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CTEV: Pre-natal diagnosis and its impact of treatment

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Abstract

CTEV (Congenital Talipes Equinovarus) is one of the common musculoskeletal deformities in newborn. The incidence is about 1/1000 population. Prenatal diagnosis is possible many times in TIFFA scan (Targeted Imaging for Fetal Anomalies). Ultrasound being the observer-dependent, its common to miss the club foot during the antenatal scan. Antenatal detection of CTEV ranges from 20 % to 80% of cases. Antenatal detection helps the parent to prepare psychologically and seek treatment early. This definitely increases the early recovery of the deformity and reduces the stress over the parents. In a presented study of 53 patients with CTEV at the time of birth, 18 patients had antenatal diagnosis, the mean time from the birth to the first plaster was 6.67 days in patients with antenatal diagnosis when compared to 10.2 days in another group where no antenatal diagnosis was made. The conclusion was that the patient whom the antenatal diagnosis is made, seek treatment early and get treated early with relatively less number of casts.

Keywords: CTEV, antenatal diagnosis, casts, ultrasound

Introduction

Congenital clubfoot or CTEV is one of the most common abnormalities detected during fetal life, with a prevalence of about 1 to 3 per 1000 live births. Clubfoot, or talipes equinovarus, is a positional deformity of the joints of the ankle resulting in the foot being fixed in adduction, supination, and Varus. CTEV may be associated with other major structural and karyotype anomalies, and genetic syndromes [1]. Isolated cases are usually not considered to be severe enough to cause significant physical disability and rationalize the termination of the pregnancy. Ultrasound examination is the widely accepted choice of screening examination for any prenatal diagnosis. Prenatal diagnosis is best possible in TIFFA scans (Targeted Imaging for Fetal Anomalies) [2]. Ultrasound being the observer dependent, its common to miss the club foot during antenatal scan. Antenatal detection of CTEV ranges from 20 % to 80% cases [3]. Prenatal counselling must be reserved because the diagnostic accuracy at 20 to 22 weeks has been with mixed accuracy across literature. Parents should be advised about the possibility of false-positive cases and a discrepancy between the ultrasound and postnatal diagnosis of severity and bilateral affectation [4].

Aim of this study was to evaluate the advantage of prenatal diagnosis of clubfoot and early treatment with serial casts to those patients diagnosed after birth.

Materials and Method

The study done in the teaching institute, all the patient coming to CTEV clinic in two years (2017 to 2019) has been considered. The retrospective data collection done and antenatal scan evaluated. Sample size was 53.

Inclusion criteria

- Isolated idiopathic CTEV patients.

Exclusion criteria

- Patients with multiple deformities.
- Patients with CTEV secondary to neurological defect etc.

Results

Out of 53 patients, 37 are male constituting of about 70 percent of the cases. Antenatal diagnosis was made in TIFFA scan in 18 patients only; this is about 34 % of CTEV cases.

In patients with antenatal diagnosis, the duration of the first plaster from the birth is 6.67 days ranging from 2 days to 10 days. The average number of casts needed for the correction 6.44 casts.

In patients with no antenatal diagnosis, the duration of the first cast from the birth is 10.2 days, ranges from day 4 to 25 days. The average number of casts needed for correction is 7.33.

Discussion

CTEV is male prevalent deformity with the ratio between male and female ranges between 2.5:11 to 1.6:1, it strongly correlates with our study where the ratio is 2.3:1^[5].

Rosselli P (2015)^[6] in his study found antenatal diagnosis in 34.5 % of his patients (N= 178). Though there is variation in antenatal diagnosis of disease in various studies 0.43% to 59.8%, our findings fall in between the range^[7].

In various studies, number of days before the treatment started once the pre or postnatal diagnosis, Significant differences were found in the treatment start between patients with a prenatal diagnosis (mean of 9.9 days) and those diagnosed after birth (mean of 30 days). This delay was marginal in our study, the reason may be easy availability of orthopedicians. As the study was done at the tertiary center of the urban area, all deliveries are hospital deliveries, so early and timely referral is possible.

The average number of casts required for CTEV correction by Ponseti technique ranges from 5 casts to 10 cast with mean value of 6.6^[8]. The average number of the cast required in group with antenatal diagnosis is 6.67 days which is comparatively higher than the other group where the antenatal diagnosis couldn't be done. This may be due to delay in intervention due to lack of preparedness.

Conclusion

CTEV is male predominant deformity. There is variation in the diagnosis of CTEV in antenatal scan; this may be due to inappropriate timing of scan, lack of suspicion in normal pregnancy and in adequate training. The early diagnosis definitely helps in early correction of deformity and avoidance of surgical intervention.

Though antenatal diagnosis has not much impact in urban areas where diagnosis in the labor room can be made and immediate referral is possible. But, in rural areas with lack of specialty services, seeking treatment may be delayed due to many issues (travelling, financial, social), antenatal diagnosis can help in preparing parents for the intervention earliest.

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