatoglyphics. Dermatoglyphics like many other hereditary characteristics show geographical and sex variations. The patterns are classified into three main types-loops, whorls and arches² (Fig. 1). Any disturbances in hereditary or environmental factors at the time of ridge formation may alter the dermatoglyphic pattern.

It is well known that bipolar mood disorder have some genetic predisposition³. There has been reports of associations between dermatoglyphic patterns and bipolar mood disorder^{4,5}. In the present study an attempt has been made to find out any alternations in the dermatoglyphic characteristic in subjects with bipolar mood disorder from those of the normal individuals in Kelantan.

Materials and Methods

Seventy-five Malay patients of either sex were included in this study by performing clinical examination DSM IV criteria for bipolar mood disorder.

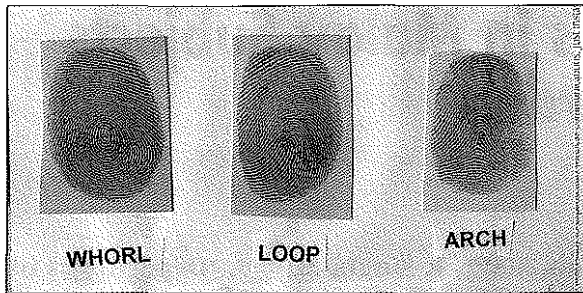


Fig. 1: Showing different types of finger prints.

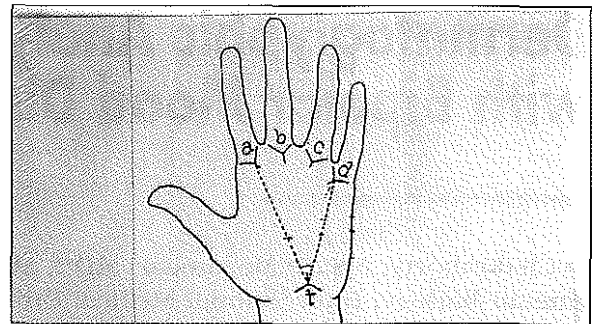


Fig. 2: Showing 'atd' angle.

Patients were selected from HUSM and at the Psychiatric Department of the General Hospital, Kota Bharu. Forty-nine patients were males and 26 patients were females. One hundred and two Malay individuals, age and sex matched, were taken as the control group.

Finger and palm prints of controls and patients were taken by the ink-method. Prints were studied with the help of a magnifying lens. The following dermatoglyphic observations were made:

1. **Fingertip Pattern:** Fingertip patterns were studied on individual digits. Numbering of digit was done from thumb to little finger.

Fingertip patterns were classified as arches, loop and whorls (Fig. 1).

- a). *Arch*. In this pattern ridges enter from one side, traverse a pattern area, from a curve and leave from other side.
- b). *Loop*. In a loop, ridges enter on one side of the digit, recurve abruptly and leave the pattern

area on the same side. If the ridges enter and leave from ulnar side it is called ulnar loop. If ridges enter and leave from radial side it is called radial loop.

c). *Whorl*. It is complex pattern. It is defined as any ridge configuration with two or more triradii, one as ulnar other as radial.

2 The 'atd' angle is formed by line drawn from triradius a to t and from t to d (Fig. 2).

Z-test of difference in proportion were done in order to find out any significant alternations in the dermatoglyphic characteristics in subjects with bipolar mood disorder from those of the normal individuals.

Results

The frequency of radial loops were increased in patients compared to the controls. There was no significant difference in the ATD angle between controls and patients.

**Table 1
Finger Print Frequencies in Both Hands of Malay Males at a Glance**

	Whorl		Ulnar Loop		Radial Loop		Arches	
	No	%	No	%	No	%	No	%
Control	260	43.33	322	53.66	15	2.5	3	0.5
Patients	202	41.22	247	50.40	37*	7.55	4	0.81

*p< 0.01

Table II
Finger Print Frequencies in Both Hands of Malays (Both Sexes) at a Glance

	Whorl		Ulnar Loop		Radial Loop		Arches	
	No	%	No	%	No	%	No	%
Control	420	41.17	570	55.88	25	2.45	5	0.49
Patients	315	42	372	49.6	56*	7.46	7	0.93

*p < 0.001

Table III
Average ATD Angles

Groups	Average ATD angles (degrees)
Malay control	79.27
Malay patients	81.15

Discussion

Studies on the origin of epidermal ridges have established that critical period of primary ridge differentiation is between 11th and 17th week of intrauterine life^{6,7,8}. Many other scientists have confirmed these findings on ridge development^{9,10,11}. In this experiment there were significant changes in the radial loop in bipolar mood disorder patients. These changes in the epidermal ridges in the bipolar mood disorder patients can be attributed to the association between dermatoglyphic patterns and disease.

Jelovac *et al*⁴ reported increased c-d ridge count of the left hand in bipolar mood disorder patients. Gutierrez *et al*⁵ found significant excess of ridge dissociation (RD) and abnormal features in

bipolar mood disorder patients when compared with controls.

Moreover, in bipolar mood disorder chromosome involvement cannot be ruled out. It is also well known that any disturbances in hereditary factors at the time ridge formation may alter the dermatoglyphic pattern.

Conclusion

The observed changes suggest an association between dermatoglyphic patterns and bipolar mood disorder. Dermatoglyphics, a non-invasive method, could serve as a screening indicator for the follow up of individuals in threatened families.

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