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

Medical Science

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ABSTRACT

Background: Club-foot is one of the most prevalent congenital anomalies of the lower extremities. Since there are only few studies on profile of this disease in Karnataka, we decided to assess it in a sample population in Bellary. Materials and Methods: A descriptive study was conducted in a Tertiary care hospital,Bellary,Karnataka. Sample size was 85 and children with clubfoot were study subjects. Using pre tested semi structured questionnaire, required information was collected. Results:During this study period, we could examine85 children. Of them, 18.8% were female and 81.2%were male. Majority of the children (88.34%) were under age of 1 year with 45% under 1 month. Right side were little higher in number than left side clubfeet. Only 7% 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.

Introduction:

Congenital talipusequinovarus probably the most common congenital pathological condition is a descriptive term. The term was first described by Hippocrates. It was Nicolas Andry in his "Orthopaedicia" described the term "Pedis Equinal" which meant the foot resembling the foot of the horse. The term "talipusequinovarus" is derived from latin :Talipus , a combination of words- Talus (ankle) and pes (foot) ; equinus meaning "horse like"(the heel in plantar flexion) and varus meaning inverted and adducted.

Clubfoot occurs in 1 in 1000 live births and is one of the most common birth defects involving the musculoskeletal system1. CTEV results in an equine deformity characterized by ankle plantar flexion, subtalar inversion and adduction of the hind and 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 1000among Caucasian to 6.8 per 1000 among Polynesians2. 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 talipesequinovarus3.

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 factors4,5. 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 clubfoot5. The etiology of clubfoot is still unknown. Many theories such as vascular, viral, genetic, anatomic, environmental and positional factors have been proposed5. 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, mobios syndrome or diasthrophic 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 leg5. The diagnosis of clubfoot is clinical and is confirmed by radiographic assessment of the foot and ankle4.

Methodology:

A descriptive case series 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 85 children participated in the study and patients with Neurogenic clubfoot, Syndromic clubfoot, Affections of Spine or Hips, Associated neurological defects, Feet previously treated by same or other methods and Unwilling to participate in the study were excluded. 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.

Results:

Table 1: Age distribution

Age in months	No. of children	No. of feet	Percentage
Less than 1	38	54	44.72%
1 to 3	17	23	20%
3 to 6	10	15	11.76%
6 to 12	10	17	11.76%
More than 12	10	17	11.76%
Total	85	126	100%

About 65% of the children were below 3months 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 39 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 45% under 1 month.

Table 2: Gender distribution

Gender	Number of cases	Percentage
male	69	81.2%
female	16	18.8%
total	85	100%

Male predominate our study by constituting about 81.2% giving a male to female ratio of 4.3: 1.

Table 3: Side affected

Side affected	Number of cases	Percentage
Right	24	28.2%
Left	20	23.5%
Bilateral	41	48.3%
Total	85	100%

Of the 85 cases 48.3% were bilateral and 51.7% unilateral. Right side were little higher in number than left side clubfeet.

Table 4: Family history

Family history	Number of cases	Percentage
Present	6	7%
Absent	79	93%
Total	85	100%

Only 7% of the cases had a positive family history some sort of foot deformity, only one case had history of patient's father affected by clubfoot which is untreated

Table 5: Pre treatment Pirani scores

Group	Initial Pirani score	Number of feet	Percentage
I	3 to 4.5	26	25.24%
II	5 to 6	77	74.76%
Total		103	100%

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 85 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, 88.3% within 1 year of age. The range of the children treated being 3days to 39. The mean age at initial presentation of 9 weeks excluding 5 children who were older than 12 months (17,18, 24, 33 and 39 months). These children were excluded because it would shift the mean age of presentation to a false higher value. The mean age is in agreement with age incidence observed by Dobbs et al[6] 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[7], the mean age was 6.9 weeks at initial presentation. A mean age of 10.8 weeks was reported by Lehman et al8 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.9 Turco in his series of 468 patients reported 71.36% males and 28.64% females.10

Raju Rijal et al. in his series reported 76.2% males and 33.8% females.11 M Changulani et al. in his series reported 75.7% males and 24.3% females.12 this may be attributed to Ignorance, social bias and increased attention towards males in Indian setup.

As regards laterality, 41 of our cases were bilateral (48.3 %) and 44 were Unilateral (51.7%) (24 right and 20 left sided) which is similar to other series presented by, Wyne Davis (44% bilateral and 56% unilateral).13 Ponseti found 40% bilateral cases.14 Chung reported bilaterality in 55.75% of cases. Turco reported bilaterality in 56.76% cases.10 Raju Rijal et al. in their study reported 57.89% 11 M Changulani et al in their study reported 52% bilateral and 48% unilateral.12

Herzenberg et al15 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 Kite16 and Palmer17. However Laaveg and Ponseti7 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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