ORIGINAL ARTICLE

Evaluation of Ponseti Method for Management of Idiopathic Clubfoot in Toddlers

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ABSTRACT

Aim: To evaluate the efficacy of ponseti method for treatment of idiopathic clubfoot by correction of all deformities in toddlers in terms of percentage of excellent Pirani score ≤1.
Study design: It was a Multi-Centre descriptive case series study.
Duration: From 30th April 2010 to 30th April 2012.
SETTINGS: Department of Orthopaedic Surgery, DHQ Hospital, Bhakkar, Jinnah Hospital Lahore.
Methods: A total of fifty (50) patients coming to the Outpatient department of either gender from one to three years of age with Idiopathic clubfoot of moderate to severe deformity according to pirani socre (i.e. 3 to 6). The final outcome was recorded at the time of removal of final cast after 3 weeks, and final Pirani score was documented to assess the success of treatment.
Results: The results of the study reveal that most of the patients i.e. 48%(n=24) had 2 years of age, mean and sd was calculated as 1.64±0.76 years, 58%(n=29) male and 42%(n=21) females, mean and of Pirani Score was 1.31±0.43 years, frequency of efficacy of Ponseti method for treatment of idiopathic clubfoot by correction of all deformities in toddlers in terms of percentage of excellent Pirani score reveals in 68%(n=34) while 32%(n=16) had no findings of efficacy.
Conclusion: We concluded a considerable efficacy of ponseti method for treatment of idiopathic clubfoot by correction of all deformities in toddlers in terms of percentage of excellent Pirani score ≤1 even upto 3 years of age.
Keywords: Idiopathic clubfoot, ponseti method, toddlers, efficacy, Pirani Score

INTRODUCTION

Clubfoot deformity or Congenital talipes equinovarus (C.T.E.V) consists of 4 components: equines, varus, adductus, and cavus.[1] Clubfoot has a wide spectrum of presentations, from a mild, postural form to a severe, rigid deformity. It occurs in approximately 1 to 2 in 1,000 births.[2] Bilateral disease occurs in approximately 50% of cases.[3]

Children with neglected clubfoot are destined to grow up with deformed and painful feet, leading to physical disability.[4]

The goal of treatment is to attain a functional, pain-free, plantigrade foot, with good mobility.[5] Treatment of clubfoot remains as controversial as its etiology. Various conservative methods of treatment have been described with variable and often irreproducible results. The surgical methods are fraught with their own list of limitation and complications. After many years during which surgical methods were touted as the treatment of choice, conservative methods like the Ponseti technique have again become popular[6].

The Ponseti method in nonoperative management of clubfoot has proven to be effective, and in the last decade has come to be accepted as the treatment of choice in the majority of centers worldwide for children under 6 month age. Proper use of this technique can be logically divided into 2 phases.[7]

The Ponseti method has been reported to have successful results in clubfoot patients less than 6 months of age but the literature on its efficacy in older clubfoot patients still remains sparse.[8,9] However, we intend to evaluate the efficacy of ponseti method in treatment of idiopathic clubfoot in toddlers (i.e. children of 1 to 3 years age) in terms of percentage of excellent Pirani score[10,11] i.e. zero to less than 1 Pirani score is considered excellent.

MATERIAL AND METHODS

A total of fifty (50) patients coming to the emergency department of either gender from one to three years of age with Idiopathic clubfoot of moderate to severe deformity according to pirani socre (i.e. 3 to 6) were included while Syndromic clubfoot, Secondary clubfeet and Previously operated children were excluded from the study. All patients were treated on office based procedure. Every clubfoot under Ponseti management was initially graded according to the Pirani scoring system and then serial manipulations followed by weekly above-knee castings were done

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for 12 weeks. A total number of maximum 9 casts were applied. The deformities were corrected in the sequential order as described by Ponseti. Cavus was corrected in first cast. In subsequent casts adduction was gradually corrected. The equinus deformity was treated in the end by percutaneous Tendo Achilles tenotomy when pirani score for mid foot was less than 1 and pirani score for hind foot was more than one followed by casting for three weeks. The final cast was applied with the foot in 15 degrees dorsiflexion and 70 degree external rotation. Before changing every cast Pirani scoring was regularly revised to monitor the status of correction of deformities. The final outcome was recorded at the time of removal of final cast after 3 weeks, and final Pirani score was documented to assess the success of treatment. Follow-up was ensured by taking telephonic contact of parents.

Data was collected in the form of variables and entered and analyzed on SPSS ver.10 Mean and Standard deviation was calculated for quantitative data including variables as age and Pirani score. Frequency and percentages were calculated for gender, and efficacy.

RESULTS

A total of 50 patients fulfilling inclusion/exclusion criteria were studied to evaluate the efficacy of ponseti method for treatment of idiopathic clubfoot by correction of all deformities in toddlers in terms of percentage of excellent Pirani score. Age distribution of the patients was done, it shows 48%(n=24) with 2 year of age, 34%(n=17) had 1 year and 18%(n=9) had 3 years of age, mean and sd was calculated as 1.64+0.76 years.(Table 1). Gender distribution of the patients shows 58%(n=29) male and 42%(n=21) females (Table 2). Mean and of Pirani Score was calculated in Table 3, it was recorded as 1.31+0.43 years. Frequency of efficacy of Ponseti method for treatment of idiopathic clubfoot by correction of all deformities in toddlers in terms of percentage of efficacy in 68%(n=34) while 32%(n=16) had no findings of efficacy (Table 4).

Table 1: Age Distribution of The Subjects (n=50)

Age in years	=n	%age
1	17	34
2	24	48
3	9	18

Mean and S.D. 1.64±0.76

Table 2: Gender of The Subjects (n=50)

Gender	=n	%age
Male	29	58
Female	21	42

Table 3: Mean Pirani Score

Pirani score	Mean sd
	1.31±0.43

Table 4: Frequency of efficacy of Ponseti method for treatment of idiopathic clubfoot by correction of all deformities in toddlers in terms of percentage of excellent pirani score (n=50)

Efficacy	=n	%age
Yes	34	68
No	16	32

DISCUSSION

In this study we evaluated the efficacy of Ponseti method in treatment of idiopathic clubfoot in toddlers (i.e. children of 1 to 3 years age) in terms of percentage of excellent Pirani score i.e. zero to less than 1 Pirani score is considered excellent. The significance of the study was that no data or study available in our population and sparse in overall international literature, the results of the study provide a base line data for our population and add useful information to international literature.

The results of the study reveal that most of the patients i.e. 48%(n=24) had 2 years of age, mean and sd was calculated as 1.64$\pm$0.76 years, 58%(n=29) male and 42%(n=21) females, mean and of Pirani Score was 1.31$\pm$0.43, frequency of efficacy of Ponseti method for treatment of idiopathic clubfoot by correction of all deformities in toddlers in terms of percentage of excellent Pirani score reveals in 68%(n=34) while 32%(n=16) had no findings of efficacy.

Our results are in agreement with a study which shows the efficacy in severe cases in terms of Pirani score 1$\geq$ to be 89 percent,[11] the difference behind our study and reference study is that we considered ≤1 pirani score as effective while in their study they considered even with ≥ pirani score also as successful.

Few studies have evaluated this method in children of slightly older age group although clinical experience in our center has shown fair amount of success with traditional methods of casting in this population.

There is nearly universal agreement that the initial treatment of the Clubfoot should be non-operative regardless of the severity of the deformity. Ponseti Method which involves serial corrective manipulation, a specific technique of the cast application, and a possible percutaneus Tendo-Achillis tenotomy. The method has been reported to have short-term success rate approaching 90% and long-term results have been equally impressive.

However, our results confirms much success rate then the age limit of Ponseti casting and it is revealed that it can be stretched to 3 years as first line of treatment. As in our country due to lack of awareness and poverty late presentation is not uncommon. This technique may provide the advantages of conservative management even at late presentation and will also avoid excessive cost, work load and its potential complications related to surgery, and this method may be adopted even at rural health centers where specialized orthopedic facilities or not available.

CONCLUSION

We concluded a considerable efficacy of ponseti method for treatment of idiopathic clubfoot by correction of all deformities in toddlers in terms of percentage of excellent Pirani score $\leq$1 even upto 3 years of age.

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