

Original Research Article

Investigating the birth prevalence of congenital club foot in both Paktya and Kapisa provinces of Afghanistan

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ABSTRACT

Background: Congenital talipes equinovarus (CTEV) or Clubfoot is one of the most common birth defects of the musculoskeletal system and affects 1 in every 1000 live births each year that cause mobility impairment. The purpose of this study is to investigate the birth prevalence of congenital club foot in both Paktya and Kapisa provinces of Afghanistan.

Methods: This descriptive cross-sectional study was performed in all live birth babies during one-year period in the Paktya regional hospital (Paktya province) and Al Beroni teaching hospital (Kapisa province) of Afghanistan from September 2019 to September 2020. In this study, all ethical considerations were considered. The variables that were examined in our study included the following: type of delivery, maternal age, gender and form of laterality of the legs in the baby. The legs of newborn were photographed on the first day of birth and evaluated by an orthopedic surgeon. Finally, statistical data were analyzed by using SPSS software

Results: In this study 35 cases of multiple births including 33 cases of twins and 2 cases of triplets were recorded and the rate of cesarean section was 5.96%. In this group data showed 99.65% of infants with no congenital talipes equinovarus or club foot abnormalities. Subsequently, 0.35% or 36 people had congenital clubfoot which shows more incidence in male than female and unilateral form was more common.

Conclusions: Based on our study result, we found that prevalence of clubfoot is about 3.5 per 1000 live birth similar to other low-income countries. Because of diagnosis and treatment of clubfoot in the early stage is more possible. Therefore, timely recognition, diagnosis and treatment are significant and helpful to decrease medical expenses. Our result in this study supports high prevalence of clubfoot anomaly in mentioned provinces of Afghanistan because of different genetic and environmental risk factors. To provide practical suggestions we need more epidemiologic study in all over the Afghanistan.

Keywords: Club foot, Congenital anomaly, Male population, Afghanistan

INTRODUCTION

Lower limb specially its distal part or foot is important part of body its major function is to support the weight of the body and movement. Movement of foot significantly depends on muscles of the leg so under-development, contracture, fibrosis or imbalance of these muscles can markedly distort the foot to different direction and all grade of these distortions are called talipes equinovarus.¹

Congenital talipes equinovarus (CTEV) or clubfoot is one of the most common birth defect of the musculoskeletal system and affects 1 in every 1000 live births each year that cause mobility impairment.^{2,3}

This complication occurs more often in boys than girls and most cases are unilateral.⁴ However this varies between different races, ethnicities and countries. Typically, a small set of statistics are routinely cited for birth prevalence of

clubfoot with reports of 0.39 per 1000 births in Chinese populations, 1.1 per 1000 in Caucasian and 6.8 per 1000 in Polynesian populations.⁵ Overall, it is estimated that 80% of children born with clubfoot each year live in low- and middle-income countries (LMICs).⁶

The structure and position of the foot are affected, and untreated clubfoot results pain and reduced mobility, which potentially leads to participation restrictions and activity limitation.⁷ Clubfoot is formed in the early weeks of gestational development, and this may be part of specific syndrome or secondary to neurologic or systemic disease. However, the majority of cases occur in isolation and are called 'idiopathic'.⁸ the cause of which is not completely understood.⁹ Genetic factors have been implied, while environmental factors, for example seasonal variation and intrauterine immobility, have been reported in some studies.¹⁰⁻¹² Other risk factors that have been reported are male gender, maternal smoking and maternal diabetes.¹³⁻¹⁵ However, the underlying pathogenesis for these factors remains a matter of scientific debate. The paraclinical may not be very helpful in diagnosing clubfoot in infants and toddlers. The diagnosis of this abnormality is mostly made by clinical examination. Currently, no epidemiological studies associated with clubfoot in Afghanistan. This study was designed to describe incidence and specific risk factors that may be associated with an increased risk of idiopathic clubfoot in Afghanistan. Due to the importance of initial diagnosis for the treatment of this complication and providing information for further programming for Trustees and managers of the health department. This study was performed with the aim investigating the birth prevalence of congenital club foot in both paktya and kapisa provinces of Afghanistan.

METHODS

This is a cross-sectional descriptive study. The statistical population of this study included all neonates who were born in two hospitals Paktya regional hospital (paktya province) and Alberoni teaching hospital (kapisa province) from September 2019 to September 2020 and in this study, all ethical considerations were considered.

Inclusion criteria were new born babies with only idiopathic talipes equinovarus. The exclusion criteria include those with other congenital deformities or dead babies. variables that were recorded in this study were type of delivery, maternal age at delivery, Multiple pregnancies, Baby gender and laterality.

All infants were examined by a pediatrician and digital photography was done in four views (Back views, Sole, Middle and Side of the baby's foot) by an expert. These images are evaluated by an orthopedic surgeon and suspected cases of clubfoot anomalies were identified and recorded. Data were analyzed using Statistical package for social sciences (SPSS) software.

RESULTS

About 10385 infants include 5390 girls and 4990 boys evaluated for congenital foot abnormalities. The mean age of the mother at the time of delivery was 24 years and ranged from 14 to 46 years. In this study 35 cases of multiple births including 33 cases of twins and 2 cases of triplets were recorded and the rate of cesarean section was 5.96% in this group (Table 1).

Table 1: Descriptive statistics of delivery cases.

| Demographic characteristics | Number | Percentage |
|-----------------------------|--------|------------|
| Total newborn babies | 10385 | 100 |
| Male | 4990 | 48 |
| Female | 5390 | 52 |
| Type of delivery | | |
| Normal | 9767 | 94 |
| Caesarean | 618 | 6 |
| Multiple births | 35 | 0.34 |
| Twins | 33 | 0.319 |
| Triplets | 2 | 0.02 |

Our study for investigation the incidence of congenital clubfoot deformities among 10349 infants in that period of time, showed that 99.65% of infant had no congenital club foot abnormalities subsequently, 0.35% or 36 infants had congenital clubfoot that 23 of them were male (64%) and 13 were female (36%), about 56% of newborn were unilateral and 44% were with bilateral clubfoot (Table 2).

Table 2: Descriptive statistics of clubfoot cases (n=36).

| Phenotypic characteristics | Cases | Percentage |
|----------------------------|-------|------------|
| Gender | | |
| Male | 23 | 64 |
| Female | 13 | 36 |
| Laterality | | |
| Bilateral | 16 | 44 |
| Unilateral | 20 | 56 |
| Left | 9 | 56 |
| Right | 7 | 44 |

DISCUSSION

Based on our study result, among 10385 newborn at Paktya and Kapisa Hospitals we found that prevalence of clubfoot is about 3.5 per 1000 live birth and incidence of clubfoot in male newborn were higher than females, 64% and 36% respectively which is similar with the studies of Asuquo et al in South Nigeria and Ukoha et al in southeast Nigeria.^{16,17}

In this study 0.35% of all live births were multiple, respectively 0.319% were twins and 0.02% were triplet and most of births were in the form of normal delivery about 94% and 4% of them were by cesarean section so in this study we did not find significant relationship between mode of delivery and multiple birth with clubfoot. Our study shows similar result to hanif et al study but it is

different with Israr Ahmad's study. This discrepancy may be due to the short duration of our study and the inclusion of only idiopathic clubfoot.^{18,19}

Clubfoot can be unilateral or bilateral studies showed different result, Ahmad et al reported equal number of unilateral and bilateral clubfoot in their study, Chesney et al reported that unilateral clubfoot is more common than bilateral club foot respectively 55% in male and 45% in female, Cardy et al reported 51% bilateral and 49% unilateral club foot deformity in this study 56% of newborns were unilateral and 44% were bilateral so unilateral form was more common similar to some previous study.^{1,20-22} In some case our finding are different it can be because of limitation in our study population, economical and geographic difference and other risk factor to finding them we need more study. Due to the high prevalence of congenital clubfoot in low-income countries and it's diagnosis and treatment in the early stages. Therefore, timely recognition, diagnosis and treatment are significant and helpful to decrease medical expenses and yet no research has been performed in recent years on the prevalence of this anomaly. It is hoped that the results of this study will help further research and inform the Afghan community about home births.

The result of our study shows high prevalence of clubfoot anomaly in Pakya and Kapisa provinces of Afghanistan like other low income countries about 3.5 per 1000 live birth. This study supports previously reported data stating that males are more affected by clubfoot and approximately 56% of clubfoot patients are affected unilaterally. it was more common in male infant because of different genetic and environmental risk factor to provide practical suggestions we need more epidemiologic study in all over the Afghanistan.

CONCLUSION

Our study about that prevalence of clubfoot in both Pakya and Kapisa provinces of Afghanistan showed homogeneity with other low-income countries and it was about 3.5 per 1000 live birth incidence of club foot were more common in male, then female diagnosis and treatment of clubfoot in the early stage is more easy. But according to poor medical facilities in Afghanistan timely recognition, diagnosis and treatment is difficult and it may contribute to higher prevalence of club foot. Because of different genetic and environmental risk factors, practical suggestion needs more epidemiologic study in all over the Afghanistan.

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