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Short communication

Adult convulsive status epilepticus in the developing country of Honduras

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ABSTRACT

Epidemiologic data on convulsive status epilepticus (CSE) is needed to develop preventative strategies. Epilepsy is one of the known risk factors for CSE. A systematic review of epidemiologic studies on status epilepticus (SE) completed in the United States and Europe reports that people with epilepsy account for less than 50% of cases of SE in all age groups. Less is known about the epidemiology of SE in developing countries including those in Central America.

A high incidence of epilepsy, widespread non-adherence to anti-epileptic drugs (AED), and common use of complementary and alternative medicines have been shown in all ages in the developing country of Honduras, Central America. In 2003, an epidemiologic study of CSE in Honduran children demonstrated it is common and exhibits a long duration until onset of treatment. The etiologies, treatment, and outcomes of CSE in Honduran adults have not been thoroughly studied. This study is a consecutive case series of 31 adult patients presenting with CSE to the adult medicine emergency department of the tertiary care "Hospital Escuela" in the capital city Tegucigalpa, Honduras. The majority (77.4%) of patients had a prior history of epilepsy. Non-adherence to AED was the most common etiology of CSE (75.0%). The mortality rate in this pilot CSE study was 14.8%, which is similar to studies from industrialized countries where mortality from status epilepticus ranged from 7.6 to 22% for all age groups. However, this rate is concerning given that CSE from epilepsy and AED non-adherence generally carries a good prognosis.

Improving AED adherence in this population appears to be the most effective approach in decreasing the rate, and possibly the mortality of Honduran adult CSE.

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1. Introduction

Epidemiological data on convulsive status epilepticus (CSE) is needed to develop preventative strategies.[1] A systematic review of the epidemiology of status epilepticus (SE) conducted in 2004 concluded that the incidence of SE varies greatly, but falls in the range of 9.9 to 41/100 000/year for all age groups.[1] The review also reported that people of all ages with epilepsy accounted for less than 50% of cases of SE. However, only studies from the USA, Germany, England, and Switzerland met inclusion criteria.[1] Less is known about the epidemiology of SE in developing countries, including those in Central America. Reasons for this include lack of investigators and funding for these studies, difficulty in defining a population due to scarcity of medical centers, and SE reviews that exclude studies from developing countries which failed to use International League Against Epilepsy (ILAE) classifications.

A high incidence of epilepsy and a high percentage of preventable causes of epilepsy in all ages have been shown in the developing country of Honduras.[2–4] Neurocysticercosis was the most common preventable cause found.[4] From 1999 to 2002, a survey of 135,126 Hondurans was conducted, and the mean incidence of epilepsy was found to be 104/100,000. This value ranged from 48 to 254/100,000 with regional variability.[2] In the

Abbreviations: CSE, Convulsive status epilepticus; SE, Status epilepticus; AED, Anti-epileptic drugs; ILAE, International League Against Epilepsy; IRB, Institutional Review Board; MUSC, Medical University of South Carolina; NAUH, National Autonomous University of Honduras; EEG, Electroencephalogram; NCSE, Non-convulsive status epilepticus.

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rural county of Salamá, Honduras, a study demonstrated a prevalence rate of 23.3/1000 and incidence rate of 92.7/100,000.[4] The incidence is much higher than the range of 30 to 50/100,000 reported in industrialized nations.[5,6] Complicating the treatment of these people with epilepsy is widespread non-adherence to anti-epileptic drugs (AED) due to AED unavailability, inability to pay for the AED, inadequate education, cultural beliefs, and the common use of complementary and alternative medicines.[7]

An epidemiologic study in 2003 examined CSE in children presenting to the children's tertiary care "Hospital Escuela Materno-Infantil" in Tegucigalpa, Honduras.[8] Of the 47 patients included in the study, the median duration of CSE was 95 min due primarily to long distances traveled before reaching the hospital for treatment. Morbidity and mortality were higher in children from rural locations.[8]

The etiologies, treatment, and outcomes of CSE in Honduran adults have not been thoroughly studied. In this prospective, consecutive case series, we aim to describe the etiologies, emergency department AED treatment, and short-term in-patient outcomes of adults 18 years and older from a developing country who present with CSE to a tertiary care emergency department in the capital city of Tegucigalpa, Honduras, Central America.

2. Methods

Adult patients with CSE were consecutively enrolled from November 2008 to May 2009. Institutional Review Board (IRB) approval of the study was obtained at the Medical University of South Carolina (MUSC) in Charleston, SC, USA, and the National Autonomous University of Honduras (NAUH) in Tegucigalpa, Honduras. Informed consent of each enrollee was signed before study participation.

2.1. Inclusion and exclusion criteria

All patients 18 years and older presenting to the NAUH Hospital Escuela adult medical emergency room during the defined study period during an on-going convulsive seizure equal to or greater than 5 min were included.[9–11] Patients who presented to the emergency department with seizures which were self-limited, and did not require emergent AED were excluded. The investigators did not seek IRB approval for the inclusion of pregnant women, prisoners, or institutionalized patients; therefore, these vulnerable populations were excluded.

2.2. Etiology

CSE etiologies were determined by history, laboratory testing, neuroimaging, and electroencephalogram (EEG). All CSE events were classified according to International League Against Epilepsy (ILAE) guidelines based on semiologic description.[12]

2.3. Emergency room and in-patient treatment

The 1st and 2nd line AED used to treat the CSE, and the time between CSE patient arrival to the emergency department and administration of the 1st AED were the primary treatment aims.

2.4. Emergency room and in-patient outcomes

The primary outcome measure was mortality. In-patient recurrence of seizures and CSE were also evaluated.

Table 1
Patient characteristics in 31 consecutive adults with convulsive status epilepticus when initially seen at Hospital Escuela adult medical emergency department in Tegucigalpa, Honduras.

Age in years	Gender	History of epilepsy	ILAE class	1st AED for CSE	2nd AED for CSE	Time from ED arrival to 1st AED	Recurrent in-patient Seizure	Recurrent inpatient CSE	Mortality
18	F	Yes	TC → SCSE	PHT	CLZ	420	No	No	No
20	F	Yes	C	DZP	CLZ	15	Yes	Yes	No
34	F	Yes	TC	DZP	PHT	5	No	No	No
31	M	No	TC	MDZ	MDZ	15	Yes	Yes	No
19	M	Yes	TC	PHT	DZP	20	NR	NR	NR
21	F	Yes	T	DZP	PHT	5	No	No	No
43	F	Yes	TC	DZP	PHT	30	Yes	No	No
52	F	Yes	TC	DZP	PHT	10	NR	NR	No
33	M	No	SCSE	DZP	PHT	10	NR	NR	Yes
39	F	Yes	TC	DZP	PHT	10	No	No	No
41	F	Yes	T	DZP	PHT	10	No	No	No
37	F	No	TC	DZP	PHT	10	NR	NR	No
22	M	Yes	T	DZP	PHT	5	No	No	No
20	F	No	TC	DZP	PHT	20	No	No	Yes
26	F	Yes	TC	DZP	PHT	10	NR	NR	NR
48	F	Yes	TC	PHT	PHT	30	No	No	No
28	M	No	TC	DZP	PHT	40	NR	NR	NR
42	F	Yes	T	DZP	PHT	5	Yes	Yes	Yes
71	M	No	TC	DZP	PHT	15	No	No	No
48	M	Yes	TC	DZP	DZP	5	Yes	Yes	Yes
23	M	Yes	TC	DZP	PHT	5	No	No	No
46	F	Yes	TC	PHT	PHT	30	No	No	No
28	F	Yes	TC	MDZ	DZP	10	No	No	No
28	M	Yes	TC	DZP	PHT	5	No	No	No
38	F	Yes	TC	PHT	PHT	NR	No	No	No
39	M	Yes	TC	PHT	None	10	No	No	No
43	M	Yes	TC	DZP	PHT	10	NR	NR	NR
64	M	No	TC	DZP	PHT	10	No	No	No
42	F	Yes	TC	DZP	PHT	5	No	No	No
20	M	Yes	TC	DZP	DZP	10	Yes	No	No
23	F	Yes	TC	DZP	PHT	10	Yes	No	No

ILAE, international league against epilepsy classification; AED, anti-epileptic drugs; CSE, convulsive status epilepticus; ED, emergency department; F, female; M, male; NR, not recorded; TC, tonic–clonic; SCSE, subtle convulsive status epilepticus; C, clonic; T, tonic; PHT, phenytoin; DZP, diazepam; MDZ, midazolam; CLZ, clonazepam.

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