

Treatment of the Convulsive Condition at the Resuscitation Department of Teaching Hospital Aristide Le Dantec

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Abstract

Original Research Article

Background: The condition of convulsive status epilepticus poses many practical and theoretical difficulties. It requires precise and rigorous care. First cause of neurological emergencies, the symptomatic resuscitation of the condition of convulsive status epilepticus is an emergency that aims to maintain vital functions and must be started in prehospital care. **Objectives:** to specify the epidemiological and etiological characteristics and the difficulties of management of convulsive states in the exercise conditions in Senegal. **Materials and methods:** Retrospective and descriptive study conducted at the Aristide Le Dantec University Hospital in Dakar between January 1st, 2012 and December 31st, 2013. **Results:** Thirty-three cases of convulsive status epilepticus were collected in the intensive care unit. Etiologies were distributed as follows: 57.5% eclampsia, 39.4% epilepsy and 3.1% hypertensive crisis. Several therapeutic protocols have been introduced as soon as the patient receives the etiology. Patients with mechanical ventilation accounted for 45.45%. Death rate was 33.3% and average duration of resuscitation was 6 days.

Keywords: Convulsive condition - Resuscitation - Protocols – Senegal.

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INTRODUCTION

The condition of convulsive status epilepticus is an emergency often poorly supported in developing countries because of insufficient staff, equipment and medicines. It is a common cause of neurological emergencies in intensive care. Mortality is lower in children than in adults. The high frequency of secondary etiologies predisposes a number of patients to present a state of convulsive status epilepticus. It was the subject of expert's work in 2008 under the auspices of the French Language Resuscitation Society [1]. The convulsive status epilepticus remain a major factor of morbidity and mortality. Variable mortality rates of 0 to 19% are reported worldwide according to etiology, time of care and available therapeutic means [2-4]. Symptomatic resuscitation is an emergency that aims to maintain vital functions and must be started on prehospital care by a medical team.

In the majority of developing countries, the therapeutic means are limited to injectable diazepam and / or phenobarbital, with varying efficiencies [5, 6]. However, thiopental, clonazepam and magnesium sulphate are being used more and more in our resuscitation units. The lack of accessibility and / or availability of the means of assisted ventilation and intensive resuscitation constitute considerable factors of

morbidity and mortality, but especially of transfer to referral units of resuscitation. This work aims to specify the epidemiological and etiological characteristics, and the difficulties of management of convulsive status epilepticus in our exercise conditions. This is why a retrospective study was conducted from the records of patients received for a state of bad convulsion at the Aristide Le Dantec University Hospital in Dakar.

PATIENTS AND METHODS

This is a retrospective, descriptive and analytical study whose recruitment took place from January 1st, 2012 to December 31st, 2013. Were included in the treatment all patients hospitalized at the resuscitation of the hospital Aristide Le Dantec for a condition of convulsive status epilepticus. The diagnosis was made on the basis of generalized or partial seizures with or without loss of consciousness, evolving for a variable time depending on the case, without complete cessation or cessation not exceeding two minutes. The parameters analyzed from the files and from the monitoring and resuscitation treatment sheets were: epidemiology, etiologies, management and evolution. Medical information carriers were used in medical records and resuscitation and structural transfer treatment records, patient evacuation records, admission and treatment records for biological and medical

imaging patients. The word processing was done with the Microsoft WORD software, the data analysis with the EPI Info software version 3.5.4 and the tables with the Microsoft Office EXCEL software.

RESULTS

From January 1st, 2012 to December 31st 2013, 33 cases of convulsions were collected in the

intensive care unit at Aristide Le Dantec hospital. The majority of patients were young with an average age of 24 years, a standard deviation of 10.5 and extremes of 3 years and 54 years old. Female sex was predominant with a ratio of 0.03. The majority of our patients, 75.8%, were married women with mid socioeconomic status. 78.79% had no history (see Table I).

Table-I: Repartition of patients according to past medical history

Past medical history	Number	Percentage (%)
Absence seizures	26	78,79
Epilepsy	3	9,09
Hypertension	1	3,03
Chronic renal disease	2	6,06
Mental disorders	1	3,03

The delay in the care was relatively long for some patients and short for others ranging from one day to 3 days. 63.6% of the patients came from Dakar Suburbs, 24.5% from Dakar Center and 11.9% from outside Dakar. Transportation was non-medical for 72.7% of patients transferred to intensive care. The etiologies were dominated by eclampsia (57.5%) followed by epilepsy (39.4%) and hypertensive

emergencies (3.1%). 97% presented generalized tonic-clonic seizures. Injectable diazepam was used in all patients with doses ranging from 5mg to 10mg intravenously or intramuscularly repeated as needed. This treatment was associated with magnesium sulfate in all eclamps. Several organ failures have been noted in our patients (see Table II).

Table-II: Repartition by type of organ dysfunction

Organ dysfunction	Types	Percentage (%)
Neurological	Disorders of consciousness	36,36
	Babinski reflex and hemiplegia	6
	Motor deficit	3
Respiratory	ALI	39,39
	ARDS	12,12
Renal	Oliguria	15,15
	Anuria	21,21
Hemostasis	Thrombocytopenia	15,15

ALI: Acute Lung Injury

ARDS: Acute Respiratory Distress Syndrome

Management in intensive care consisted of monitoring (ECG, SpO₂, HR, PANI), establishment of a peripheral venous route or central venous route, respiratory and hydro-electrolytic resuscitation and protection of hyperthermia. All patients benefited from standard assessments: blood glucose, blood ionogram,

blood count. Some have, according to their age, antecedents and etiology, made a calcemia, an electrocardiogram, an infectious balance or a tomodensitometry. Patients with mechanical ventilation accounted for 45.45%. Several therapeutic protocols were introduced upon patient arrival (see Table III).

Table-III: Therapeutic protocols

Protocol by etiology	Percentage (%)
Diazepam in association with phenobarbital	33,1%
Bolus of diazepam in association with magnesium sulfate (power syringe)	39,4%
Clonazepam in association with magnesium sulfate (power syringe)	18,1%
Clonazepam with phenobarbital	09,1%
Thiopental (power syringe) in association with phenobarbital and Depakine	03%

The patient who received thiopental presented a state of refractory convulsion. Other treatments have been associated with these protocols in particular: anti-H₂, analgesic, basic intakes, feeding by nasogastric tube, prevention of thromboembolic disease and

postpartum antibiotic therapy. The evolution was favorable in 66.7% of the patients with transfer in their service of origin. However, 33.3% of the patients, one-third, had septic shock complications on mechanically ventilated pneumonitis in 21.2% and multi-organ failure

in 12.1%. All patients who presented complications died. The average duration of resuscitation was 6 days with extremes of 1 day and 28 days.

DISCUSSION

The condition of convulsive status epilepticus, by far the most frequent, is usually of easy diagnosis. In the majority of cases, the incidence is higher in epileptic patients, young children and the elderly, but almost half of the cases occur in an epileptic patient [7]. The young age of the majority of our patients reflects the incidence of convulsions and is correlated with the youth of the Senegalese population [8]. In addition, the incidence of eclampsia at the young age of the parturients [9] increases, especially since it represents more than 50% of the etiologies of our study. Epilepsy is the second etiology with 39.4%. This is found in the works of Mbodj [8] with a lower percentage. In the work of Goulon [10], the vast majority of patients, 71.3%, had no history of epilepsy. The etiologies of the states of symptomatic pain have been very varied. These results overlap those of the previous publications; the states of symptomatic pain are much more frequent than the states of evil in known epileptics. Most of our patients had mostly respiratory organ failures.

Engrand in his work described several complications related to the state of convulsive illness [11]. We found a predominance of generalized seizures while most studies showed other types of seizures [12-14]. The condition of convulsive status epilepticus must be quickly identified and supported according to pre-established protocols, developed by the teams to take care of patients. Close collaboration between emergency medical specialists, resuscitators, electrophysiologists and neurologists is essential. All our patients received anticonvulsant therapy. This treatment varies according to the etiology. All eclamps were put on diazepam and magnesium sulphate. In many studies, clonazepam and lorazepam are the most commonly used [1, 15, 16]. In our study, rare are the patients who benefited from it and this is due to the unavailability of these products. However, the magnesium sulphate used in our study is the reference treatment in eclampsia [9, 17]. The other patients received diazepam and phenobarbital. This association is found in many works [5, 18]. The epileptic patient who presented the state of refractory convulsion was the only one to receive thiopental at power syringe associated with phenobarbital and depakine [1]. The electroencephalogram (EEG) indicated in this state of refractory convulsive illness [19, 20] was not made due to unavailability of the device in our structure. However, it should be noted that the precise indications of EEG monitoring and its impact, in intensive care, on the therapeutic management remain to be clarified [21]. All patients under mechanical ventilation or 45.45% had organ failures and / or a state of refractory convulsion. Several shortcomings are related to the delay in the care, the unsafe transport of some patients,

the unavailability of therapies and equipment and the lack of qualified personnel in the centers of origin. Mbodj noted a long delay between the onset of clinical manifestations and management in a university-hospital setting, with an average delay of 16.6 hours [8]. In our study the average time was 24 hours. "The mortality goes from 2.7% for a crisis of one hour to 32% beyond one hour" said Martin Savard. More than a third of patients, 66.7%, have well evolved. Several complications noted are related to mechanical ventilation including pneumopathies acquired under mechanical ventilation that evolved to a state of septic shock in 21.2%. This rate is found in the work of Aranda [22]. The others are constituted by the multivisceral failures. The mortality varies from 7.6 to 39% and is influenced by the consideration of anoxic encephalopathies and the quality of the initial care. This mortality implies a codified therapeutic strategy that may depend on the definition and classification of the state of convulsive illness. By definition, a state of convulsive status epilepticus is an epileptic seizure that lasts or repeats at short intervals without regaining consciousness. The time required to talk about it in the situation of a crisis that does not stop is more debated [7]. In Nouailhat's work, the 36% mortality corresponds exclusively to the secondary states of the disease, which indicates the determining prognostic incidence in the underlying cerebral lesions [23]. The mortality rate in our study was 33.3% close to that of Nouailhat and was related to delayed management and nosocomial infections. The best prognosis is due to the simultaneous application of new anti-epileptic drugs and resuscitation measures associated with etiological treatments.

CONCLUSION

The convulsive status epilepticus is a real emergency whose management must be early and the initial therapeutic strategy must be rapid and rigorous. Pre-established protocols are essential for better management. The refractory case and the non-observance of the therapeutic protocol and the severe sepsis predict the prognosis [24]. These are all cyclical factors that must be taken into account, alongside preventive medical (primary and secondary) and therapeutic convulsions in general to improve the vital and functional prognosis still serious.

REFERENCES

1. Outin H, Blanc T, Vinatier I. Prise en charge en situation d'urgence et en réanimation des états de mal épileptiques de l'adulte et de l'enfant (nouveau-né exclu). Recommandations formalisées d'experts sous l'égide de la Société de réanimation de langue française. *Réanimation*. 2009;1(18):4-12.
2. Logroscino G, Hesdorffer DC, Cascino G, Annegers JF, Hauser b WA. Short-term mortality after a first episode of status epilepticus. *Epilepsia*. 1997; 38: 1344-9.

3. Maharaj M, Henry D, Ali K, Mohammed PD. Status epilepticus. Recent experience at the Port-of-Spain General Hospital, Trinidad. *West Indian Med. J* 1992; 41: 19-22.
4. Senanayake N, Peiris H. Mortality related to convulsive disorders in a developing country in Asia: trends over 20 years. *Seizures*. 1995; 4: 273-7.
5. Osuntokun BO. Treatment of epilepsy: with special reference to developing countries. *Prog Neuropsychopharmacol*. 1979; 3: 81-94.
6. Singhi S, Banerjee S, Singhi P. Refractory status epilepticus in children: role of continuous diazepam infusion. *J Child Neurol*. 1998 ; 13 : 23-6.
7. Dupont S, Crespel A. États de mal épileptiques: épidémiologie, définitions et classifications. *Revue neurologique*. 2009 Apr 1;165(4):307-14.
8. Mbodj I, Ndiaye M, Sene F, Sow Salif P, Sow HD, Diagana M, Ndiaye Pierre I, Diop Gallo A. Prise en charge de l'état de mal épileptique dans les conditions de pays en développement. *Neurophysiologie Clinique/Clinical Neurophysiology*. 2000 ; 30(3) : 165-169.
9. Diouf AA, Diallo M, Mbaye M, Sarr SD, Faye-Diémé ME, Moreau JC, Diouf A. profil épidémiologique et prise en charge de l'éclampsie au Sénégal : à propos de 62 cas. *Pan African Medical Journal*. 2014 ; 16(1)
10. Goulon M, Levy-Alcover MA, Nouailhat F. Etat de mal épileptique de l'adulte. Etude épidémiologique et clinique en réanimation. *Revue d'électroencéphalographie et de neurophysiologie clinique*. 1985 Apr 1;14(4):277-85.
11. Engrand N, Demeret S, Savart D, Clair B. Prise en charge non spécifique de l'état de mal convulsif. *Revue Neurologique*. 2009 ; 165(4) : 348-354.
12. Cascino GD, Hesdorffler D, Logroscino G, Hauser WA. Morbidity of nonfebrile status epilepticus in Rochester, Minnesota, 1965-1984. *Epilepsia*. 1998 ; 39 : 829-32.
13. Goulon M, Levy-Alcover MA, Nouailhat F. Etat de mal épileptique de l'adulte. Etude épidémiologique et clinique en réanimation. *Revue d'électroencéphalographie et de neurophysiologie clinique*. 1985 Apr 1;14(4):277-85.
14. Hayakawa T, Sato J, Hara H, Murakami F, Goto T, Fukuyama Y. Therapy and prognosis of status convulsivus in childhood *Folia. Psychiatr Neurol Jpn*. 1979; 33: 445-56.
15. Meierkord H, Boon P, Engelsens B, Göcke K, Shorvon S, Tinuper P, Holtkamp M. EFNS guideline on the management of status epilepticus in adults. *European journal of neurology*. 2010 ; 17(3) : 348-355.
16. Outin H. État de mal épileptique convulsif généralisé de l'adulte en situation d'urgence et en réanimation. *La presse médicale*. 2009 Dec 1;38(12):1823-31.
17. Cissé CT, Diémé MEF, Ngabo D, Mbaye M. Indications thérapeutiques et pronostic de l'éclampsie au CHU de Dakar. *Journal de gynécologie obstétrique et biologie de la reproduction*. 2003; 32(3)-C1 : 239-245.
18. Diop AG, Ndiaye M, Diagne M, Thiam A, Sène-Diouf F, Diallo AK. Filière des soins antiépileptiques en Afrique. *Épilepsies*. 1998 ; 10 : 115-21.
19. Rossetti AO, Santoli F. Traitement pharmacologique de l'état de mal réfractaire *Revue Neurologique* April. 2009; 165 (4) : 373-379
20. Navarro V, Engrand N, Gélisse P. Place de l'électroencéphalogramme dans l'état de mal épileptique. *Revue Neurologique*. 2009 Apr 1;165(4):328-37.
21. Velly L, Pellegrini L, Bruder N. EEG en réanimation: quelles indications, quel matériel?. In *Annales francaises d'anesthesie et de reanimation* 2012 Jun 1 (Vol. 31, No. 6, pp. e145-e153). Elsevier Masson.
22. Valton L, Aranda A. Prise en charge des états de mal épileptiques généralisés de l'adulte en France en 2010. *Pratique Neurologique-FMC*. 2010 ; 1(2) : 151-156.
23. Nouailhat F, Levy-Alcover MA, Goulon M. Traitement de l'état de mal épileptique de l'adulte. Analyse rétrospective de 192 cas traités en réanimation. *Revue d'électroencéphalographie et de neurophysiologie clinique*. 1985 Apr 1;14(4):287-92.
24. Boumendil D, Negadi MA. Analyse de la mortalité hospitalière en réanimation des états de mal convulsifs: une cohorte de 441 enfants. *Revue Neurologique*. 2018 Apr 30;174:S61.