

Predictors of Outcome in Infantile Epileptic Encephalopathy

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ABSTRACT

The aim of the study was to evaluate early predictors of long term outcome of infantile epileptic encephalopathy(IEE). 36 patients with IEE were followed for more than 4 years. Clinical features assessed were: occurrence of neonatal seizures, neonatal background and ictal EEG, time of appearance of infantile spasms (IS), preexisted seizures and seizure evolution, time period between seizure appearance and treatment. Neurodevelopment was assessed before IS and at age 5. Variables were compared among groups according to the etiology (cryptogenic, prenatal, perinatal and postnatal). Predictors of poor developmental outcome were severe background EEG abnormalities in neonatal period ($p<0.05$), seizures before IS ($p<0.02$), early IS ($p<0.05$). Clinical type and ictal EEG of neonatal seizures did not influence developmental outcome and subsequent seizure control. Developmental outcome of IEE is diverse and is influenced by multiple factors: time and severity of brain injury, time of appearance of IS, existence of neonatal seizures, early treatment strategy.

KEYWORDS: *infantile epileptic encephalopathy, neonatal seizures, infantile spasms, neurodevelopment, electroencephalography (EEG)*

Epileptic encephalopathies are group of epilepsies or epileptic syndromes with the following features: early start (often within the first year), refractory to drug treatment, and poor developmental outcome.

The term infantile epileptic encephalopathies (IEE) is used for epileptic conditions in which cognitive, behavioral and other brain functions impaired as part of the underlying disease process [1]. The etiology of IEE is multifarious, and antenatal, perinatal, and postnatal causes can be distinguished. In childhood they manifest by reduction of developmental progress or loss of already acquired cerebral function.

The treatment of IEE is aimed at correcting the underlying cause, e.g. by comprehensive care including drug treatment and epilepsy surgery [3].

The etiopathogenesis of a high percentage of IEE is unknown and needs to be further investigated [2].

The purpose of the study was to evaluate early predictors of long term outcome of infantile epileptic encephalopathy (IEE).

MATERIALS AND METHODS

36 patients with IEE were followed for more than 4 years. Clinical features assessed were: occurrence of neonatal seizures, neonatal background and ictal EEG, time of appearance of infantile spasms (IS), preexisted seizures and seizure evolution, time period between seizure appearance and treatment. All patients were assessed on the basis of motor and mental development (Milani-Comparesetti Motor Development Screening Test for Infants

and Young Children, Gross Motor Function Measurement, Bayley Scales of Infant Development, Kaufman ABC) before IS and at age 5. Variables were compared among groups according etiology (cryptogenic, prenatal, perinatal and postnatal).

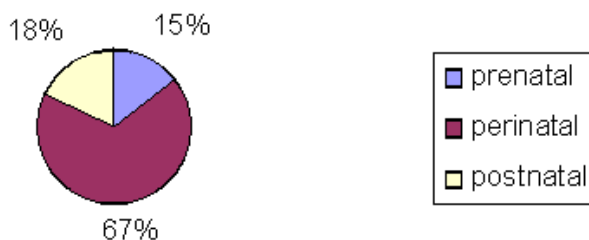
RESULTS

In our study among 36 patients 25% were cryptogenic cases, 75% symptomatic. Most frequent cause of IEE was perinatal injury - 66.7%, postnatal and prenatal injuries occurred comparatively rare (18.5%, 14.8%). The outcome was best in cryptogenic group - normal development in 33% of cases, mild retardation in 22% cases. In symptomatic group prevailed cases with moderate and severe retardation - 74%, normal development was observed in 11% of cases.

Predictors of poor developmental outcome were severe background EEG abnormalities in neonatal period ($p<0.05$), seizures before IS ($p<0.02$), early IS ($p<0.05$). Good seizure control correlated significantly with early treatment ($p<0.05$), appearance of spasms after 6 month age, one seizure type ($p<0.020$). Refractory seizures were observed mostly in perinatal injury group with neonatal seizures and multiple seizure types. Clinical type and ictal EEG of neonatal seizures did not influence developmental outcome and subsequent seizure control.

CONCLUSIONS

Developmental outcome of IEE is diverse and is influenced by multiple factors: time and severity of brain injury, time of appearance of IS, existence of neonatal seizures and early treatment strategy.



Tab.1 Etiology of IEE.

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Предикторы исхода инфантильной эпилептической энцефалопатии

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Р Е З Ю М Е

Целью исследования являлось определение ранних предикторов отдаленного исхода инфантильных эпилептических энцефалопатий (ИЭЭ). Под наблюдением находились 36 пациентов с ИЭЭ в течение более 4 лет. Оценивались различные клинические признаки наличия неонатальных припадков, неонатальная фоновая и иктальная ЭЭГ, начало инфантильных спазмов (ИС), наличие других видов эпилептических приступов и их трансформация в дальнейшем, длительность периода между проявлением приступов и началом лечения. Нейроразвитие оценивалось до ИС и в 5-летнем возрасте. Эти данные были распределены в разных этиологических группах (криптогенный, перинатальный, постнатальный). Предикторами плохого исхода оказались тяжелые изменения на фоновой ЭЭГ в неонатальном периоде ($p < 0,05$), наличие других приступов до возникновения ИС ($p < 0,02$), раннее начало ИС ($p < 0,05$). Клинические и иктальные ЭЭГ - изменения неонатальных приступов не оказывали влияния на развитие ребенка и процесс контроля приступов. Отдаленный исход ИЭЭ зависит от многих факторов: времени и тяжести поражения головного мозга, времени возникновения ИС, наличия неонатальных приступов и стратегии раннего лечения.

КЛЮЧЕВЫЕ СЛОВА: *инфантильная эпилептическая энцефалопатия, неонатальные приступы, инфантильные спазмы, нейроразвитие, электроэнцефалография*