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Original Research Article

Study of digital and palmar dermatoglyphic pattern of both hands of female patients with carcinoma breast

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Abstract:

Background & Method: The aim of the study is study of digital and palmar dermatoglyphic pattern of both hands of female patients with carcinoma breast. Purpose of study was explained along with proper information about the procedure to the members of both the groups. Informed consent was taken from both groups. Dermatoglyphic pattern of palms and fingers was taken by Ink method as described by Cummins and Midlo.

Result: It shows that significantly higher number of breast cancer patients i.e. 84.48% show presence of whorls in their two or more fingers as compared to controls where it was 69.80% (p value < .05), the table no. 3 also depicts that presence of two or more whorls is significantly associated positively with carcinoma breast (OR= 2.15).

Conclusion: The present study was done to find any significant dermatoglyphic difference between breast carcinoma patients and healthy controls and it has been found that there is a possible positive correlation between digital ridge patterns, ridge counts and breast cancer. Hence dermatoglyphics could be helpful in screening out risk group which can be subjected to timely mammography and detecting possibility of breast cancer, so as to enable us to take preventive prophylactic measures like prophylactic surgery or chemoprevention.

Keywords: palmar, dermatoglyphic, female & carcinoma breast.

Study Designed: Observational Study.

1. Introduction

Over the past one and half century, Dermatoglyphics has been a useful tool in understanding basic questions in biology, medicine, genetics and evolution, in addition to being the best and most widely used method for identification of individual[1]. Analysis of dermatoglyphic is now beginning to prove itself as an extremely useful tool for initial investigations into conditions with a suspected genetic basis. The scientific basis of friction ridge identification has developed over many years, even centuries[2].

Cancer, heart diseases and Alzheimer's disease are some of the many diseases that have been correlated with fingerprints. Breast cancer is the most common cancer in women worldwide and second most common cancer in Indian women. It can be life threatening disorder if not diagnosed during early stages. Incidence of breast cancer is seen more in patients having positive family history.

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Mammary buds develop during intrauterine life around 6th week as solid down growth of the epidermis in the underlying mesenchyme[3]. This means that the genetic message contained in the genome either normal or abnormal is translated during this period and is also reflected by dermatoglyphics[4].

2. Material & Method

The present study was conducted on 150 diagnosed and histopathologically confirmed female cases of breast cancer attending the radiotherapy department. Similarly 150 age matched normal healthy female controls were selected at of Private Hospital for 01 Year.

Purpose of study was explained along with proper information about the procedure to the members of both the groups. Informed consent was taken from both groups. Dermatoglyphic pattern of palms and fingers was taken by Ink method as described by Cummins and Midlo[5].

INCLUSION CRITERIA:

1. Both cases and controls were of age group 18 to 70 years.
2. Only histopathologically confirmed female breast cancer patients as cases were taken.

EXCLUSION CRITERIA:

1. Females under 18 and above 70 years of age.
2. Individuals having any deformities in their hands like burns or injury.

3. Results

Table No. 1: Comparison of percentage of different fingertip patterns in total fingers of breast carcinoma cases and the control group

Fingertip pattern	Cases	Controls	P value
Whorls	43.77%	37.89%	0.005
Loops	47.53%	52.21	0.1
Arches	8.70%	9.90%	0.069
Composite	00	0.00%	-

It was observed that total number of whorls in cases were 43.77% whereas in controls the total number of whorls were 37.89%.The p-value is less than 0.05, this suggests that the total number of whorls were significantly higher statistically in breast cancer patients as compared to normal healthy females.

Table No. 2: Comparison of percentage of whorls in each digit of right hand of the two groups

GROUP	THUMB	INDEX	MIDDLE FINGER	RING FINGER	LITTLE FINGER
CASES	45.80%	55.04%	31.10%	63.30%	17.40%
CONTROLS	43.10%	43.10%	21.10%	57.70%	23.80%
P VALUE	0.68	0.078	0.093	0.39	0.24

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All the digits in right hand of patients show higher percentage of whorls than controls except in little finger where count is higher in controls, but the difference is not statistically significant in any of the digits (p value > 0.05).

Table No. 3: Comparison of percentage of whorls in each digit of left hand of the two groups

GROUP	THUMB	INDEX	MIDDLE FINGER	RING FINGER	LITTLE FINGER
CASES	50.45%	52.20 %	40.30%	66.90%	24.70%
CONTROLS	45.80%	40.30 %	28.45%	58.70%	26.60%
P VALUE	0.49	0.07	0.06	0.21	0.74

Similarly all the digits in left hand of cases show higher percentage of whorls than controls except in little finger where percentage of whorls is more in controls. Here also the difference in not statistically significant in any of the digits (p value >0.05).

Table No. 4: Comparison of subjects with different type of fingerprint pattern in two or more fingers out of their ten fingers

PATTERN TYPE	CASES	CONTROLS	ODDS RATIO	P VALUE
WHORL	84.48%	69.80%	2.15	0.02
LOOP	87.15%	82.56%	1.43	0.3
ARCH	13.00%	17.00%	0.55	0.12

It shows that significantly higher number of breast cancer patients i.e. 84.48% show presence of whorls in their two or more fingers as compared to controls where it was 69.80% (p value < .05), the table no. 3 also depicts that presence of two or more whorls is significantly associated positively with carcinoma breast (OR= 2.15).

4. Discussion

BRCA mutation carriers were found to be members of families with a high incidence of breast and ovarian cancers, the actual effects of the gene are likely to be confounded by environmental factors or by contributory activity of other genes[5]. Serova et al. (1997)[3] state that at least one (and possibly several) other major susceptibility genes are likely to be responsible, since only a fraction of high risk families have been demonstrated to have mutations in BRCA1 or BRCA2[6].

The fingerprint patterns do not change after their formation in early foetal life, they are unique and vary from individual to individual. Dermatoglyphics is considered as window of congenital abnormalitie. This revolutionary finding helped to bring the developing science of dermatoglyphics from a place of limited use in identification of individuals to being acceptable as a diagnostic tool among medical personnel. Since then widespread interest in epidermal ridges developed in medical field since it became apparent that many patients with chromosomal aberrations had unusual ridge formations. Inspection of skin ridges therefore

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seemed promising, simple, noninvasive and inexpensive means for determining whether a given patient have a particular chromosomal defect.

Chintamani et al (2007)[5] found significantly reduced arches in breast cancer patients than in control group. Sukhre and Mahajan found a significantly increase in the number of arches in carcinoma breast patients as compared to that in the controls, on both the hands[7]. The low frequency of the arches in the carcinoma breast patients as compared to that in the controls[8]. Reported that on comparing all the ten digits, a significant decrease in the arch pattern was reported (P value = 0.05) from the right hands of the carcinoma breast patients.

5. Conclusion

The present study was done to find any significant dermatoglyphic difference between breast carcinoma patients and healthy controls and it has been found that there is a possible positive correlation between digital ridge patterns, ridge counts and breast cancer. Hence dermatoglyphics could be helpful in screening out risk group which can be subjected to timely mammography and detecting possibility of breast cancer, so as to enable us to take preventive prophylactic measures like prophylactic surgery or chemoprevention. As we know breast cancer is a disease with genetic background and is the most common malignancy affecting females worldwide, large scale screening and timely intervention can save many lives.

6. References

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