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Lehila Bagnan Tossa, [Gilles Bognon](#), Annatou Yakoubou,
Francis Lalya, Marcos Doussoh

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Seizures in Children in the Lagoon Mother and Child University Hospital Center (CHUMEL) of Cotonou: Community Practices and Risk Factors for Death in Benin

Lehila Bagnan Tossa¹, Gilles Bognon², Annatou Yakoubou³, Francis Lalya¹, Marcos Doussoh³

¹University Clinic of Pediatrics and Medical Genetics of the National Hospital and University Center Hubert K. MAGA of Cotonou, Cotonou, Benin

²Pediatric of the University and Departemental Hospital Center of Ouémè-Plateau, Porto-Novo, Benin

³Pediatric Ward of the Lagoon Mother and Child University Hospital Center of Cotonou, Cotonou, Benin

Email: tossabagn@yahoo.fr

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Abstract

Introduction: The experience of convulsions is full of myths in our socio-cultural context. **Objectives:** To determine the frequency of seizures, to identify community practices in the care of seizures and the death risk factors. **Methods:** We conducted a prospective, descriptive and analytical study between April and August 2015 in the pediatric ward of the Lagoon Mother and Child University Hospital Center (CHUMEL) of Cotonou. We included children aged from 1 month to 15 years old hospitalized for either febrile or non-febrile convulsions happened at home. **Results:** A total of 102 cases of convulsion were included, 11.3% of hospitalizations. These were mostly children under 5 years, 87/102 (85.3%). Traditional resuscitation procedures were performed on 81 children (79.4%). They consisted of the forced introduction of objects in the mouth in 46 cases (46.1%), the oral administration of various products in 39 cases (38.2%), the ocular instillation of products in 10 cases (9.8%). Nineteen bodily injuries were found. The lethality was 15.8%. The risk factors for death identified were the use of traditional healers and the delay in consultation. **Conclusion:** The high frequency of seizures, the severity of seizures, the harmful traditional practices performed, and the delay to consultation require to strengthen the education of the population.

Keywords

Seizures, Traditional Resuscitation, Child, Benin

1. Introduction

Seizures are a common reason for consultation and hospitalization in pediatric wards. They constitute a potentially serious pediatric emergency [1] [2]. The problem of convulsions lies neither in their frequency nor in their recognition, both known. It exists rather in the research of the etiology which conditions the therapeutic management. In west Europe, 5% to 9% of children experience at least one febrile convulsion within their first 5 years. In Africa, febrile convulsions are the most frequent because of the prevalence of infectious pathology including malaria. The management of convulsions varies from one country to another, considering differences in the environment, medical density and those relating to socio-cultural and economic implications. In our socio-cultural context, seizures look like supernatural causes [3] [4]. The crisis is always described by a symbolism that refers to epilepsy, which in Africa, is a socio-cultural origin of disease, not medical thereby priority use of traditional treatments whose practices are often harmful [5] [6]. According to a study conducted in 2003 in the pediatric department of the Cotonou CNHU, certain harmful community practices have been reported [6]. This study, carried out in the Pediatric Ward of the Lagoon Mother and Child University Hospital Center (CHUMEL), aimed to contribute to the improvement of the management of convulsions, to determine their frequency, and to identify community practices and risk factors for death.

2. Patients and Methods

It was a prospective study referred descriptive and analytical conducted from April 1st to 15th of August 2015 in the Pediatric Service of the CHUMEL, a teaching hospital.

Children aged between one month and 15 years admitted to the pediatric emergencies then hospitalized for either febrile or non-febrile seizures which happened at home and whose parents agreed to participate in the study were included. Children with hospital onset of seizures were not included.

The variables studied were:

- Socio-demographic: age, sex, ethnicity, religion, and mother's educational level.
- Clinical: admission mode, seizure's description, bodily injury following traditional resuscitation practices, elapsed time before presenting to the pediatric emergency department.

Care taking before admission: the therapeutic route, the gestures of resuscitation and the cult practices and the evolution.

The collection technique was interview and direct observation. Our sources of data included service records and medical files. The data was collected using a questionnaire analyzed and processed in Excel and using the SPSS21 software. The comparison of the proportions was made using the Chi2 and exact Fischer test. *p* value less than 0.05 was regarded as statistically significant.

The anonymity and confidentiality of the data have been respected.

3. Results

Sociodemographic characteristics of the study population

During the study period, 903 children from 1 month to 15 years were hospitalized, among them 102 children meeting the inclusion criteria were identified, that corresponds to 11.3% of hospitalizations.

There were 51 boys (50%) and 51 girls (50%). The average age was 36 months, extreme (2 months and 132 months). Children under 5 years were the most numerous with 87/102 cases (85.3%). The children were of Christian parents in 79 cases (77, 5%), Muslim in 9 cases (8.8%) and animist in 14 cases (13.7%).

The education level of mothers was the primary education level in 45 cases (44.2%), secondary in 19 cases (18.6%) and higher in 5 cases (4.9%). In 33 cases (32.3%), these were out-of-school mothers.

Clinical features of the study population

- Mode of admission

Seventy-one children (69.6%) received in the pediatric emergency department were referred from peripheral medical centers. Nineteen children (18.6%) stayed with a traditional practitioner or in a church, and 12/102 (11.7%) came directly from home to the pediatric ward of the CHUMEL.

- Description of crisis

The seizures were associated with fever in 98% of cases. Generalized tonic and tonic-clonic seizures were described in 54/102 (53%) of patients, focal seizures in 17/102 (16.7%) and ocular revulsions in 31/102 (30.3%).

- Traditional resuscitation gestures

The children had several traditional resuscitation procedures performed by the parents as shown in **Table 1**.

- Injuries secondary to the traditional resuscitation

Nineteen children (18.6%) presented damages secondary damage to a traditional resuscitation gesture. Each child had one or more injuries at a time. The most affected body part was the head as shown in **Table 2**.

- **Delay before consultation at CHU-MEL**

The average pediatric emergency consultation time was 48 hours, range (1 hour and 96 hours) as shown in **Table 3**.

- ✓ Evolution

The evolution was favorable for 83 children (81.4%), 16 children (15.7%) died and two children were released against medical advice.

Relationship: Care pathway and evolution:

The relationship between care pathways and evolution showed that the risk of death was five times higher for children who went to traditional healers or to church (**Table 4**).

- Relationship between the consultation period and the evolution of children

At a delay of more than 72 hours, the risk of death was much greater ($p = 0.001$) (**Table 5**).

Comments

The hospital frequency estimated at 11.30% in this study shows that seizures constitute a major public health problem. Frequencies higher than ours were reported in our country by Alao *et al.* in 2011 with 16.88% [7] in Cotonou and by Adédémé in Parakou in 2011 with 14.99% [8]. The differences in frequency between these studies are related to the study population and design. In our work, the non-inclusion of convulsions that occurred during hospitalization is one of that. Results from African studies are similar to our data with frequencies varying from 7% to 23% [3] [4] [5] [7] [9] [10] [11].

Table 1. Distribution of children according to the procedures of resuscitation undergone before admission.

Traditional resuscitation gestures ¹	Staffs	Percentages (%)
Slaps or pressure on part of the body	78	76.4
Forced introduction of finger or objects in the mouth	47	46.1
Oral administration of various products ²	39	38.2
Instillation of various products in the eyes ³	10	9.8
Water spraying (cold) to the face and wet wrap	9	8.8
Whole-body application of various products ⁴	5	4.9
Instillation of traditional powder in the nostrils	1	0.09
Application of hot metal on the body	1	0.09

¹Gestures were isolated or associated; ²Oil of cod liver, palm nut, olive (n = 14), herbal teas (n = 11), honey, sugar, lemon (n = 9), holy salt water (n = 5); ³Salt salt water, lemon juice, menthol products; ⁴Cod liver oil, traditional ointment, menthol products, blessed perfume.

Table 2. Distribution of children according to injury secondary to traditional resuscitation.

Topographies*	lesions	Effective
Eye damage	Conjunctivitis	7
	Periorbital edema	4
Oral impairment	Edema and wounding of the lips	9
	Injury of the tongue	2
	Dental avulsion	3
Attack of the face	rash and swelling of the cheeks	5
Other	Skin wounds/nail strokes 2nd degree burn	3

*The topography of the lesions was isolated or associated.

Table 3. Distribution of children according to the time of consultation between the occurrence of the crisis and admission to the CHUMEL.

Consultation time	Effective	Percentage
Less than 24 h	58	56.9
24 - 72 h	37	36.3
More than 72 hours	7	6.8
Total	102	100

Table 4. P arches of care and evolution of children.

Care paths	Evolution of children			p	OR IC 5%
	Death	Favorable			
Traditional healers					
Yes	5	7		0.020 ¹	5.13 [1.39 - 19.0]
No	11	79			
Celestial, Evangelical Church					
Yes	2	5		0.669 ¹	0.97 [0.09 to 5.25]
No	14	81			
Peripheral center					
Yes	8	57		0.214 ²	0.51 [0.15 to 169]
No	8	29			

¹ = exact Fischer test; ² = Pearson chi2 test.

Table 5. Relationship between the consultation period and the evolution of children.

Consultation time	Evolution of children			p	OR IC 95%
	Death	Favorable			
>72 h	5	5		0.001	19.09 [2.6; 211.6]
≤72 h	11	84			

Seizures are more common in children under 5 years of age in malaria endemic areas, with malaria being the leading cause of morbidity in this age group [7]. In Benin, malaria counts for 80% of the causes of convulsions in children [7] [8].

Seizures predominate in children of mothers with low education and low socioeconomic status as already reported [7] [8]. The corollary is the practice of so-called traditional resuscitation gestures whose harmful effects were found in this study like injuries, as reported by Jarett, O. *et al.* in Nigeria [12].

The use of traditional resuscitation practice is a known fact in Benin [6]. These practices have been reported in sub-Saharan Africa, particularly in Côte d'Ivoire, Togo, Mali, Nigeria, Senegal and Malawi [9]-[16], as well as in India [17] [18] [19].

Those practices are linked to the perceived social and cultural dimensions of seizures by the population living in Cotonou and broadly in Benin [6] [20]. The belief that witchcraft and curse could be diseases' origin is more common in Benin than France [5] wherein Moretti had described more rational seizures' management practices at home. Those adequate practices included: putting the child in security lateral position in 36% of the cases, intra-rectal diazepam administration (40%), phone call to a medical emergency unit within 18 minutes [3]. It's unanimously reported in the literature that traditional resuscitation practices are due to parents fearing occurrence of the child's death. The absolute objective is then to keep the child alive whatever he cost. This will cause

the parents inflicting to the child all kind of pain in order to prevent him from “closing his eyes or mouth for good” or losing his sensitiveness.

Oral aggression with objects introduction into the mouth has been described in Nigeria where a rate of 61.2% was found and in China with a rate of 40% [13] [16]. Eyes aggression with irritants product instillation has resulted in conjunctivitis, but more severe lesions with sequelae like blindness have been described [6] [12]. The less common practices were burns, found in one child. This rate is much lower than the literature data where it ranged from 1.4% to 8% [6] [12]. Oral administration of various products such as herbal mixtures preparations, cod liver oil, palm nut oil, or honey during the crisis or the post-critical coma have been described by other authors both Beninese and foreign [6] [8] [12]. This practice is in line with the many virtues attributed rightly or wrongly to products traditionally used to lower fever, stop seizures or put the child to sleep. In Nigeria, the same practice has been twice as implemented [13]. The most used product was a mixture of cow or human urine with tobacco leaves, onion, basil leaves, lemon juice and salt. This mixture has been described as a poison since 1975 and can cause hypoglycaemia, hypotension, respiratory distress and seizures [21]. This practice therefore entails risks of intoxication. In addition, a risk of inhalation pneumopathy related to this practice has been described [3].

The convulsive child suffers not only from his illness but also from the abuse he is subjected to by ignorance of society. Traditional resuscitation bad practices can thus worsen the patients’ evolution and prognosis. The solution is firstly, to adequately train the medical and paramedical staff for a correct management of seizures. Secondly families and the general public should be educated for a less dramatic perception of seizures.

The educational facilities are numerous and efficient if used wisely. Also, before considering the seizures from the medico-social angle, it would be necessary to demystify this symptom.

The severity of seizures is explained by high lethality (15.7%). The factors associated with death were the visit to a traditional healer and the delay in the consultation.

To reduce the lethality of convulsions in our socio-cultural context, we should organize strategies of education for the population through well-codified programs on good practices to adopt with the participation of health professionals, psychologists and sociologists as done in China [22].

4. Conclusion

Community practices of traditional resuscitation in the face of seizures are still a reality. They are very physically violent and, and responsible for a still high lethality in children, especially the under 5 years. It is important to educate people by strengthening campaigns during immunization sessions and the use of mass media among others.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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