Seizure 1998; **7**: 73–82

Abstract of posters presented at the International League against Epilepsy (British Branch) annual scientific meeting Oxford, October 1997

The application of sodium oxibutirate with galvanic current for the treatment of severe forms of childhood epilepsy

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A continuous current apparatus for electrophoresis was used. An electrode of two discs of 5 cm in diameter connected with the (−) terminal was fixed on closed eyes, orbits and upper eyelids of recumbent child patients. A 10% sodium oxibutirate solution was prepared from 20% injection solution just before the procedure. Gauze moistened with the 10% sodium oxibutirate solution was applied on top of the electrode. Another 50 cm^2 electrode connected with the (+) terminal was placed on the back of the patient's neck. The current was applied for 10 minutes. The current intensity depended on the patient's age within the limits of 0.4–0.8 mA. The course of treatment consisted of 10–20 applications. In the case of a positive therapeutic effect, the treatment was repeated in 1–1.5 months. A total of 36 children (aged from 8 months to 4 years) with severe forms of epilepsy were treated by transorbital electrophoresis with sodium oxibutirate whilst having their usual therapy. The results obtained place the method of transorbital electrophoresis within a perspective of treatments for severe forms of epilepsy in children (without brain tumours). The advantage of the method, in addition to its therapeutic efficiency, is freedom from complications and side effects as well as being non-invasive.

Cardiorespiratory changes in children in response to epileptic seizures

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The cardio-respiratory response to seizures has rarely been studied in children. The aims of this paper are to determine whether the physiological changes recorded were (a) compensation for the seizure, or (b) due to the seizure discharge affecting the autonomic nervous system.

Thirty-five children (19 male, 16 female) with a mean age 7.6 years (range 1.5–15.5 years), all having a definite diagnosis of epilepsy, were monitored ictally and interictally. Parameters studied were EEG, heart rate, respiratory rate, systolic blood pressure and oxygen saturation.

Data from 101 seizures (10 tonic–clonic (TC), 30 complex partial seizures (CPS), 40 atypical absences (AA), 11 infantile spasms (IS), and 10 tonic seizures (TS)) were recorded. An *early deceleration* in heart rate (HR) occurred in 34 (33.6%) seizures (10 CPS, 8 TC, 4 IS, 12 AA) the deceleration ranged from 6.6 to 40% (mean 19.5%). An *early acceleration* in HR occurred in 41 (40.5%) seizures (13 CPS, 2 TC, 6 IS, 10 TS, 10 AA): the increase varied from 7 to 150% (mean 26%). A *late deceleration* in HR occurred in 16% (3 CPS, 2 TC, 1 TS, 5 IS, 5 AA, mean 16.5%) whilst 40.5% (8 TC, 3 TC, 3 TS, 1 IS, 15 CPS, 14 AA), had a *late acceleration* in HR (mean 17.6%, range 12–130%). A decrease in heart rate throughout the seizure was shown in 19%. The changes in heart rate were statistically significant. Increase in heart rate was significant at levels of $P < 0.001$ tonic–clonic, $P < 0.002$ tonic, and $P < 0.05$ complex partial seizures. The decrease in heart rate in IS was also significant ($P < 0.05$). Respiratory rate and rhythm were even more variable in all seizures except AA, the maximum increase and decrease ranged from 50 to 400% and 50 to 100% respectively. A prolonged drop in oxygen saturation occurred in 9.6% of seizures.

The above findings indicate that seizure activity disrupts normal physiological regulation and control of cardiac and respiratory activity. This disruption may be implicated in unexplained sudden death associated with epilepsy or explain why some children are at risk of brain damage after short seizures.

1059-1311/98/010073 + 10 $12.00/0