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Status epilepticus in resource-poor countries

***†Charles R. J. C. Newton**

***Kenya Medical Research Institute, Kilifi, Kenya; and †Neuroscience Unit, Institute of Child Health, University College London, London, United Kingdom**

Status epilepticus is common in patients admitted to hospitals in resource-poor countries (RPCs). However, there appear to be differences in the epidemiology, etiology, and outcome of status epilepticus in these regions compared to high-income countries; although there are few data from the former regions.

RPCs are those classified by the World Bank as low income or middle-low income countries, and encompass those situated in the tropical and subtropical regions. The International League Against Epilepsy (ILAE) definition of status epilepticus (ILAE, 1993) is problematic in these areas, since patients often present to health facilities without adequate documentation of the duration of convulsion. Therefore, more pragmatic definitions have been developed (Sadarangani et al., 2008).

Most studies on status epilepticus in RPCs describe convulsive status epilepticus (CSE) (Misra et al., 2008; Sadarangani et al., 2008), since nonconvulsive status epilepticus is rarely detected in these regions. In only one study, nonconvulsive status epilepticus was detected in 11% of Indian adults with altered mental status (Narayanan & Murthy, 2007). The incidence of CSE appears to be higher in RPCs than in high-income countries, but there has been only one epidemiologic study conducted. In this study, the incidence of children fulfilling the ILAE definition of CSE who presented to a Kenyan District General Hospital was 35 per 100,000 per year, with 52 per 100,000 per year in children aged 1–11 months old. The incidence is higher if those with probable CSE are also included (268/100,000/year, with 108/100,000/year). These figures are likely to be an underestimate, since many children with CSE are not admitted to a hospital, either because convulsions are thought to be caused by cultural reasons, such as ancestors, or the children die before they reach a hospital. Therefore, the rate in this area of Kenya is at least 2–5 times that of a similar study in London, United Kingdom (Chin et al., 2006).

Address correspondence to Charles R.J.C. Newton, PO Box 230, Kilifi, Kenya. E-mail: cnewton@kilifi.kemri-wellcome.org

CSE appears to be more common in children than adults, mainly because acute symptomatic seizures or febrile status epilepticus is more common, particularly in RPCs (Tabarki et al., 2001; Sadarangani et al., 2008). A significant proportion of people with epilepsy in RPCs have an episode of CSE, usually in childhood and often as the first reported seizure. Therefore, in a cross-sectional study of active convulsive epilepsy in Kenya, 35% of those identified with active convulsive epilepsy had a history of prolonged seizures (probable CSE), of which 75% were associated with a febrile illness (Edwards et al., 2008). Consequently, the high incidence of acute symptomatic CSE in many RPCs may account for the increased incidence and prevalence of epilepsy in these regions.

The increased incidence of symptomatic CSE is attributed to the increased incidence of infections (Misra et al., 2008; Sadarangani et al., 2008). In malaria-endemic areas, malaria is an important cause of CSE in children (Sadarangani et al., 2008), whereas bacterial meningitis and viral encephalitis are important causes in other areas (Murthy et al., 2007). Patients appear to be in status for longer periods, although there are few reliable data on the duration of CSE in those presenting to hospitals. The increased duration may be due to the lack of treatment prior to admission to a hospital, inadequate treatment upon admission to a hospital, and/or a reduction in the responsiveness to the benzodiazepines.

The mortality associated with CSE in RPCs is greater (11–15%), both in adults (Murthy et al., 2007) and children (Sadarangani et al., 2008), but the long-term outcome in terms of premature mortality and neurocognitive sequelae is undetermined. Risk factors for mortality, that is, young age (<1 years), etiology (particularly bacterial meningitis), focal seizures and duration of seizure, are similar to those in high-income countries. The neurocognitive outcome of CSE appears worse, with 36% of Tunisian children having intellectual disability or epilepsy (Tabarki et al., 2001). The risk factors for neurocognitive impairment include young age (<1 year) and focal seizures (Sadarangani et al., 2008).

Many hospitals in RPCs, particularly those in rural areas, have few drugs to treat CSE, and many hospitals

do not have intensive care facilities with equipment such as ventilators, or sufficient staff to provide optimal management. The antiepileptic drugs are limited to benzodiazepines, particularly diazepam and phenobarbital. However, the response to diazepam appears poorer in many RPC, either because the patients present with seizures lasting many hours or possibly the etiology, such as malaria (Ikumi et al., 2008), makes them more resistant to these compounds. The treatment of CSE in RPCs is further complicated by the lack of rectal preparations of diazepam [parenteral preparation is often used, but has erratic absorption (Ogutu et al., 2002)] and lack of supply of parenteral phenobarbital (Wilmshurst & Newton, 2005). These issues may affect the outcome.

Therefore, CSE appears to be more common, with a worse outcome in RPCs than in the developed countries; however, at present, there are few data on which to determine the burden and propose recommendations of treatment in RPCs.

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