



**CROSS SECTIONAL STUDY TO UNDERSTAND THE RELATION
BETWEEN DERMATOGLYPHICS AND DWI-DOSHAJA PRAKRUTI**

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ABSTRACT

Science always believes on principles and facts that are methodically attested and un-deniably accepted. In Ayurveda Deha Prakruti has important role in fulfilling the basic requirement for prevention, diagnosis and treatment of various ailments, hence Prakruti is considered one among the Dasavidha Pareeksha and it is inherent from birth to death and is determined by status of Doshas from the time of conception. Similarly Dermatoglyphics is the study of epidermal Ridge-land enough evidence shows that the characteristics of Dermatoglyphics are also inherited. From the study point of view and diagnostic aspects of diseases which have the origin in early foetal life, may result in deviation in Dermatoglyphic pattern. So it will be relevant to know the basic concept of Prakruti in relation with Dermatoglyphics. The knowledge of both Dermatoglyphics as well as Prakruti is having a prime importance in day today practice to assess the physical, mental built and for prognosis of diseases in individuals. Here, we have chosen such an interesting study to understand the relation between Dermatoglyphics and different Dwidoshaja Prakruti. The study was conducted on 20 subjects of Dwidoshaja Prakruti. The palmar imprint were obtained by the modified Coterman's technique. Imprints were analysed by using proper statistical tools. The study satisfied the relation of features of

Prakruti with classical texts. Prakruti and Dermatoglyphics can be considered under genetic control. The frequency of whorls and arches are more in Vatapittaja Prakruti, arches and loops in Pittakaphaja Prakruti, that of whorls and loops in Vatakaphaja Prakruti.

Keywords: Dermatoglyphics, Dwidoshaja Prakruti, Coterman's technique

INTRODUCTION

Ayurveda a science of life aims to maintain the health of healthy person and to cure disease of diseased person. In Ayurveda treatment is fin-tuned, taking into consideration the individual's constitution, susceptibility to diseases mental make-up, life style and other factors. This has been refined to a very high degree in Ayurveda with its powerful concept of Prakruti.

Prakruti Pareeksha has very important role for the examination of patient, for the prevention and curative aspect of many disorders. As Prakruti is the inherent property of an individual it refers to the genetically determined physical and mental make-up of the individual. Even if we go by the theory of heredity or genetics it also says that an individual's behaviour or psyche is decided even before he is born. In this way these lines and symbols on the palms and soles may be helpful for the determination of the Prakruti and can be understood and evaluated in more appropriate and scientific method. The character and temperament might be well correlated to Dermatoglyphic observation.

Prakruti Pareeksha is on the basis of a susceptibility of a particular disease to a particular type of man, by knowledge of

Prakruti the equilibrium of various fundamental constituents of human body can be maintained to keep him in a state of perfect health. Dermatoglyphics is the study of the patterns of epidermal ridges of fingers, palms, toes and soles. Each individual has unique finger prints. This uniqueness is based on the genetical characteristics of each individual which are transferred genetically from one generation to others.

In our Ayurveda classical text books and the Hastasamudrika, Brihath Hastharekha Sastra (hastharekha sastra), it is said that the study of different shapes and lines of our palms and soles indicate the course of life, span of the life, health, wealth, abilities, talents and weakness of an individual. The detailed description of palms and fingers ridges pattern could be found in many Sanskrit literature on palmistry, a science of prophecy and fortune telling. This ancient literature on palm history describes the figures of Chakra, Shanka and Padma on human palms, soles, fingers and toes. The same is studied these days as loops, whirls and arches respectively. These lines contain certain characteristics that are explained in the form

of code. Dermatoglyphics helps to unlock these secret codes and helps for understanding human potential and examination of patient.

On cliff of Nova Scotia, papillary ridges like carvings of pre-historic age have been discovered. Use of fingerprints was practiced in official documents of China, dating as back as 3000 B C. it was also in use in ancient Indian documents. It is from the ancient period that the study of creases commenced, dating from Vedic period. This evident by the study of carvings and paintings of the palms and soles on the walls of the caves. The dimension and purposes of these uses are of course not clear [1].

In Kashyapa Samhita in Lakshana Adhyaya Sloka 6-7 he explained different lines and shapes like Swastika, Padma, Chakra and auspicious signs on the feet denoting the life span, health, wealth and the luck of the individual. He explained the feet which are corpulent, well formed with upward lines are of good longevity prosperous and administrators. The mark of swastika, plough, lotus, conch shell, wheel, horse, elephant, chariot, weapon and other auspicious signs of kings, coppery and smooth sole are of lucky persons. Upward bent are of persons with medium wealth and longevity, white colour denotes poor, without lines denotes servants, so many lines denotes ill health [2].

The basic methods and principles of Dermatoglyphics study were laid down in 1892 by Sir Francis Galton an anthropologist from London, he classified epidermal patterns under Galton's system and gave a detail account of morphology, inheritance and racial variations of ridges [3]. The epidermal ridge pattern is generally determined and is unique for each individual. Normally the ridge pattern does not change during life, except on enlarge and thus can serve as the basis for identification through fingerprints or footprints [4].

Development of Dermatoglyphic pattern is under genetic control. This is evident from the clear resemblance of Dermatoglyphics among related persons (Schumann and Alter 1976) [5]. Medical research shows that health trends can be perceived on our palms and this Dermatoglyphics relates to many physical, emotional and mental health conditions of an individual.

The assessment of the Prakruti by this Dermatoglyphics study we may get to know the span of the life, behaviour and health condition of the person as it is said the life span , health, wealth behaviour differ from one Prakruti to another. The simple inexpensive and non-invasive method of performing Dermatoglyphics study has thus become a useful tool in the hands of clinicians for comparisons and diagnosis of many disorders. Thus examination of

palmer prints may soon become part of the general physical examination.

AIMS AND OBJECTIVES

Here an attempt has been made to correlate the Dermatoglyphics pattern of the Dwidoshaja Prakruti by conducting a survey study.

MATERIALS AND METHODS

The literary data was collected from Ayurvedic classics, related thesis, journals, books of Hastarekha shastra (Palmistry).

For the study 20 volunteers of each Dwidoshaja Prakruti between age group of 20-40 irrespective of sex are selected. The volunteers were randomly selected and data were collected. Those with the diseases of hand like keratosis Palmaris, impetigo, wails, leprosy, injuries and scars of the palms, congenital anomalies and other skin disorders were excluded. Planter imprints were also omitted.

A careful study of the patients Prakruti Pareeksha done by objective scoring of individuals through a professionally set questionnaire.

❖ Assessment criteria for determination of scores of Prakruti

The Prakruti Pareeksha preform includes 37 traits of Prakruti (Vata.Pitta.Kapha) to be responded by individual patients. If patients response is positive awarded score of 1, if no

response it was given zero. Uncertain and wavering responses were not entertained. Numerical data of Dosha traits was evaluated for proper statistical analysis.

❖ Assessment criteria for determination of scores of Dermatoglyphics

The criteria taken was - Finger Print Pattern, Palmar Pattern. TFRC ATD Angle and Hypothenar Pattern. This qualitative and quantitative analysis was carried out and observations noted.

Finger prints and palmar prints were obtained by the modified Coterman's Ind tan ink technique. The following materials were used for obtaining the prints.

Materials Used

- Inking Plate (Metal or 4" Glass) 6" wide x 14" long
- Printer Ink
- Roller
- White paper.
- Paper Towel
- Inking Plate Cleanser
- Cleaning Fluid or Cream
- Washing bowl
- Magnifying Glass

PROCEDURE

- The volunteer was asked to wash the hands cleanly, and then dry them properly. Ink was smeared evenly by the roller on the glass

inking plate. The volunteer was asked to keep his palms on the glass plate (first right hand) and roll properly. The imprints were taken on the white paper. It was allowed to dry under the tan. The imprints obtained were analyzed using magnifying lens.

- The patterns were classified into various base types and analyzed. The ATD angle was also measured.
- Dermatoglyphics thus obtained by modified coterman’s ink method in the different

Ekadoshja Prakruti were compared and analyzed.

❖ **Application of dermatoglyphics in Dwidoshaja Prakruti pariksharm**

The obtained imprints observed and categorized into different types like whorls, loops, arch's and their qualities or characters were correlated with the character', of particular Dwidoshaja Prakruti. The mean ATD angle was calculated for each Dwidoshaja Prakruti consisting of 20 volunteers were compared and correlated.

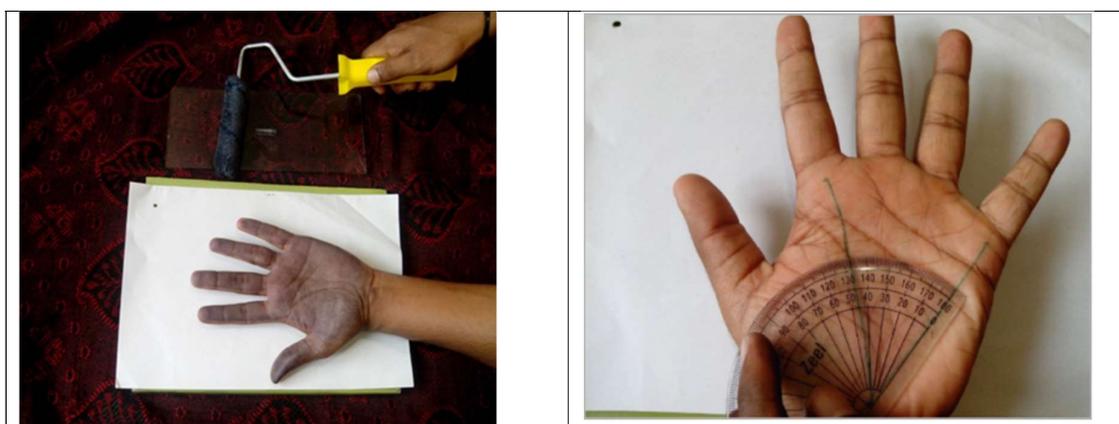


Figure 1: Measurement of ATD angle



Figure 2: Locations of Triradii

OBSERVATION

Observations are made with Prakruti analysis in relation to Dermatoglyphics as against the mean ATD Angle, Mean TFR Count, and total number of patterns and frequency of patterns.

For this study 60 volunteers were selected, 20 for each Dwidoshaja Prakruti (Vatapittaja, Pittakaphaja, Vatakaphaja). The following observation was made.

1) INCIDENCE IN MALES AND FEMALES

The **Table 1** and **Graph 1** show incidence of male and female in the study. The observation shows that in

- Vatapittaja Prakruti 75% are males, and 25% females.
- Pittakaphaja Prakruti 25% are males and 75% are females.
- Vatakaphaja Prakruti 85% are males and 15% females.

2) **AGE:** The **Table 2** and **Graph 2** shows the incidence of age. The observation shows that in

- Vatapittaja Prakruti 15% of volunteers fall under the age group of 20 – 25. 60% fall under age group of 25 – 30. 10% fall under age group of 30 – 35. 15% fall under the age group of 35 – 40.
- Pittakaphaja Prakruti 5% fall under the age group of 20 – 25. 70% fall

under the age group of 25 – 30. 25% fall under the age group of 30 – 35.

- Vatakaphaja Prakruti 95% fall under the age group of 25 – 30. 5% fall under the age group of 30 – 35.

3) **MEAN ATD ANGLE:** **Table 3** and **Graph 3** shows mean ATD angle. The observation shows in

- Vatapittaja Prakruti mean ATD angle is 40.2.
- Pittakaphaja Prakruti mean ATD angle is 41.4.
- Vatakaphaja Prakruti mean ATD angle is 41.6.

4) **MEAN TFRC ; The observation shows (Table 4, Graph 4)**

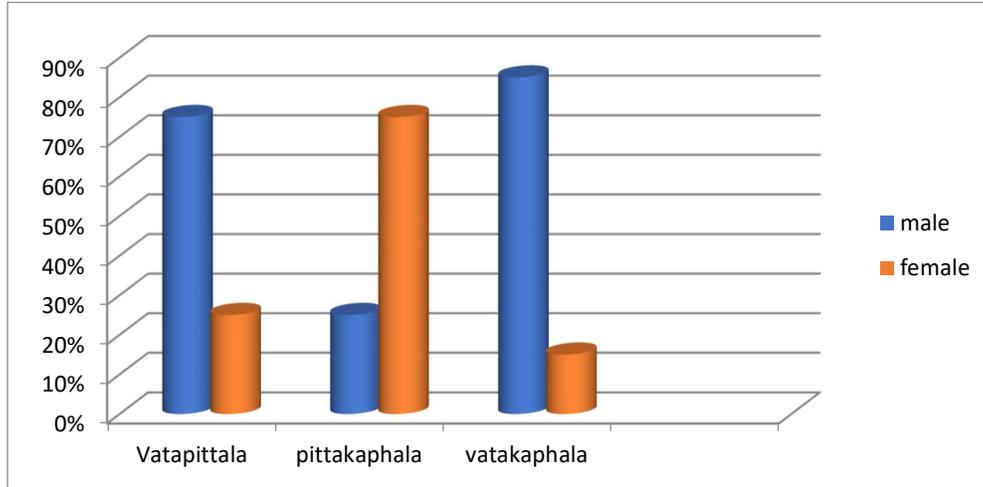
- Vatapittaja Prakruti has mean TFRC 94.8.
- Pittakaphaja Prakruti mean TFRC is 85.1.
- Vatakaphaja Prakruti mean TFRC is 101.91.

5) **PATTERNS;** **Table 5** and **Graph 5** shows total no of patterns. The observation shows that

- Vatapittaja Prakruti has 43.5% of Loops, 37.5% of Whorl, 16% of Arch and 3% of Composite.
- Pittakaphaja Prakruti 27% of Whorl, 55.5% of Loop, 17% of Arch and 0.5% Composite.
- Vatakaphaja Prakruti 42% of Whorl, 54% of Loop, 1% of Arch and 3% of Composite.

Table 1: Shows incidence of male and female

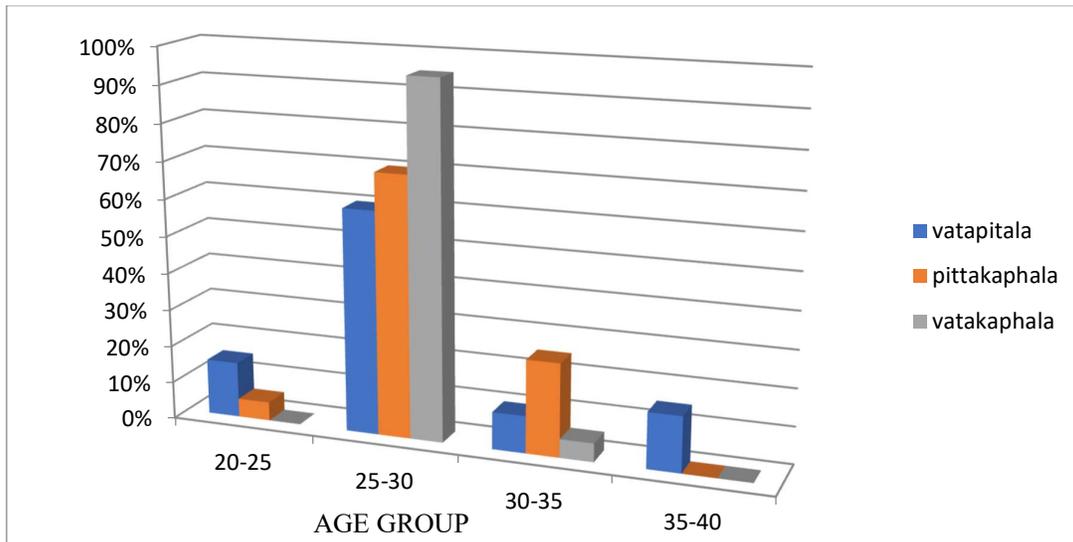
Name Of Prakriti	No of Females	%	No of Male	%
Vatapittaja	5	25%	15	75%
Pittakaphaja	15	75%	5	25%
Vatakaphaja	3	15%	17	85%



Graph 1: Shows incidence of male and female

Table 2: Shows the incidence of age and Prakruti

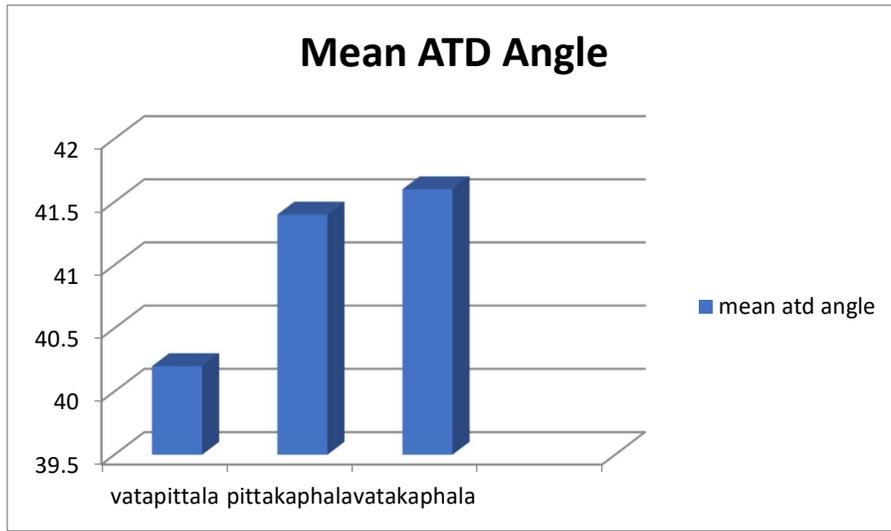
Age	Vatapittaja	%	Pittakaphaja	%	Vatakaphaja	%
20 – 25	3	15	1	5	0	0
25- 30	12	60	14	70	19	95
30 -35	2	10	5	25	1	5
35 – 40	3	15	0	0	0	0



Graph 2: Shows the incidence of age and Prakruti

Table 3: Shows mean ATD angle

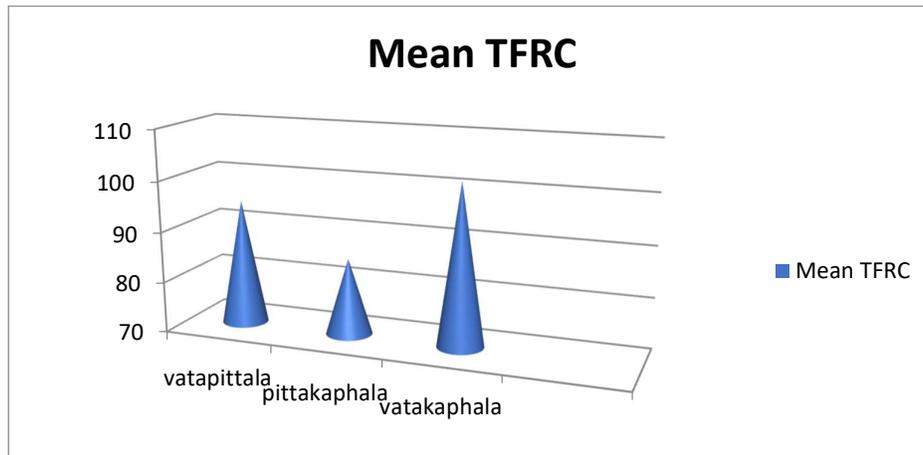
Prakruti	Mean ATD angle
Vatapittaja	40.2
Pittakaphaja	41.4
Vatakaphala	41.6



Graph 3: Shows mean ATD angle

Table 4: Shows mean TFRC

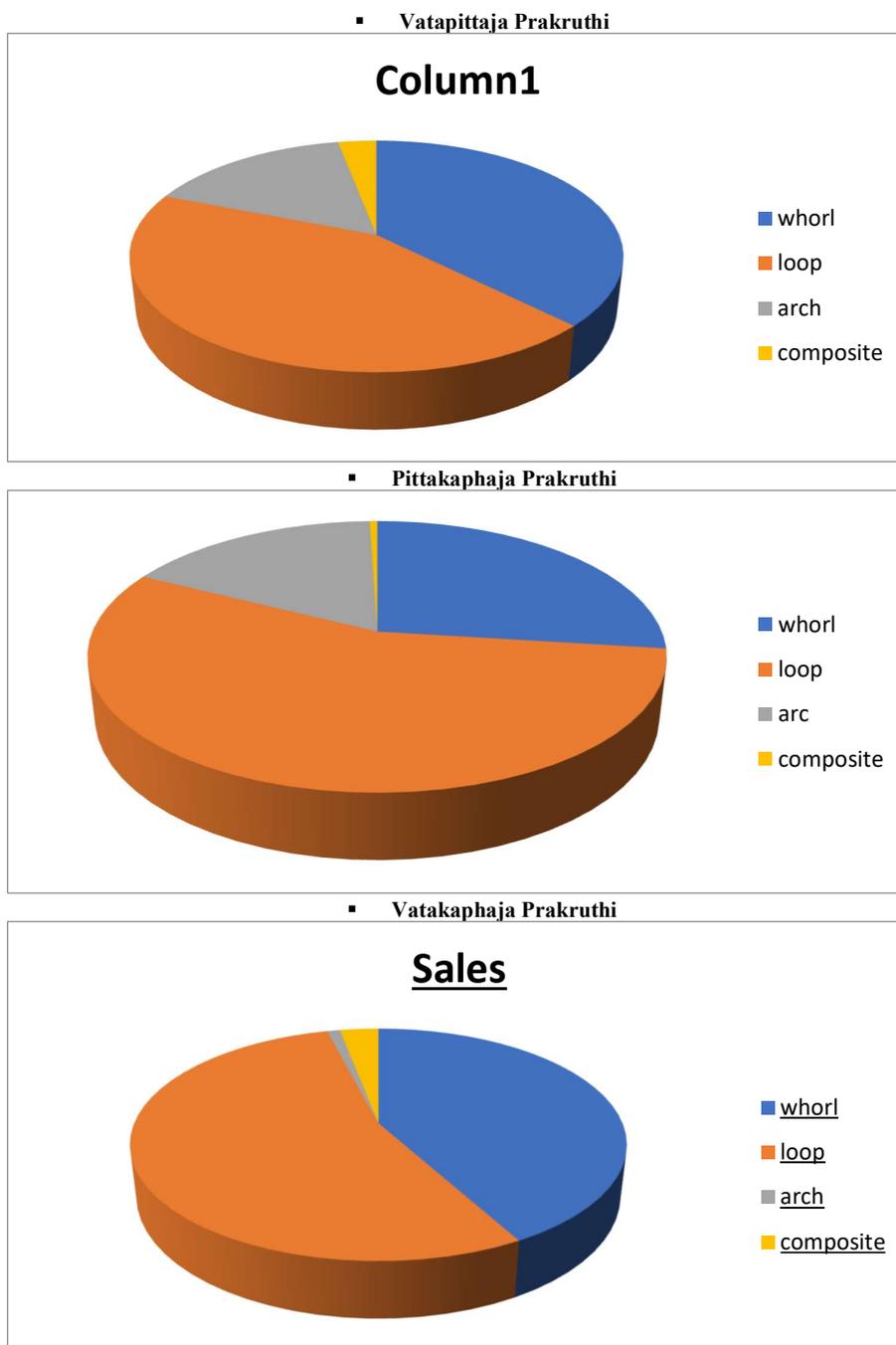
Prakrithi	Mean TFRC
Vatapittaja	94.8
Pittakaphaja	85.10
Vatakaphaja	101.91



Graph 4: Shows mean TFRC

Table 5: Shows total no of patterns.

Prakruthi	Whorl	Loop	Arch	Composite
Vatapittaja	37.5 %	43.5%	16%	3%
Pittakaphaja	27%	55.5%	17%	0.5%
Vatakaphaja	42%	54%	1%	3%



Graph 5: Shows total no of patterns

DISCUSSION

It is said that the scientific study of papillary ridges was first done by sir Jonnes. Gradually there was development of this science, the greatest contribution to this field is by sir Harold Cummins called as father of

Dermatoglyphics and he was the first to link the Dermatoglyphic to genetics and he was the first to coin term Dermatoglyphics.

This Dermatoglyphics in modern science pronounced as der- mah-to-glif-iks is a Greek word used to denote the study of

the patterns of ridges of skin of fingers, palms, toes and soles.

After considering literature available and opinion of various authors it is understood that both line and epidermal ridge patterning in the foetus may be strongly dependent upon the highly conserved genes that belong to the developmental pathways which function as a variety of diverse cells at different developmental stages.

So the development of Dermatoglyphic pattern can be considered under genetic control having three specific features i.e. Uniqueness, invariance and hereditary by this the Dermatoglyphic study may be helpful or used to assess the complex genetic traits, genetic disorders, effect of toxins on the intrauterine life etc... Therefore Dermatoglyphics as a diagnostic tool is now well established in a number of diseases which have a strong hereditary basis.

There are different systems of classification of pattern like Galton's system, Henry's system etc. Henry's system is more widely used than any other system, the Henry's system of finger patterns are classified mainly as 4 types Arches, Loops, Whorls. Composite.

The analysis of the Dermatoglyphic pattern is mainly based on epidermal ridges which are of 6 types short ridge, long ridge, interstitial line or ridge, fork enclosure, islands. It can be said that the ridges are not

influenced by bones, muscles or movements of hands. The thick skin bears few ridges and they form arch and small loops whereas the thin skin bears more ridges which form whorls and large loops, even the symmetry or asymmetry of the volar pads will results in formation of different patterns, the symmetrical forms whorls, asymmetrical forms loops and weak pads develop into arch. There are many explanations regarding the different qualities of different finger pattern i.e. for whorls, arch, loops etc...

❖ **General characteristics finger patterns**

Noel Jaquin began to speculate about the psychological connections of fingerprints and individual subjects in print in 1933. In his study he divided the prints into five generalized types that he would use for later study and reference in his work: The loop, arch, tented arch, whorl and composite. By the end of that decade he was to publish his conclusions regarding the psychological significance of each of those patterns. Jaquin assigned these general characteristics to each of his five fingerprints [6, 7].

After going through the available literature regarding finger patterns as per the different authors and analyzing and understanding it thoroughly I am of opinion that a person with

1. **Loop:** will have mental and emotional elasticity with possible lack of concentration, adaptable, emotionally responsive, adaptable, and versatile.
2. **Arch:** Self-contained, repressive, secretive, suspicious, and hesitant.
Tented arch: Nervous activity, responsive to emotional stimulation, artistic i.e. too easily affected by musical tunes, idealistic.
3. **Whorl:** Independence in thought and action, original in ideas and independent, self-confident subjects, secretive in their expression and selfish.
4. **Composite:** Practical, good judgment, materialistic, lack of common sense, lack of mental elasticity and are narrow minded.

The explanation about Shanka (ulnar or radial loop), the chakra or whorl, Shakti resembling the composite was also available and discussed in Hindu literature. Depending on the different patterns and number of the patterns on the digits the future of the person was predicted.

All the authors who had commented on Dermatoglyphics were of opinion that the ridge count for arch and Composite are zero, where as there are different opinion regarding the TFRC. It can be said the TFRC commonly seen in Indian population may be nearly 133 for males and nearly 118 for

females, according to Chakraborti and Magotra, according to Santosh Kumar 145 for males and 134 for females. From the palmer pattern we can study the axial tirades, AID angle which tells us about the angle available in the palm which can also considered as an important landmark for assessment of Prakruti.

❖ Prakruti

Prakruti is an expression of one's own constitution formed by the predominant Dosha at time of conception. Prakruti is explained as the body constitution as per modern terminology. In Charaka Samhitha equilibrium of Dhatu is said as Prakruti, here the word Prakruti denotes the good health of a person [8].

Every individual has some specific physical and mental qualities and that is considered as the Prakruti. It can be defined as the state of the body which is generally used to denote the psychological make-ups of an individual [9]. Every individual has Vata, Pitta, Kapha doshas. The percentage of these Doshas, and dominant and recessive part of them changes from person to person. This is why every individual is unique and different from each other [10].

The determination of Prakruti has been made clear in asserted verse by different Acharyas. As allocated by Kashyapa the human constitution is developed from panchabhoutika ahararasa of the mother. According to Acharya Sushruta and

Vagbhatacharya constitution formed at the time of fertilization by leading Dosha. Charakacharya also gives prime importance to the above though he also lays prominence on rasa derived from matured diet, Kala, Garbhashaya etc.

All the authors have vocalized the influences of Prakruti on health. Both Vagbhata's enunciate that the person with Sama Prakruti are excellent while with Dwidoshaja as well as Ekadoshaja Prakruti's are condemnable, the Vata, Pitta and Kapha predominance are said to be Heena (inferior), Madyama (mediocre) and Uthama (good) respectively.

Acharya Susruta has clearly mentioned by quoting the example of poisonous insect's and emphasize that Prakruti being genetic concern do not harm individuals. Similarly Acharya Charaka has presented a long discussion regarding Prakruti and accentuated the Superiority of Sama Prakruti, contrary to this Acharya Kasyapa was of opinion that the individuals of other Prakruti's (Ekadoshaja/ Dwidoshaja) are prone to diseases, because they have to use only such diet and mode of life, which is congenial to their physical constituents, while those of Sama Prakruti can use any diet.

Based on the study conducted in relation to Dermatoglyphics and Prakruti on the basis of observation made with the study of

ridge count, ATD angle and palmer patterns etc. Tools, few observations were made.

Ridge count:

There are different opinions explained by eminent authors of Dermatoglyphics regarding the ridge count. In the present series the total finger ridge count in Vatapittaja Prakruti varied from 87 to 122 in males and 53 to 14 in females and in Pittakaphaja it varied from 61 to 122 males and 61 to 111 in females, Vatakaphaja 93 to 14 in males and females 61 to 129. However in all the three Prakruti the TFRC of males showed an increase than that of females.

1. ATD Angle:

It was observed that in Vatapittaja Prakruti 50% are proximal and 50% intermediate, in Pittakaphaja 60% are proximal and 40% intermediate and Vatakaphaja 60% are proximal and 40% intermediate.

The ATD angle ranged from 33 to 50°. In Valapittaja Prakruti with mean 40.2°, in Pittakaphaja ranged from 36 to 52° with mean of 41.4°, in Vatakaphaja ranged from 33 to 54° with mean of 41.6°.

2. Patterns:

The frequency of patterns differs from one Prakruti to other, the frequency of the whorls and arch is more in vatapittaja Prakruti, the frequency of the arch and loop is more in Pittakaphaja and the frequency of whorl and loop is more in Vatakaphaja Prakruti as compared to normal distribution.

The qualities attributed to whorls, loop, arch and composite as per the study conducted are grossly similar to the qualities mentioned by our Acharyas while explaining the Dwidoshaja Prakruti.

CONCLUSION

Prakruti helps to determine the general built and character of individual. The characteristic features of each Prakruti assessed during the study conducted are found to have been in concurrence with those mentioned in our classics. Prakruti and Dermatoglyphics can be considered under genetic control as Prakruti is formed at the time of conception, it refers to genetically determined physical and mental makeup of the individual, whereas the Dermatoglyphic markings correspond to the neurophysiologic development and it relates to physical, emotional and mental health condition. The frequency of whorls and arch was more in Vatapittaja Prakruti, that as arch and loop in Pittakaphaja Prakruti, that of whorls and loops in Vatakaphaja Prakruti, as compared to the normal distribution. There is gross similarity between qualities attributed to whorl, arch, loop, and the qualities explained by our Acharyas about Vataja, Pittaja and Kaphaja Prakruti. Whorls and loops were more frequently found epidermal patterns on finger tips. Radial loops were less frequent of the entire dermal pattern. The total ridge count of males showed an increase than that of females. The

mean ATD angles for Dwidoshaja Prakruti are nearer to each other. Assessment of Prakruti by examination of palmar prints, may become a part of general examination. Dermatoglyphics can be useful investigation, being quick and inexpensive, but its result must be judged with reservation. Hence it can be concluded that, the study of Dermatoglyphics can be used as a criteria for assessment of Prakruti.

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