EEG as Prognostic Argument in First Afebril Seizures

Healthcare

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Abstract

Cerebral disorder crisis are sudden disorder and transition of brain function that are characterized by the appearance of motor, sensitive, vegetative or psychological symptoms depending on the area in which are discharge, and tend to repeat. Clinically manifested of focal crisis, generalized tonic, clonic, floppy, with sensibilities disorder or vegetative symptomatology such as nausea, sweating, pallor, tachycardia, salivation. (4,6,7,10). The mention groups of cerebral crisis may be manifested as single or combined. Cerebral crisis manifested as seizures for practical aim are split in: 1. Provoked seizures, 2.Unprovoked seizures (6,7).

Introduction

About 5% of children have a crisis of non febrile seizures until the age of 18 years old. Usually appear in first year of life. The evaluation of non febrile seizures is conducted step by step, according to the protocol. Based in clinical manifestation and anamnesis we have differential diagnose between epileptic and non epileptic crisis (psychogenic) (4,6,7,8,10).

It is important to make sure that this is the first crisis and we don't have knowledge about provocative potential factors. From the witness who was with child we learn (now) about clinical manifestation of the crisis, how was, focal or generalized, tonic, clonic, tonic-clonic, or floppy, during the seizures was the child conscious, approximately how long lasted the seizures, did he have the body injury, foam, urination or non voluntary defecation (7,10).

Patient history, we are interested in details from the birth, its quality, the condition of the newborn, if he had spontaneous breath, the color of the skin, tonus and mobility (Apgar score), how long was the pregnancy, birth weight, potential neonatal respiratory problems, brain infections, hyperbilirubinemia, health in the neonatal period. How was psychomotor development, was conform to age. Until now did the child have head injury, brain infection? Finally we ask about family history, for metabolic or neurologic disease, changes in skin area hyper colored or no colored in the family, especially in the presence of hemangioma in the head region.

After anamnesis we do clinical examination of the child, starting from the head, shape, size, the presence of scarring or pudenz, current injuries, are they superficial or penetrating (4,6,7,10). After examining scalp we continue with cardio respiratory system, especially if we suspect that the etiology factor of the crisis can be syncope. Suspect ion for syncope grows if the child has been in the hot environment, free of drafts, in vertical position, excited.

At syncope blood circulation in the brain is reduced, it is evident when the heart rate is below 40 or above 180 beats per minute. Bradycardia below 40 beats per minute is found at completely atrioventrikular block (Adams Syndrome - Stokes). It should be measured the blood pressure, action of the heart, ECG analyzes. If is heard the pathological sound we should consult pediatrician cardiologist for evaluation of the structure of the heart and major blood vessels entering and leaving the heart. In the ECG we should analyze QT interval in terms of the length that is of syndrome Romano - Wardov, born sindrome (7,10).

If the child is under the age of 4 years we should think about the differential diagnosis of affective respiratory crisis (10).

The type and extent of laboratory examination after an unprovoked non afebrile crisis has a lot of controversy and discussion. Urgent request analyses of glycemia, electrolytes, complete blood biochemistry, depending on the clinics also require toxico-logical analysis, eventually the lumbar punction and biochemistry of cellular elements from lumbar punction. (Meningoencephalitis). The number of diseases that come into consideration in the differential diagnosis of epilepsy, every day is increasing, so that 9-50 % of patients instructed to the tertiary institutions are not true epileptic crisis (2,7,10,12).

Value of standard electroencephalographic examination (EEG) after first non febrile crisis without provoking is very questionable.

Pathological changes in EEG are recorded only at about 5% of these children that matches the number of children who have genetic heritage. In 50 % of cases the standard EEG is normal. EEG has value only to epilepsy which is sudden disorder and transitory disorder of brain function characterized by the appearance of motoric, sensitive, vegetative or psychological symptoms depending on the area in which we have discharge, tend to repeat and are almost always associated with EEG changes (3,4,6,10).

EEG helps in determining the type of epilepsy and helps us in selecting proper antiepileptic. Only one crisis of seizers is not epilepsy. It is necessary at least two seizers non provoked crisis for the diagnoses of epilepsy. According to various studies second crisis could be repeated at 27 to 84 % of cases (6,7).

Based on the description of crisis, history of life, the family history and laboratory analysis, it is time to decide whether it is necessary to organize and carry the EEG, if so, should it be done within first 24 hours or planned within a few days. The possibility of recurrence of the crisis depends on many assumed factors; if the clinical manifestation of convulsions is focal it present a potential risk to relapse, then is the risk at children with difficulties or lateralization of neurological status, if crisis occur during sleep, duration of the crisis is in correlation with the possibility of recurrence, including positive hereditary for epilepsy in the family. Only 50 % of children experience a recurrence of the crisis, while those who have the second crisis the possibility of repeating reaches 80 % (9,13).

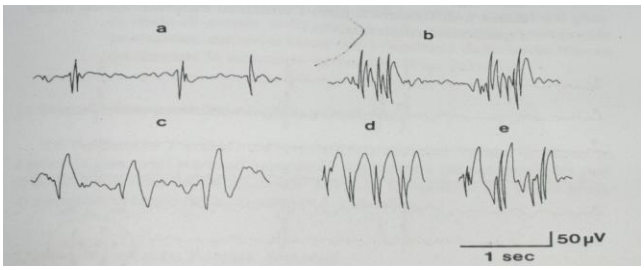

Figure 1. Specific epileptic grafoelements

Children with positive family history of idiopathic epilepsy, such as genetically transferred absans, Roland benign epilepsy and juvenile myoclonic, manifested as generalized motor convulsions are usually children with normal neurological development, without deficit and therefore, to these children have no space for panic, and EEG can be planned after a few days (7).

It is known that in medicine there are no strict rules, which happens that the crisis will be repeated crisis, with all those bad experiences for child and parents. For this event in the children seriously are we guilty or not, that we did not do the EEG within 24 hours? Our decision to plan EEG after a few days should be based on scientific arguments. Under a guide of United Kingdom pediatric protocol for management of first unprovoked convulsions. If are generalized is not necessary to make urgent EEG (2,5,9).

Different authors have different opinions and explanations regarding making an urgent EEG. After the first unprovoked non febrile crisis it has more counseling importance and prognostic for parents regarding opportunities for further evaluation of the crisis.

Among the numerous scientific studies that supported the idea of making urgent EEG is the study of Stroink et all. Who analyzed the urgent EEG and repeated EEG for the purpose of forecasting, and the possibility of recurrence of seizures crisis within the next 2 years. From this study they concluded that pathological EEG is no credible argument for the necessity of repeated convulsions, and a normal EEG does not provide safe prognosis that convulsions will not be repeated (14).

Another study by Pohlmann – Eden et all who studied the EEG track to give advice to the parents and the prognosis for future convulsive crisis (11).

Panayiotopoulos from Department of Clinical Neurophysiology recommends making EEG after the first unprovoked non febrile convulsive crisis and requires from the neuro-pediatricients to make analyses of the current protocols that are against making emergency EEG. Panayiotopoulos own thesis arguments with the fact that a specific epileptic EEG with grafoelements spike – wave represents an important indicator for recurrence of convulsions (9).

In scientific studies group that are for delay of EEG at least 10 days after the unprovoked convulsive crisis take for the base mainly the generalized clinical manifestation and normal neurological status before and after the crisis.

From these studies we citate Richard Appelton et al, who initially oppose Panayiotopoulos studies saying that EEG examination is not only prognostic but could be potentially harmful depending how it is done, where and by whom becomes interpreted, because making and interpretation of EEG can be done outside tertiary institutions, with what we have diversity in the quality and interpretation of EEG reports, which are often based on inaccurate diagnosis, which later carry serious medical, psychological and social severe consequences to children and parents (1).

Another paper led by Tan et all. studied EEG interpretations deficiencies in pediatric age and concluded that rarely based on EEG can say 'yes or no', given that the EEG track matures with baby's growth and the level of adult EEG reaches at the age of 12 years old. They conclude that EEG examination is not as safe, if not combined with the clinic (15).

Gilbert et al, in a 10-year study looked at justification and value of EEG after an unpro-voked convulsive crisis, finishing with EEG results documenting that there is little value in establishing the clinical

diagnosis and clinical prognosis, not underestimate its significance and prognostic diagnostic to specific focal depletion. EEG done improperly and diversified interpretation can leave serious medical and psychological consequences for the child and family. They propose that EEG should be done selectively and in any way to be routine after an unprovoked convulsive crisis (5).

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