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Management of Idiopathic Congenital Clubfoot at the Yaoundé Central Hospital

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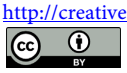

Abstract

Introduction: Congenital clubfoot (CCF) is a complex foot deformity combining varus, cavus, adduction and equinus. The Ponseti method is currently the gold standard treatment. The aim of our preliminary work was to assess the management of this condition at Yaoundé Central Hospital. **Method:** Over a period of ten years, in the paediatric surgery department of Yaoundé Central Hospital, we conducted a cross-sectional, descriptive study including all patients with idiopathic CCFEV (ICCFEV) treated using the Ponseti method. We focused on epidemiological, diagnostic, therapeutic and prognostic aspects. **Results:** Mean annual frequency was 2.1 patients, 61.9% of whom were boys, with an average age of 107 days. The diagnosis was clinical only. The condition was bilateral in 71.4% of cases, with the right side being predominant. A malformation association was found in 14.3% of cases. The Ponseti method was the treatment of choice, resulting in plantigrade walking in 85.7% of cases. Residual varus was the most common complication. **Conclusion:** ICCFEV at YCH affects male infants with a bilateral form of clinical diagnosis, treated using the Ponseti method with convincing results.

Keywords

Congenital Clubfoot (CCF), Yaoundé Central Hospital (YCH)

1. Introduction

Clubfoot is a congenital foot abnormality involving internal cavus, adduction of

the forefoot, varus deformity of the foot and equinus deformity [1]. According to Ponseti, although the rate varies from country to country, its incidence is 1 to 2 births per 1000 live births [2]. Congenital clubfoot varus equinus affects boys more than girls, with a sex ratio of 2:1. Unilateral forms are the most common (58%), with the right foot being the most affected [3]. Although the diagnosis is clinically obvious after birth, antenatal diagnosis between 18 and 28 weeks of pregnancy is possible through obstetric ultrasound. An MRI scan may be considered in cases of complex abnormalities [4]. There is a range of scores for assessing the severity of the condition, the best known of which are the Pirani score and the Déméglio score [5] [6]. The treatment of idiopathic congenital clubfoot has evolved over time, from ancient times to the 20th century, with the introduction of the Ponseti method (1960), which has become the gold standard [7]. It is easy to perform and economical. It therefore seems well suited to our socio-economic environment. The aim of our study was to review the management of congenital clubfoot in the paediatric surgery department of Yaoundé Central Hospital.

2. Patients and Methods

We conducted a cross-sectional, descriptive study in the paediatric surgery department of Yaoundé Central Hospital over a 10-year period, from January 2015 to December 2025. It focused on paediatric patients treated for idiopathic congenital clubfoot (ICCF) until they were able to walk (n = 29). Patients who were lost to follow-up (n = 2), those undergoing treatment (n = 3) and those who refused to participate in the study (n = 3) were excluded.

The data collected for this study were epidemiological [annual frequency, age at diagnosis, sex], diagnostic [antenatal diagnosis, severity of the condition according to the Pirani score (**Table 1**), bilateral or unilateral form, laterality of the condition, associated malformations], therapeutic [orthopaedic or surgical measures, average number of casts or surgical procedures per patient] and prognostic [follow-up, plantigrade gait, complications]. We considered plantigrade gait to be indicative of a good prognosis.

Table 1. Pirani score.

Parameters	Mild	Moderate	Severe
Forefoot			
Lateral edge curvature	0	0.5	1
Median groove	0	0.5	1
Prominent talus head	0	0.5	1
Hindfoot			
Posterior groove	0	0.5	1
Stiffness of the equinus	0	0.5	1
Hollow heel	0	0.5	1

Our sampling was consecutive and patient anonymity was respected. Our data were processed using Excel and SPSS.

3. Results

Twenty-one cases of idiopathic congenital clubfoot were collected. This represented an average annual frequency of 2.1 cases. There were 13 boys (61.9%) and 8 girls (38.1%).

The average age at diagnosis was 107 days, with extremes of 4 days and 2 years. No antenatal diagnoses were reported.

In terms of diagnosis, 15 cases were bilateral (71.4%) and 6 cases were unilateral (28.6%), with the right foot being the most affected (4 out of 6 cases, or 66.7%). There were no antenatal diagnoses.

The condition was severe in 13 patients (61.9%) (Figure 1) with a total Pirani score ≥ 4 and moderate in 8 patients (38.1%) with a score of 2 to 3.

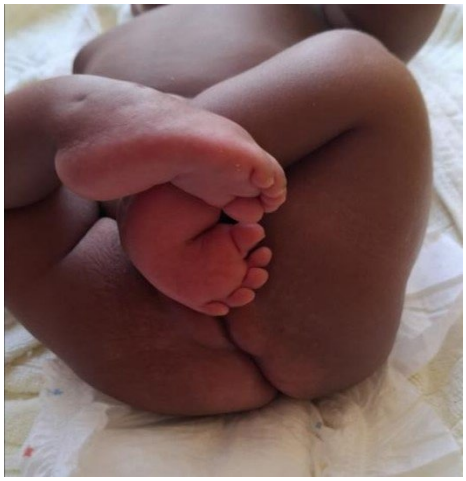

Figure 1. ICCFEV in a 2-week-old newborn. (YCH photo library).

A malformation association was found in 3 patients (14.3%) consisting of polydactyly of the hands, congenital heart disease and Aitken I omphalocele (Table 2).

Table 2. Distribution according to existence of associated malformations.

Associated malformations	Polydactyly of the hands	1	14.3%
	Congenital heart disease	1	
	Omphalocele Aitken 1	1	
None		18	85.7%

Therapeutically, the only method used was orthopaedic treatment using the Ponseti method. The average number of corrective casts was 7.2, ranging from 6 to 10 casts. With an average follow-up of 5 years and 8 months, ranging from 11

months to 9 years and 10 months, 18 feet (85.7%) were plantigrade and 2 feet were onguligrade (9.5%). One complication was found in 4 patients (19%), dominated by 2 residual equinus deformities, one residual varus deformity and one recurrence that required a repeat Ponseti procedure.

4. Discussion

The average annual frequency of 2.1 cases found in our series is similar to that reported in Africa by Anozzie *et al.* in Nigeria [8] and Kiggundu *et al.* in Uganda [9]. This frequency seems low to us because there is a specialised centre for disabled people, although it is not paediatric, where these children are mainly referred, due to a lack of knowledge of the specialty (paediatric orthopaedics), which is just starting up in our centre. Furthermore, in Europe, authors report a prevalence of 0.7 to 1.1 per 1000 births [10]. However, in India, Argawal *et al.* report an incidence of 2 to 3 per 1000 births in rural areas, which are characterised by limited access to quality medical care [11]. We believe that this low prevalence in Europe is correlated with effective antenatal diagnosis and the possibility of elective termination of pregnancy, which is well developed in these countries.

The average age at diagnosis was 107 days in our series, which is similar to Africa, where it is 180 days in Nigeria and 150 days in Uganda [8] [9]. In these African areas, access to care, cultural beliefs, stigmatisation, and insufficient awareness of this condition are factors that influence the timing of consultation. In contrast, in the United States and the United Kingdom, the median age at diagnosis is very low (30 to 60 days) due to the existence of early screening programmes with immediate treatment in various hospital settings [11].

The absence of prenatal diagnosis of PBVEC in our series could be due to the lack of experience of medical imaging practitioners in diagnosing this condition, or to insufficient technical facilities, especially in rural areas, and also to the fact that in some imaging centres, ultrasounds are not always performed by specialists trained in this field. This is responsible for the exclusive postnatal diagnosis [8].

The predominance of bilateral forms could explain why ICCFEV, far from being a malformation, is in fact a deformity, generally resulting from a malposition of the foetus during its development. The right-sidedness found in most of the literature cannot be explained. The same applies to the existence or absence of associated malformations.

The Ponseti method is the only treatment used, as it is the gold standard for this condition. Its low cost is well suited to the economic circumstances of the families in our series.

With plantigrade walking in 85.7% of cases, our study confirms the effectiveness of the Ponseti method in the management of congenital clubfoot, as reported in most of the literature. The average number of casts in Europe is 5.56 [12]. The high plaster cast average in our series is due to dermatitis developing in one patient and a wound in another, which led to the procedure being temporarily halted and resumed once these had healed.

As reported in all the literature, non-compliance with wearing orthoses appears to be a risk factor for recurrence and all the complications observed.

5. Conclusion

ICCFEV at HCY concerns male infants diagnosed postnatally with a bilateral form treated using the Ponseti method with convincing results. Success depends on strict adherence to the treatment protocol and wearing the Denis Brown splint.

Conflicts of Interest

The authors declare no conflicts of interest in relation to this article.

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