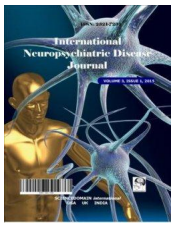

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Migralepsy: A Case Report

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Authors' contributions

This work was carried out in collaboration between both authors. Author ET designed the study and wrote the first draft of the manuscript. Author AM managed the literature searches. Both authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Background: There are different possible temporal associations between epileptic seizures and headache attacks which have given rise to unclear or controversial terminologies. The classification of the International League Against Epilepsy does not refer to this type of disorder, while the International Classification of Headache Disorders (ICHD-III beta version) defines three kinds of association: 1. migraine-triggered seizure (''migralepsy''), 2. hemicrania epileptica, and 3. post-ictal headache.
Case Report: The history of the child show the temporal succession of clinical events that suggest the real "migralepsy". The case is interesting because of the susceptibility of crisis triggered by emotional factors as can be for the headache. The child describes her feel well and therefore the partial crisis documented by the EEG is well representative.
Conclusion: The case is suggested for the rarity of this pathology also in the childhood.

Keywords: Migraine; epilepsy; hemicrania epileptica.

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1. INTRODUCTION

Actually migraine and epilepsy are considered two paroxysmal diseases that display epidemiological and clinical comorbidity. The prevalence of epilepsy in a population of migraine sufferers ranges between 1% and 17%, with a median percentage of 5.9%, representing a conspicuously higher percentage with respect the 0.5% prevalence found in the general population [1,2,3,4]. The prevalence of migraine in patients with epilepsy is high and ranges between 8.4% and 20% [5,6,7,8]. The association between headache and seizures is a widespread and well-known event. Headache/ migraine are associated with seizure occurrence in 34–58% of epileptic patients, 60% of whom have are a peri-ictal headache alone (i.e. headache/migraine in such subjects are always temporally related to seizures) [6,7,8]. The rate of peri-ictal headache in epileptic subjects reported in the literature (34–58%) is very similar in past and more recent studies. The temporal relationship between migraine/headache and seizures allows (us) to subdivide headaches as follows: 5–27% (are) only pre-ictal, 2.2%, ictal, 30–70% (are) only post-ictal, while 7–27% are both pre-ictal and post-ictal [8,9,10,11].

The headache develops very frequently after an epileptic seizure but it is rare that a migraine attack trigger an epileptic seizure (1.7-3%) [10,11,12]. This phenomenon, defined as "migralepsy," is codified in the ICHD –III in the chapter of migraine complications ,the chapter 1.4.4 It is described that the Migraine aura-triggered seizure is a seizure triggered by an attack of migraine with aura [9] The ICHD-III classification reports the criteria to diagnosis illustrated below [9].

Criteria of ICHD-III to migralepsy diagnosis:

A. A seizure fulfilling diagnostic criteria for one type of epileptic attack,
B. Occurring in a patient with 1.2 Migraine with aura, and during, or within 1 hour after, an attack of migraine with aura.
C. Not better accounted for by another diagnosis.

The comment underlines that this phenomenon, sometimes referred to as migralepsy, is a rare event, originally described in patients with Migraine with aura but the evidence for association with Migraine without aura is still lacking. The "migraine triggered seizures" is considered a complication of migraine [9]. The other known associations between headache and epilepsy are also included in ICHD-III as secondaries headaches and are called Hemicrania epileptica (chapter 7.6.1) and Post-ictal headache (chapter 7.6.2.7).

In the ILAE classification [13] the association between epilepsy and headache is not recognized. In literature there is debate about this diagnosis pertinence and more Authors suggest that this term should be deleted until unequivocal evidence of this condition existence emerges. Sances and Coll [14] detected in the literature 50 cases described as "migralepsy" and verified that only two cases, representing the 6% of sample, are correctly identified according to IHCD-II criteria. Also headache itself can represent an epileptic ''aura'' of a seizure, as has been described in a patient with a partial status epilepticus in occipital lobe epilepsy [13].

2. CASE REPORT

A female hospitalized at 4 years old for a seizure occurred in sleeping, characterized by head and mouth deviation on the right, fixity of the look, and loss of awareness. The duration of seizure was more than 20 minutes. EEG immediately showed the presence of a delta rhythm. MRI scans resulted not pathological. The anamnesis discloses that she was affected by one episode of simple febrile convulsion and her father suffered by two episodes of febrile convulsions. Her sister is affected by celiac disease. She was under pharmacological preventive treatment with valproic acid and currently she is free from loss of consciousness awareness and partial focal seizures. She still reports have recurrent frontal throbbing headaches associated with phosphenes and visual symptoms, subjective dizziness and vomiting.She describes colorful scotoma as pink and purple circles (Fig. 1). Crisis are always triggered by emotional stress. It was possible recording the EEG during a crisis while there was a thunderstorm that represented a lucky occurrence since she reported to be afraid of thunder and storm. During a thunderstorm she arrived just suffering from headache throbbing and visual symptoms, colorful scotoma and at the outbreak of thunder she fixed the eyes, presented abdominal pain and vomiting. The EEG record in the interictal period showed spike and spike-wave in the Temporo-Central district in the left hemisphere, accentuated by hyperventilation and during sleeping records (Fig. 2). The EEG record, at time of

thunderstorm, showed, in region temporooccipital of left hemisphere, discharges of sharpe-wave and during the crisis beta rhythm (Fig. 3). The girl is currently free from seizures and migraines for about 3 years and discontinued the therapy with valproic acid for 3 years.

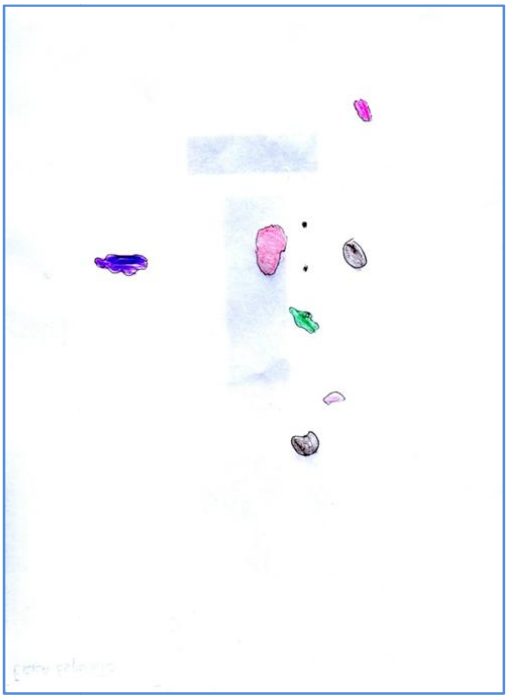

Fig. 1. The drawing made by the child of her visual hallucinations

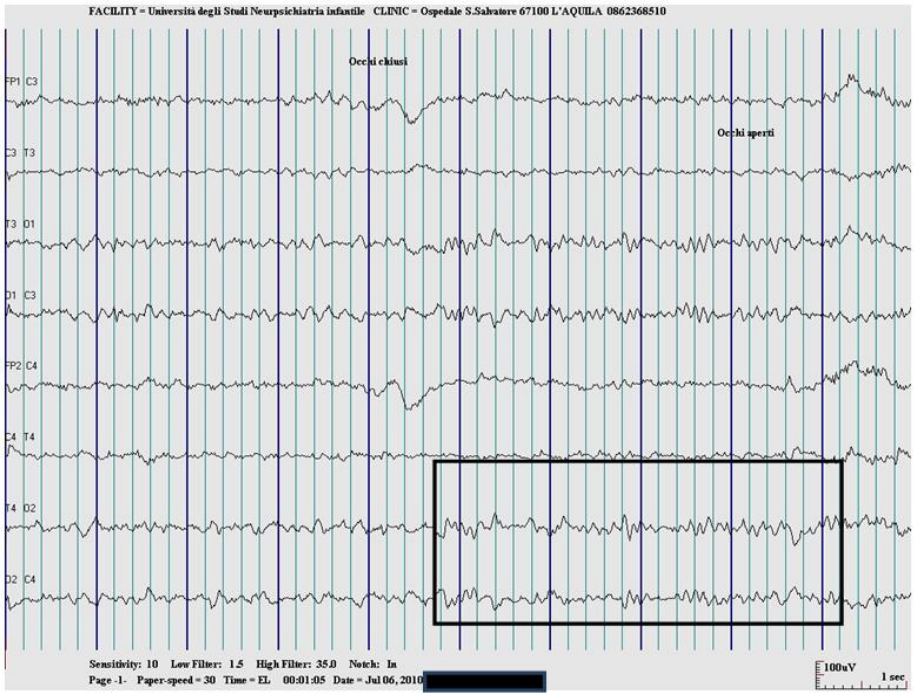

Fig. 2. EEG in interictal time with sharp waves and points in region temporooccipital right

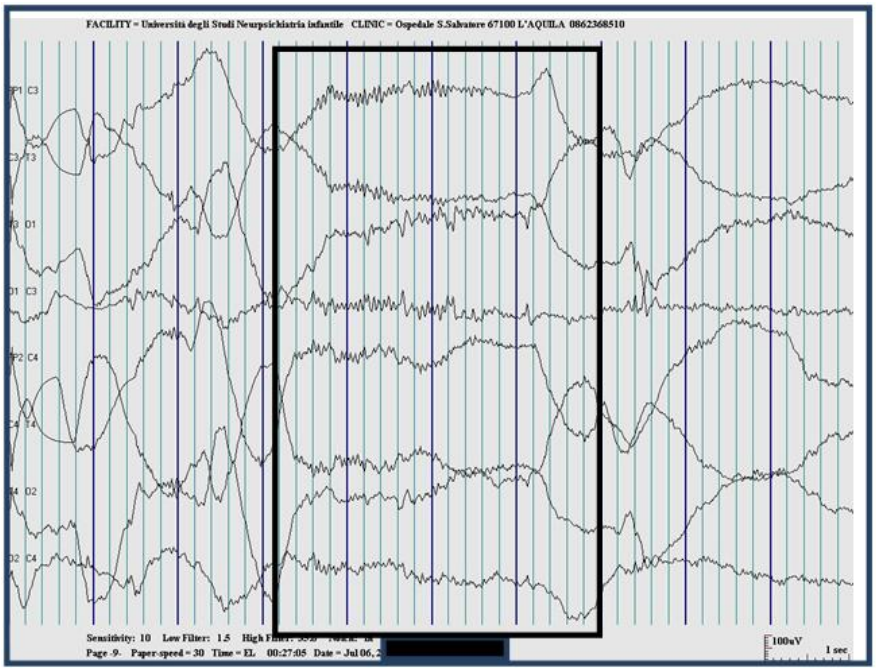

Fig. (3a)

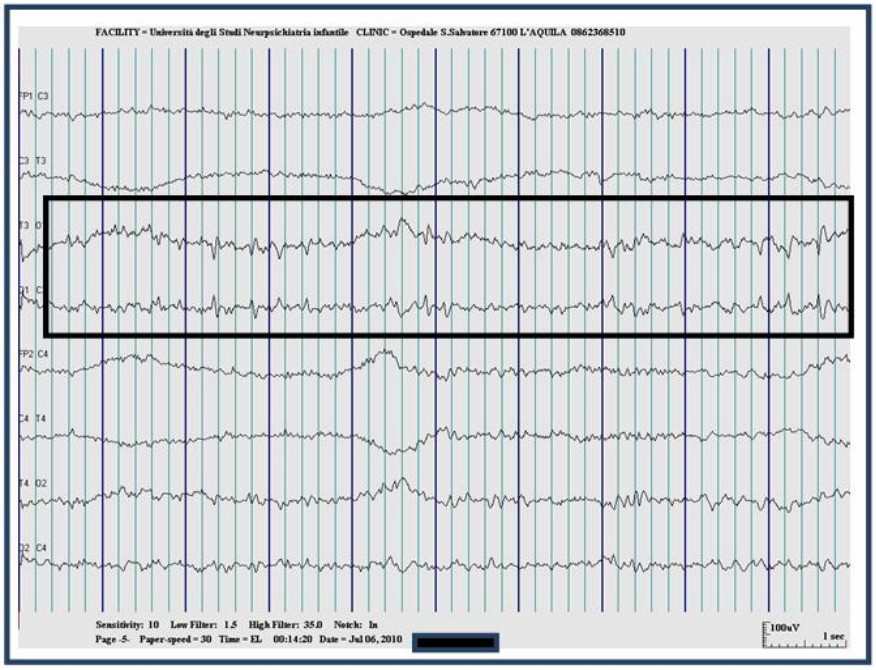

Fig. (3b)

Fig. 3. EEG record during thunderstorm: a. Sharpe-wave in the region temporooccipital left; b. During the event caracterized by fixed eyes and vomiting: beta rhythm diffused

3. DISCUSSION

The clinical manifestations of patient responds to the following criteria:

1. Close temporal association between migraine attack and the onset of seizure;
2. Ictal EEG has recorded during migraine attack followed by seizure;
3. Visual symptoms as simple hallucinations were present and associated to nausea, vomiting, and abdominal pain.

The succession of symptoms suggests that clinical picture is represented by headache-seizure and not by seizure-headache, as observed by Panayotopoulos [15]. According to its criteria the differential diagnosis is between occipital epilepsy and migralepsy and migraine epileptic [15].

Autonomic seizure is described as an objectified, documented, and distinct alteration of the autonomic nervous system function including cardiovascular, pupillary, gastrointestinal, vasomotor and thermoregulatory functions [15].

In our opinion, the type of trigger factor is the most important factor common to migraine and epilepsy. Emotional triggers are frequent in both children and adults.

A migraine/headache attack can originate at different levels, cortical or subcortical, whereas an epileptic focus arises cortically and can be modulated only at subcortical levels [10,11,12]. To explain headache/migraine manifestation, two mechanisms have been hypothesized [4,11,12,13]: a subclinical epileptic discharge might activate the trigeminovascular system (TVS) resulting in a migraine/headache without any other associated cortical epileptic sign or symptom; a central autonomic networks (cortical or subcortical) have a lower threshold for epileptogenic activation than those producing focal cortical semiology. The patients described [3,14,16,17,18] showed a poor response to the antiepileptic therapy: in fact the seizures respond to therapy, but, any crisis triggered by factors as light stimulus or emotional stress are more drug resistant to treatment. A paroxysmal changes in cortical neuronal activity may occur during migraine attack or epileptic seizure. Hyperexcitability occurs in epilepsy, whereas in migraine hypo- and hyper-activation of cortical areas occurs sequentially in spreading depression. Mutations in genes coding for ion channels cause abnormal synchronization or the excitability of cortical neurons [3,19]. The patient reported is affected from febrile convulsion and have familiarity for febrile convulsion in the father. The susceptibility to seizure draw up to a crisis triggered by emotional factors under headache. This in part shows that the overlapping of symptoms between migraine and epilepsy can create a different spectrum of disease symptoms.

4. CONCLUSION

The relationship between headache and epilepsy, in an isolated form or as the first symptom of an epileptic seizure, frequently of occipital origin in the case of migraine with visual aura, and pre-ictal migraine or headache, whose role in triggering an epileptic seizure remains to be defined [3].

We are submitting this case because the mode of triggering seizures as well as migraine occurs under particular conditions of psychic stress, fear. In pediatric patients, the ageing of the brain and cortical structures makes the occipital bark particularly vulnerable. Some familial genetic conditions are wich increase the risk of seizures. In addition, in common with other cases of literature, the condition, migraine epilepsy, is not controlled by pharmacological therapy. In this case the disease has been good trends to the girl development.

CONSENT

As per international standard or university standard, written consent has been collected from parent and preserved by the authors.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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