



## Profile of Paediatric Patients With Clubfoot Attending Tertiary Care Hospital: A Descriptive Study

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**ABSTRACT** **Background:** Congenital Clubfoot (CC) is one of the most frequent orthopedic lesions in patients younger than 10-15 years. Club-foot is one of the most prevalent congenital anomalies of the lower extremities. **Objectives:** study was conducted to know the clinical and epidemiological profile of children with club feet attending a tertiary care centre. **Materials and Methods:** A descriptive study was conducted in a Tertiary care hospital in Eastern Bihar Sample size was 70 and children with clubfoot were study subjects. Using pre tested semi structured questionnaire, required information was collected. **Results:** During this study period, we could examine 70 children. Of them, 30% were female and 70% were male. Majority of the children (85%) were under age of 1 year with 40% under 1 month. Right side were little higher in number than left side clubfoot. Only 8.5% of the cases had a positive family history. **Conclusion:** Some more studies to find out epidemiological determinants of clubfoot should be conducted as there is some association found between sociodemographic factors and clubfoot.

### KEYWORDS :

#### INTRODUCTION

Clubfoot is a major structural birth defect of the foot. It may occur as part of a greater syndrome or as an isolated malformation. A combination of genetic and environmental factors appears to be associated with the congenital clubfoot deformity. Its incidence varies with genetic background, gender and race. Suggestions of a genetic association include studies that have revealed that the concordance of clubfoot is about 33% for monozygotic twins versus only 3% for dizygotic twins.<sup>4</sup> A higher risk among first-degree relatives than among more distant relatives has been noted in several epidemiological studies.<sup>1,5-7</sup> Furthermore, the risk among first-degree relatives of female clubfoot cases is higher (4.3%) than that in male clubfoot cases (1.3%).<sup>8</sup> These studies explain only the minority of clubfoot occurrences, leaving most as idiopathic or unknown cause. Clubfoot occurs in 1 in 1000 live births and is one of the most common birth defects involving the musculoskeletal system.<sup>1</sup> CTEV results in an equine deformity characterized by ankle plantar flexion, subtalar inversion and adduction of the hindankle forefoot. The foot itself is usually short and broad in appearance. The muscles of the lower leg are often small in diameter and do not fully develop. The incidence among different races ranges from 0.39 per 1000 among the Chinese population to 1.2 per 1000 among Caucasian to 6.8 per 1000 among Polynesians.<sup>2</sup> Lochmiller 1998 reported a male to female ratio of 2.5:1 and 24.4% of the affected individuals have a family history of idiopathic talipesquinovarus.<sup>3</sup> The prevalence of this anomaly is reported to be between 0.39 and 6 cases in each 1000 live births; this wide difference is mainly due to ethnic factors.<sup>4,5</sup> It is more prevalent in males (M/F=2.5/1). Clubfoot is about 30 times more common in the first degree relatives of the patients with clubfoot.<sup>5</sup> The etiology of clubfoot is still unknown. Many theories such as vascular, viral, genetic, anatomic, environmental and positional factors have been proposed.<sup>5</sup> None of these theories has proved to be the main pathogenesis of clubfoot, but a multifactorial theory best justifies this disease process. Clubfoot may be either primary (idiopathic) or secondary. Secondary types of this disease are associated with syndromes like arthrogryposis, streeter dysplasia, mobius syndrome or diastrophic dysplasia. In these conditions, dysplasia is seen diffusely in nearly all neuromuscular tissues, while in the idiopathic type, the dysplastic tissue is limited to the foot or at most to the leg.<sup>5</sup> The diagnosis of clubfoot is clinical and is confirmed by radiographic assessment of the foot and ankle.<sup>4</sup>

#### MATERIAL AND METHODS

A descriptive study was conducted at a Tertiary care Hospital, Bellary, Karnataka from September 2011 to September 2013 to know the profile of Patients with Clubfoot. The pediatric patients with club foot attending tertiary care hospital during the study period were the study subjects. Totally 70 children participated in the study'

#### Exclusion Criteria:

- Patients with Neurogenic clubfoot
- Syndromic clubfoot
- Affections of Spine or Hips,
- Associated neurological defects
- Feet previously treated by same or other methods

After explaining the purpose of the study, informed consent from the parents was taken and relevant information was collected. Data was entered in Microsoft excel and was analysed using SPSS 10 software.

#### RESULTS

**Table 1: Demographic and Clinical profile (n=70)**

Profile	No. of children	Percentage	
Age distribution (In months)	Less than 1	28	40%
	1 to 6	24	34.3%
	6 to 12	8	11.4
	More than 12	10	14.3%
Gender	Male	49	70%
	Female	21	30%
Family HISTORY	Present	6	8.5%
	Absent	64	91.5%
SIDE affected	Right	19	27.1%
	Left	15	21.4%
	Bilateral	36	51.4%

About 75% of the children were below 6 months of age. Excluding the children who dropped out from the study and could not complete the treatment; youngest in the series was of 3 days, while oldest was of 36 months. The mean age at initiation of treatment was 9 weeks of age excluding 10 children older than 12 months.

Majority of the children (88.34%) were under age of 1 year with 40% under 1 month.

Male predominate our study by constituting about 70% giving a male to female ratio of 2.3: 1. Of the 70 cases 51.4% were bilateral and 48.6% unilateral. Right side were little higher in number than left side clubfoot. Only 8.5% of the cases had a positive family history some sort of foot deformity. The deformity was classified, based initial Pirani scoring system into 2 groups. Since the Pirani scores ranged from 3 to 6 in our study we wanted to analyze whether any significant association between the initial Pirani scores and number of casts needed for correction. Group-I includes a Score of 3 to 4.5 (both values included) points and it was seen in 26 feet (25.24%), Group-II with a Score of 5 to 6 points was seen in 77 feet (74.76%).

## DISCUSSION

We studied 70 children with clubfeet who were treated by Ponseti technique and the results were analyzed. A large proportion of patients were seen very early in life, 85% within 1 year of age. The range of the children treated being 3 days to 36 months. The mean age at initial presentation of 9 weeks. The mean age is in agreement with age incidence observed by Dobbs et al<sup>6</sup> who reported clubfeet in 51 patients at mean age of 12 weeks, at initial presentation. While in the study of 70 patients by Laaveg and Ponseti<sup>7</sup>, the mean age was 6.9 weeks at initial presentation. A mean age of 10.8 weeks was reported by Lehman et al<sup>8</sup> in a series of 30 patients treated by Ponseti technique. In our study there were 69 male children and 16 female children that is 81.2% and 18.8% respectively. Incidence of males and females in our series is not very different from other reported series. Kite in the series of 1509 cases reported 70% males and 30% females.<sup>9</sup> Turco in his series of 468 patients reported 71.36% males and 28.64% females.<sup>10</sup> Raju Rijal et al. in his series reported 76.2% males and 33.8% females.<sup>11</sup> M Changulani et al. in his series reported 75.7% males and 24.3% females.<sup>12</sup> This may be attributed to Ignorance, social bias and increased attention towards males in Indian setup. As regards laterality, 36 of our cases were bilateral (51.4%) and 33 were Unilateral (48.6%) (19 right and 15 left sided) which is similar to other series presented by, Wyne Davis (44% bilateral and 56% unilateral).<sup>13</sup> Ponseti found 40% bilateral cases.<sup>14</sup> Chung reported bilaterality in 55.75% of cases. Turco reported bilaterality in 56.76% cases.<sup>10</sup> Raju Rijal et al. in their study reported 57.89%<sup>11</sup> M Changulani et al in their study reported 52% bilateral and 48% unilateral.<sup>12</sup> Herzenberg et al<sup>15</sup> reported common occurrence of unilateral clubfoot (74%) than bilateral clubfoot (26%) in his study. While Lehman et al reported in a series of 30 patients, an equal incidence of unilateral and bilateral clubfoot. In unilateral cases a slight preponderance of right side involvement was reported by Kite<sup>16</sup> and Palmer<sup>17</sup>. However Laaveg and Ponseti<sup>7</sup> reported slight preponderance towards left side in their series. In the present study we used Pirani scoring system which is in accordance with Lehman et al series, which shows Pirani scoring is easy to use and simple and fairly reproducible. Clubfoot deformity was classified, according to the Pirani scoring system into 2 groups. Group-I with a Score of 3.0 to 4.5 points was seen in 26 feet (25.24%) and group-II with a Score of 4.5 to 6 points was seen in 77 feet (74.76%).

## CONCLUSION

This is a preliminary and limited study on the profile of clubfoot in a subset of the population of Bellary. It presented a preliminary report of the profile of clubfoot. The authors believe that larger multi-centric studies throughout the country are necessary to further evaluate the profile of this condition.

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