

SEIZURE DISORDERS

RISK OF MORTALITY AFTER STATUS EPILEPTICUS

Researchers at University College and Great Ormond Street Hospital, and other members of the North London Epilepsy Research Network investigated the mortality within 8 years following an episode of childhood convulsive status epilepticus and its predictors in a prospective, population-based study from north London, UK. The overall case fatality was 11%; 7 children died within 30 days of the episode of status and 16 during follow-up. The mortality rate was 46 times greater than expected in the reference population, and was predominantly due to pre-existing clinically significant neurological impairments at time of the episode of status. This was the only independent risk factor for mortality. Children without prior neurological impairment who survived status were not at increased risk of death during follow-up. No deaths occurred in children following prolonged febrile convulsions and idiopathic convulsive status epilepticus. One quarter of deaths during follow-up were associated with intractable seizures/convulsive status, and the remainder died as a complication of an underlying medical condition. The high risk of death within 8 years following childhood convulsive status epilepticus was generally not seizure related. The role of convulsive status on mortality remains uncertain, but is less than generally perceived. (Pujar SS, Neville BGR, Scott RC, Chin RFM, North London Epilepsy Research Network. Death within 8 years after childhood convulsive status epilepticus: a population-based study. **Brain** 2011;134:2819-2827). (Respond: Dr Rod C Scott, Neurosciences Unit, UCL Institute of Child Health, 4-5 Long Yard, London WC1N 3LU, UK. E-mail: rscott@ich.ucl.ac.uk).

COMMENT. Recovery after severe refractory status epilepticus and 4 months of coma is reported in a previously healthy 29-year-old man with no epilepsy risk factors who experienced 2 weeks of upper respiratory symptoms followed by lethargy, fever and vomiting with multiple generalized convulsions requiring intubation. Continuous EEG showed electrographic status epilepticus. The etiology was not identified. By 18 months post-illness, the main residual complications were contractures of distal limbs, attributed to phenobarbital, and refractory complex partial seizures. (Bausell R et al. **Neurology** Oct 14, 2011;77:1494-5). Refractory status epilepticus without severe brain injury should be treated aggressively, since a favorable outcome is possible.

TREATMENT OF SUPER-REFRACTORY STATUS EPILEPTICUS

Researchers at University College, Queen Square, London, UK have evaluated the world literature on the treatment of super-refractory status epilepticus (SRSE) and proposed a protocol and flowchart for management. SRSE is defined as status epilepticus that continues or recurs 24 hours or more after the onset of anesthetic therapy or after reduction or withdrawal of anesthesia. Stages of treatment are as follows: Stage 1. Early status; first 30 min; treat with iv lorazepam, iv or rectal diazepam; Stage 2. Established status; 30-120 min; treat with iv antiepileptic drugs, phenytoin, phenobarbital or valproate; Stage 3. Refractory status; >120 min; treat with general anesthesia (eg.

propofol, midazolam, or thiopental/pentobarbital); Stage SRSE; after 24 hours in status. Treatments used and recommended for SRSE include the following in this order: anesthetic agents and antiepileptic drugs, identify and treat the cause, magnesium infusion, iv pyridoxine, consider steroids and immunotherapy, consider resective neurosurgery in lesional SE, consider multiple subpial transection, hypothermia, ketogenic diet, transcranial magnetic stimulation, vagal nerve stimulation, consider deep brain stimulation, electroconvulsive therapy, drainage of cerebrospinal fluid, and older drug therapies. Treatment of the underlying cause is stressed. Premature withdrawal of therapy is discouraged, since recovery can occur after even weeks of status epilepticus. A multinational database of outcomes of individual therapies is urgently needed. (Shorvon S, Ferlisi M. The treatment of super-refractory status epilepticus: a critical review of available therapies and a clinical treatment protocol. **Brain** 2011;134:2802-2818). (Respond: Professor Simon Shorvon, Box 5, National Hospital for Neurology and Neurosurgery, Queen Square, London WC1N 3BG, UK. E-mail: s.shorvon@ion.ucl.ac.uk).

COMMENT. The authors offer an interesting review of the mechanism of super-refractory SE. A reduction in GABAergic activity is proposed as a reason for status epilepticus to develop and also for an increasing ineffectiveness of GABAergic drugs (such as benzodiazepines or barbiturates) in controlling status. Other reported proposed causes for SRSE include mitochondrial insufficiency, changes in extracellular ionic environment, inflammatory disease, opening of the blood brain barrier, and possible changes in gene expression. Emergency therapy directed at the cause is crucial in terminating the seizure. (Neligan and Shorvon, 2011).

HYPOTHALAMIC HAMARTOMAS AND GELASTIC EPILEPSY

Researchers at Stanford University and other neurological centers in the United States performed a retrospective review and analysis of the clinical presentation and neuroanatomical features of hypothalamic lesions in 100 cases of gelastic epilepsy. Age of seizure onset was 10.52 +/- 18.12 months. Preoperative brain MRI was delayed a mean of 133.2 +/- 126.7 months after reported onset of seizures. All patients had gelastic seizures; 68 had gelastic epilepsy plus other types of seizures, including partial and generalized. Four had infantile spasms. Cognitive or developmental impairment (IQ <70) occurred in 43% (28% of patients with gelastic seizures only and 50% of those with gelastic plus multiple seizure types; p=0.052). All patients had refractory seizures. Patients with gelastic seizures plus had significantly longer duration of epilepsy (p<0.001). Precocious puberty occurred in 23%. Patients with cognitive impairment and those with precocious puberty had significantly larger lesions involving the anterior and posterior hypothalamus, at the level of the mammillary bodies. (Parvizi J, Le S, Foster BL, et al. Gelastic epilepsy and hypothalamic hamartomas: neuroanatomical analysis of brain lesions in 100 patients. **Brain** 2011;134:2960-2968). (Respond: Josef Parvizi MD PhD. E-mail: jparvizi@stanford.edu).

COMMENT. Lesions causing gelastic seizures are all localized to the mammillary level of the posterior hypothalamus. The longer duration of the epilepsy determines the development of other seizure types.