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Original Article

Refractory absence seizures: An Italian multicenter retrospective study

Emilio Franzoni [a,*], *Sara Matricardi* [b], *Veronica Di Pisa* [a], *Giuseppe Capovilla* [c], *Antonino Romeo* [d], *Elisabetta Tozzi* [e], *Dario Pruna* [f], *Grazia Gabriella Salerno* [g], *Nelia Zamponi* [g], *Patrizia Accorsi* [h], *Lucio Giordano* [h], *Giangennaro Coppola* [i], *Caterina Cerminara* [j], *Paolo Curatolo* [j], *Francesco Nicita* [k], *Alberto Spalice* [k], *Salvatore Grosso* [l], *Piero Pavone* [m], *Pasquale Striano* [n], *Pasquale Parisi* [o], *Antonella Boni* [p], *Giuseppe Gobbi* [p], *Marco Carotenuto* [q], *Maria Esposito* [q], *Carlo Cottone* [a], *Alberto Verrotti* [r]

[a] *Child Neuropsychiatry Unit, Sant'Orsola-Malpighi Hospital, University of Bologna, Bologna, Italy*
[b] *Department of Pediatrics, University of Chieti, Chieti, Italy*
[c] *Department of Child Neuropsychiatry, C. Poma Hospital, Mantova, Italy*
[d] *Epilepsy Center, Department of Child Neuropsychiatry and Neurophysiology, Fatebenefratelli and Oftalmico Hospital, Milan, Italy*
[e] *Department of Child Neuropsychiatry, University of L'Aquila, L'Aquila, Italy*
[f] *Child and Adolescent Neuropsychiatry, University of Cagliari, Cagliari, Italy*
[g] *Pediatric Neurology Department, Polytechnic University of the Marche Region, Ancona, Italy*
[h] *Child Neuropsychiatric Unit, Civile Hospital, Brescia, Italy*
[i] *Department of Child and Adolescent Neuropsychiatric, Medical School, University of Salerno, Salerno, Italy*
[j] *Department of Neurosciences, Pediatric Neurology Unit, Tor Vergata University, Roma, Italy*
[k] *Department of Pediatrics, Division of Child Neurology, Sapienza, University of Rome, Rome, Italy*
[l] *Department of Pediatrics, Pediatric Neurology Unit, S. Maria Alle Scotte Hospital, University of Siena, Italy*
[m] *Department of Pediatrics and Pediatrics Emergency, University Hospital Policlinico Vittorio Emanuele, Catania, Italy*
[n] *Pediatric Neurology and Muscular Diseases Unit, Department of Neurosciences, Rehabilitation, Opthalmology, Genetics and Maternal and Child Health, University of Genova, G. Gaslini Institute, Genova, Italy*
[o] *Neuroscience, Mental Health and Sensory Organs Department, Child Neurology, Headache Pediatric Center, Pediatric Sleep Disorder, Sapienza, University of Rome, Rome, Italy*
[p] *IRRCS, The Institute of Neurological Sciences of Bologna, Child Neurology Unit, Bologna, Italy*
[q] *Clinic of Child and Adolescent Neuropsychiatry, Department of Mental Health, Physical and Preventive Medicine, Second University of Naples, Naples, Italy*
[r] *Department of Pediatrics, University of Perugia, Perugia, Italy*

* *Corresponding author*. Child Neuropsychiatric Unit, Sant'Orsola-Malpighi Hospital, University of Bologna, Via Massarenti 11, 40100, Bologna, Italy. Tel.: +39 0516363994.
E-mail address: emilio.franzoni@unibo.it (E. Franzoni).
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ABSTRACT

Background: To evaluate evidence and prognosis of refractory cases of absence seizures.
Methods: Subjects with refractory absence seizures were identified retrospectively in 17 Italian epilepsy pediatrics Centers. We analyzed age at onset, family history, presence of myoclonic components, seizure frequency, treatment with antiepileptic drugs (AEDs), interictal electroencephalography (EEG) and neuropsychological assessment. Two subgroups were identified: one with patients with current absence seizures and another with patients that had become seizure free with or without AED treatment. The chi-square test was applied.
Results: A total of 92 subjects with drug-resistant absence seizures were analyzed. 45 subjects still show absence seizures (49%) and the other 47 became seizure free (51%) after a period of drug-resistance. The statistical analysis between these two groups showed no correlation between age of onset, family history and abnormalities at interictal EEG. Statistically significant differences were observed with regard to the number of AEDs used and intellectual disability.
Conclusion: Typical absence epilepsy classifiable as Childhood Absence Epilepsy could not be considered so "benign", as suggested in literature. A longer duration of disease and a higher frequency of seizure seem to be correlated with a higher presence of cognitive impairment. No significant risk factor was observed to allow the faster and better recognition of patients with worse prognosis.

1. Introduction

Childhood Absence Epilepsy (CAE) is an age-dependent idiopathic form of generalized epilepsy with typical absence seizures, characterized by frequent brief staring episodes. This syndrome is likely to be multifactorial, resulting from interactions between genetic and acquired factors. CAE, if properly defined using strict diagnostic criteria, has an excellent prognosis for seizure remission and the successful withdrawal of antiepileptic drugs (AEDs).[1,2]

However, up to 20% of patients may not achieve seizure remission with adequate drug therapy.[3]

In the rare studies performed to analyze the outcome of CAE, one of the problems encountered is the heterogeneity of clinical criteria.[4–9]

In recent years, there has been increased evidence of drug-resistant absence seizures,[3,10] which may develop neuropsychological and psychosocial comorbidities over time.[11,12]

Available data are insufficient to allow the delineation of reliable prognostic factors; our long-term retrospective multicenter study aims at evaluate the evidence and prognosis of refractory cases of absence seizure and analyze any possible prognostic factors.

2. Materials and methods

This multicenter retrospective study was carried out by seventeen Italian epileptic pediatric Centers. We have identified patients with refractory absence seizures.

In this study the inclusion criteria were: 1) age of seizure onset 0–14 years, 2) brief absence seizure with abrupt or severe impairment of consciousness (automatism can be present), 3) bilateral synchronous and symmetrical discharge of rhythmic 3 Hz spikes and slow wave complexes during ictal EEG and a normal interictal background activity (transient focal epileptiform abnormalities can be present), 4) to be considered as drug-resistant absence seizures, it was necessary to have encountered the failure of an adequate trial of two tolerated and appropriate antiepileptic drug schedules (firstly as monotherapy or secondly even in combinations) to achieve sustained seizure control (first-line choice Valproic Acid, Ethosuximide, Levetiracetam), 5) a normal neurological examination.

The exclusion criteria were: 1) absence seizures other than typical, 2) ictal EEG: SW complexes less than 2.7 Hz and more than 4 Hz 3) interictal EEG with persistent focal epileptiform abnormalities, 4) sensory precipitation of absence seizures, 5) abnormal pre-, peri- and post-natal history, 6) pathological findings on neurological examination and 7) pathological findings on neuroradiological and metabolic investigation.

All subjects were followed regularly at the Centers with periodical clinical and EEG evaluations for at least 3 years. For each of them, age at onset, family history, presence of myoclonic components, seizure frequency, treatment with AEDs, interictal EEG and genetic tests were analyzed. We also studied the results of neuropsychological assessment that was carried out by Wechsler Scale (WPPSI or WISC).

We divided the resistant patients into two subgroups: one with patients with current absence seizures and the other with patients who had become seizure free with or without AED treatment. The Chi-square test was applied to underline differences between these two groups.