RESEARCH ARTICLE

Experience of treating the Talipes equinovarus deformity with Ponsetti technique at district level

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Abstract

Objective: To assess the Ponsetti technique's effectiveness in the treatment of talipes equinovarus.

Methods: The cross-sectional study was conducted from January 2013 to March 2018in Naushehero Feroze disctrict of the province of Sindh, Pakistan, and data was assessed at the Department of Orthopaedic Surgery, Dow University of Health Sciences / Civil Hospital, Karachi. Children with talipes equinovarus were treated with Ponsetti casting.

Results: Of the 86 patients, 53(68%) were boys and 33(32%) were girls. There were a total of 111 feet in the study. Once the foot reached neutral, percutaneous tenotomy of tendo achilles was done in 86)85%) of 111 feet. Seven (8%) patients had recurrence because of non-compliance in the maintenance phase. Overall, 17(19.7%) patients were lost to follow-up.

Conclusion: Ponsetti casting was found to be a simple, effective and acceptable method of treatment for talipes equinovarus.

Keywords: TEV, Ponsetti casting, District level. (JPMA 69: S-25; 2019)

Introduction

Congenital talipes equinovarus (TEV) occurs in one in 1000 live birth.[1] It is mostly idiopathic but can be secondary. Ponsetti method of treatment is the standard for TEV.[2] The success rate with Ponsetti casting for TEV is around 98%.[3] Ponsetti and Smoley between 1948 and 1956 first described this method and published data on 94 feet. They treated patients with above-knee casting because it prevents the ankle and talus rotation.[4] Counsel to parents regarding the cast application is important and how many casts are needed depends on the severity of deformity.[5] The cast numbers required to achieve correction vary from three to nine and are changed weekly.[6] In the last cast, foot is placed in hyper abduction to do over-correction that reduces the rate of relapse from 56% to 11%.[7] The sequence of correction is first cavus second forefoot adduction and supination and in the last equinus and varus. Residual equinus is corrected with percutaneous tenotomy of tendo Achilles.[8] Three times weekly casting is also tried in urban areas to decrease the time of correction.[9] Variety of classification has been described, like Dimeglo and Pirani scoring which is commonly used because of good inter-observer reliability and reproducibility.[10]

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Material and Methods

The cross-sectional study was conducted from January 2013 to March 2018 in Naushehero Feroze disctrict of the province of Sindh, Pakistan, and data was assessed at the Department of Orthopaedic Surgery, Dow University of Health Sciences / Civil Hospital, Karachi. Approval was obtained from the institutional ethics review committee. Children with TEV were treated with Ponsetti casting. Data as well as relevant photographs (Figure 1-2) were collected after taking due consent from parents and guardians.

Results

Of the 86 patients, 53(68%) were boys and 33(32%) were girls. There were a total of 111 feet in the study. Of the total, 13(12%) patients had family history of TEV; and 24(23%) had bilateral deformity. The age range of the sample was from one week to 10 years Table 1).

Figure-1 A: Before correction.

Figure-1 B: After correction.

Figure-2 A: Before correction.

Figure-2 B: With Dennis brown shoes after correction.

Table-1: Age at presentation.

1 week to 1 year	29
1 year to 4 years	36
5 to 8 years	13
8 to 10 years	08

Table-2: Number of casts for correction.

1 to 4 years	5 to 6 casts
5 to 10 years	8 to 10 casts

There were7(6%) patients who had been treated elsewhere but had recurrence while 8(7%) children had secondary TEV. Children aged up to 4 years needed 5-6 casts while the rest needed 8-10 casts (Table 2).

Once the foot reached neutral position, percutaneous tenotomy of tendo Achilles was done in 86(85%) feet. Dennis brown shoes were advised after correction to be worn for 2 years. Maximum follow-up of patients was 4 years. Seven (8%) patients had recurrence because of non-compliance in the maintenance phase. Overall, 17(19.7%) patients were lost to follow-up.

Discussion

Around 80% of children born with congenital TEV live in less developed nations. It is difficult for the parents to get treatment at their doorstep as few orthopaedic surgeons serve in rural areas and tertiary hospitals are a bit too far away. In Pakistan, a national programme for the correction of TEV is there but has not developed at district levels yet. In countries like Malawi, Uganda India, Tanzania, Ethiopia and Vietnam, respective governments have approved and initiated Ponsetti method of TEV treatment.[11-15]

Study conducted in Brazil on 51 feet showed bilateral involvement in 64.5%, with mean cast changes being 5.8 and tenotomy in 26 patients. Significant deformity improvement was seen in 90.2% patients. Pirani mean scoring improved from 5.5 to 3.6 after treatment.[16]

Riberio Lara et al also reported Ponsetti method as a successful non-operative treatment. [17]

A retrospective study compared French method with Ponsetti. Both groups showed no statistically significant differences for Dimeglio grade, time from birth to treatment initiation, and poor prognosis was associated with severity of score. [18]

Systemic review on 870 club feet showed strong evidence for a positive relation between cast change interval and treatment duration. But there is no evidence for any relation between the cast change interval and the required number of casts, tenotomy rate, required surgery or failure rate.[19]

Grimes et al. found Ponsetti casting for TEV patient as an inexpensive method of treatment that is less than 10th

of the cost of other treatment methods.[20]

A study conducted at the Queen Elizabeth Hospital had 31 patients with unilateral clubfoot and 60 with bilateral clubfeet. Of them, 77 patients had primary idiopathic clubfoot and 14 patients had secondary clubfeet, while 32 patients were lost to follow-up.[21]

A study conducted in India had 356 cases with 402 feet with congenital TEV who were treated by Ponsetti method and showed good functional outcome in 95.45% cases.[22]

A study conducted in Abbottabad treated 177 clubfeet with mean age of the patients being 10.28±7.45 weeks, ranging from 2 weeks to 2 years. There were 93(52.5%) male and 84(43.5%) female patents. Of these, 20 patients were corrected with serial casting only, while the rest needed tenotomy and additional procedure.[23]

A study conducted in Karachi included parents of 120 patients. Of them, 95(79.2%) showed good compliance on Denis Browne Splint, 10(8.3%) were fair and 15(12.5%) showed poor compliance due to unaffordability. Early relapse was observed in 23(19.16%) patients and they were treated accordingly. Overall success was seen in 116(96.67%) cases.[24]

Problems noted by the current study in rural areas was less educated parents, poverty, false beliefs about deformity, parents whose child got treatment and relapsed or were resistant cases made people believe that the deformity is not generally treatable. Dennis Brown shoes or brace were beyond their means and improper bracing led to relapse. Also, people keep changing their cell numbers or do not take calls, making follow-up a tricky business.

Conclusion

Ponsetti casting is a simple, effective and acceptable method of treatment for TEV around the world. To facilitate the people locally, we have to make them aware that TEV deformity is correctable. Education of society is the key to success in this regard.

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