PRIDOMONANCE OF SIMIAN AND SYDNEY LINES IN MENTAL RETARDED
NARENDRA KUMAR GAHLOT*1, REKHA GAHLOT2, KAVITA PAHUJA3
1Assistant Professor, Department of Medicine, P.B.M. Group of Hospitals, Bikaner.
2,3Assistant Professor, Department of Anatomy, S. P. Medical College, Bikaner.
*Corresponding author: 26, SADUL COLONY, BIKANER (334001) [RAJSTHAN], Email: drrekha78gahlot@gmail.com, MOBILE NO: +91-9414894457

ABSTRACT: Mental retardation means mental illness, arrested or incomplete development of mind. Environmental, physiological, socio-cultural and genetic factors are affecting human development during first trimester. The aim of the present study was to analyze dermatoglyphic traits and abnormal palmar flexion creases as markers of environmental prenatal changes in mental retarded children.

For statically analysis, 50 mental retarded patients and 50 controls group was selected. Plamar creases with their exit line were observed. Qualitative analysis has shown statically significant difference among two groups. The finding shows increase frequency of simian and Sydney line in mental retarded than control group. These patterns show highly significant “p” value [0.0001] in right as well as in left hand. Present study indicates that dermatoglyphic patterns may be used as diagnostic tool for predicting the possibilities of development of Mental Retardation. We found that the Simian crease is the most common variant palmar crease whereas the Sydney creases are the second common variant palmar creases.

Keywords: Simian line (crease), Sydney line (crease), Dermatoglyphic pattern.

INTRODUCTION
Mental retardation means mental illness, arrested or incomplete development of mind. It is a condition of sub average intellectual function combined with deficits in adaptive behavior [1]. Environmental, physiological, socio-cultural and genetic factors are affecting human development during first trimester. Dermatoglyphics means derma (skin) and glyph (Carving). Dermatoglyphic is a study of the pattern configurations of finger and palm prints. They have a significant genetic component. Dermal ridges begin during the third month of intrauterine life as a result of physical and topographic growth forces. After formation dermal ridges are not affected by age, development & environment changes in postnatal life. The development of the ridges begins with the formation of pads in the fingers and palm during the second month of intrauterine life. Epidermal ridges appear on the surface of the hands after the regression of these pads. The presence of abnormalities in dermatoglyphics constitutes fossilized evidence of a prenatal insult that has occurred in the second trimester of prenatal life or before [2,3]. Several environmental factors such as hypoxia, viral infections and delaying growth factors may modify the symmetry and size of the pad, modifying the future dermatoglyphic patterns and number
of ridges [4]. Three primary palmar creases or lines are the thenar crease (life line), the proximal transverse crease (head line) and the distal transverse crease (heart line). Dermatoglyphic variables can be analysed as indirect markers of prenatal stress, some are particularly relevant to the investigation of congenital disorders, including: simplification of finger patterns, as measured by the relative number of arches; a decrease in the number of lines in the second interdigital area and abnormalities in the palmar flexion creases. Palmar creases are epidermal lines which produce typical or atypical patterns on the palmar surface of the hand. Simian and Sydney creases are anomalous palmar creases which have engendered medical attention because it is known that their presence correlate very strongly with several human chromosomal abnormalities and diseases [5,6]. The Simian crease is a single crease that extends across the palm formed by the fusion of the two transverse palmar creases [Figure 1]. The Sydney crease is ex-extended proximal palmar crease. The significance of the Sydney line can be related to various medical problems (such as: Down’s syndrome, leukemia, Alzheimer dementia) and psychological problems [7]. Palmar creases are also helpful in revealing the anthropologic characteristics of the populations of different ethnic origins. Apart from identification the dermatoglyphics has become an accepted means of determining physical and mental health as they are laid down early in embryogenesis and determined largely by genotype. Psychiatrists have found that hereditary factors are responsible for etiology of mental disorders. In present study the dermatoglyphic patterns of palm has been taken into consideration, to illustrate relation with mental retardation.

MATERIAL METHOD
The present study worked on the dermatoglypic patterns of mentally retarded children and patterns are compared with control group. An attempt is made to find out exists of a specific dermatoglyphic trait in mental retardation and their significance. The mental retarded children (50 patient age group 10-18 years) selected from deaf and dumb school of Bikaner and Tapovan School of Shrignanagar and control group (50 student age 18-20 years) were selected from MBBS students of S.P.Medical College, Bikaner. To obtain the plamar impression, a slight modification of ink method was used. The plain impressions of the palm were obtained on smooth white papers. This technique is known as “modified cotterman’s technique”[5]. The palmar patterns were studied for the parameters of qualitative analysis. The area around the palm is divided into 13 areas for exit of palmar creases and main line (Figure 1)
Area 1-radial border of hand to the center of wrist
Area 2-center of wrist
Area 3-center of wrist to ulnar border of hand
Area 4-area 3 to center of ulnar margin of hand
Area 5-area 4 to base of little fingerArea 6, 8, 10 & 12- at the bases of V, IV, III & II digits respectively
Area 7, 9, 11 & 13- area in inter-digital area from ulnar to radial direction
The findings were analyzed, tabulated and their statistical significance was noted. For statistical analysis was performed by SPSS 11.5.
RESULT
The table no.1 shows the percentage and frequency of palmar creases on right hand of mental retarded and control group. In control group 96% of hands follow normal pattern of palmar creases. In normal pattern the the nar crease normally exit from area 2, the proximal transverse crease from area 3 or 4 and distal transverse crease from area 10 or 11. In mental retarded only 12% cases follow this normal pattern where as other pattern was present in 88% cases. In other pattern the percentage frequency of simian line was more (58%) than Sydney line (10%). There are different patterns of simian line like bridge simian (22%), simian line with aberrant crease (28%) and plane simian line (18%).The table no.2 shows the percentage and frequency of palmar creases on left hand of mental retarded and control group. 96% hands of control group shows normal pattern of palmar creases. In mental retarded normal pattern was observed in 14% cases while other patterns were seen in 86% cases. In left hand, percentage frequency was observed in simian line (54%), Sydney line (10%), bridge simian (22%), simian line with aberrant crease (26%) and plane simian line (16%).
In present study, we found that the prevalence of abnormal palmar creases (Simian & Sidney line) was more in mental retarded than the control group. Frequency of these lines was seen 78% in right hand and 74% in left hand. These patterns show highly significant “p” value (0.0001) in right as well as in left hand. Different type of simian line was present in right hand of 68% cases and left hand of 64% cases whereas in control group only 4% people was reported having simian line. Sydney line was reported in 10% mental retarded cases both in right as well as in left hands. Sydney line was not reported in both hands of control group.

DISCUSSION
Palmar creases are of practical use, they can be analyse quickly without physical pain, high cost or age consideration [8]. The complete analysis of palmar creases in mental retarded and control reveals that there are different genetic factors which may produce embryogenesis insult that may be reflected in either isolated or multiple dermatoglyphic traits. Dar et al [9] reported that the race, sex and age factors were influence the expression of palmar crease patterns. Achs et al [10] worked on dermatoglyphic patterns association with major congenital malformation .They found unilateral simian crease on the affected hand of Poland syndrome. A unilateral simian line was also reported in a case of chromosome 9 mutation and Robino syndrome. Incidence of simian creases also found in the patients of down syndrome [11,12]. In present work, we observed presence of simian and Sydney lines were highly significant [p=0.0001] in both hands of mental retarded as compare to control group. The percentage frequency of simian line was more [right hand- 68%, left hand-64%] as compare to Sydney line [10% in both hands]. Malla T [13] observed influence of simian crease in normal nepalise children; they reported simian crease was found in 14.6%, it was significantly high in lama population. Present study reported increase frequency of simian and Sydney line in mental retarded than control group similar findings were observed by previously studies [1,14-17].

CONCLUSION
Significance of Simian and Sydney lines (creases) are associated with abnormal mental condition. In present study reported presence of the Simian crease as the most common variant palmar crease whereas the Sydney creases were the second common variant palmar crease in mental retarded patients.

Table 1. Percentage and frequency of palmar creases on right hand of mental retarded and control group

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Palmar crease</th>
<th>Mental retarded</th>
<th>Control</th>
<th>X²</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
<td>Number</td>
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<tr>
<td>S.N.</td>
<td>Palmar Crease</td>
<td>Mental Retarded</td>
<td>Control</td>
<td>X^2</td>
<td>p Value</td>
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<tr>
<td>1.</td>
<td>Normal</td>
<td></td>
<td></td>
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<tr>
<td>2.</td>
<td>Bridge simian</td>
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<tr>
<td>3.</td>
<td>Simian with aberrant crease</td>
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<tr>
<td>4.</td>
<td>Simian line</td>
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<td></td>
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<tr>
<td>5.</td>
<td>Sydney line</td>
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<td>6.</td>
<td>Any other</td>
<td></td>
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</tbody>
</table>

Table 2- Percentage and frequency of palmar crease on left hand of mental retarded and control group

REFERENCES