A DESCRIPTIVE STUDY ON RADIAL CLUB HAND

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Introduction
Radial club hand is a rare congenital anomaly of hand involving preaxial border of hand with incidence of 1 in 30,000 to 1 in 100,000. It is associated with deformities in forearm, arm and several other systemic anomalies. Its severity ranges from mild hypoplasia of radius to complete absence of radius. In Indian context there were very less studies describing anomalies and this study aims at describing this anomaly.

Objectives
- Clinical evaluation of the anomalies of hand and forearm in radial club hand children
- Evaluation of associated congenital anomalies in other organs

Materials And Methodology
A prospective, observational descriptive study was conducted between March 2014 to March 2016.

INCLUSION CRITERIA:
All patients diagnosed to have radial club hand attending the outpatient department of Bala Institute of Surgery, Research and Rehabilitation for the Disabled Hospital (BIRRD), Tirupati. Andhra Pradesh, India.

EXCLUSION CRITERIA:
All other hand anomalies which do not have radial deficiency

A detailed antenatal and peri-natal history was elicited from the mothers. Family history was taken and family tree was plotted. Children were evaluated for deformities in hand and fingers. Height and lengths of arm and forearm on both sides were taken. Child is evaluated for anomalies in arm and status of other musculature like pectoralis major and deltoit along with bones of upper limb.

A Paediatrician was involved in the evaluation. Complete haemogram with platelet count was done.

Radiographs of forearm along with wrist and hand as well as spine were taken.

Cardiology and Ultrasonography of abdomen was done to find associated systemic anomaly.

All were classified according to Byane and Klug Classification and Thumb deformities were classified as per Blauth.

Observations And Results
A total of 62 cases of radial club hand constituted our study group among which 24 were bilateral (24/2=88) and 38 were unilateral with total of 86 hands.

<table>
<thead>
<tr>
<th>Classification (Byane &amp; Klug)</th>
<th>Bilateral</th>
<th>Unilateral</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Type 2</td>
<td>5</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Type 3</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Type 4</td>
<td>41</td>
<td>26</td>
<td>67</td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
<td>38</td>
<td>86</td>
</tr>
</tbody>
</table>

Male to female ratio was 2.1:1
Age of presentation of children ranged from 20 days to 20 years with an average of 3.66 years.

No significant family history or environmental was recorded.

History of consanguinous marriage was present in 15 cases (24.2%).

Among unilateral cases majority were right sided accounting to 40.3% of total involvement (i.e. 25 cases).

<table>
<thead>
<tr>
<th>Laterality</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilateral</td>
<td>24</td>
<td>38.7</td>
</tr>
<tr>
<td>Right</td>
<td>25</td>
<td>40.3</td>
</tr>
<tr>
<td>Left</td>
<td>13</td>
<td>21.0</td>
</tr>
<tr>
<td>Total</td>
<td>62</td>
<td>100</td>
</tr>
</tbody>
</table>

78 hypo plastic thumbs were recorded and Type 5 Blauth was most commonly seen.

All unilateral cases had hypo plastic thumb association, among bilateral cases some(s) had normal thumb.

A case of polydactylyous thumb was recorded (grade 4 vessels).

A decrease in flexion of metacarpophalyngeal joints was most common deformity which was more in index finger and least in little finger.

All the finger deformities were more pronounced in index finger and were least seen in little finger.

Discussion
1. In our study we had predominantly type 4 radial club hand (i.e.) Complete absence of radius which was in accordance with studies of Heikel in 1959, Bayne LG, Klug MS in 1987.
2. Our study suggests there is no familial involvement and these cases are sporadic. This was in accordance to studies of Kato in 1924 and O Rahilly in 1946 and Heikel in 1959.
3. Environmental factors have been blamed previously for radial club hand but in our study we had no relation between environmental factors and radial club hand

Conclusion
1. Unilateral radial club hand is more prevalent than bilateral.
2. Systemic anomalies with radial club hand were associated in 33.3% cases.
3. Finger anomalies were more pronounced in index finger and least in little finger.
4. NO relation between environmental factors and radial club hand

References