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ORIGINAL ARTICLE / KLİNİK ÇALIŞMA

Jeavons Syndrome: 12 Cases

Jeavons Sendromu: 12 Olgu


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Summary

Objectives: Jeavons syndrome (JS), also known as eyelid myoclonus absence epilepsy, is a type of idiopathic reflex epilepsy that has primary seizure type eyelid myoclonuses and is characterized by blinking due to seizures or generalized paroxysms at electroencephalography (EEG) and photosensitivity. This study aimed to review JS by following up with the patients with this diagnosis.

Methods: The records of the patients who were followed up with JS diagnosis in the pediatric neurology clinic of Cerrahpaşa Medical Faculty Hospital were reviewed. These patients were interviewed, and the data obtained from their file records were evaluated.

Results: Eight female and four male patients aged between 7 and 22 years were included in the evaluation. The age at onset of seizure varied from 18 months to 14 years, often between 6 and 12 years of age. The majority of the patients visited the clinic because of generalized tonic-clonic (GTC) seizures. The results of video EEG monitoring performed for all patients revealed that eyelid myoclonias were found in all patients and absence seizures were also seen in some of them. All of the patients had generalized spike-and-wave discharges, some of which showed asymmetric features and some of which were accompanied by eyelid myoclonias and absence seizures. Moreover, focal findings were detected in the EEG analyses of eight patients. The most preferred drug was valproic acid for treatment.

Conclusion: Eyelid myoclonias or even absence seizures are usually not distinguished or mixed with some other cases such as tic disorder or daydream. The reason that brings a patient to the doctor is often the GTC seizures. In JS, focal/asymmetric findings in EEG are not uncommon. The focal findings seen in EEG may be misinterpreted and may lead to errors in diagnosis and drug selection.

Keywords: Absence with eyelid myoclonia; eyelid myoclonia; Jeavons syndrome.

Özet

Amaç: Göz kapağı miyoklonili absans epilepsisi (GKMAE) olarak da bilinen Jeavons sendromu (JS), temel nöbet tipi göz kapağı miyoklonileri olan, nöbetlerin ya da elektroensefalografide (EEG) jeneralize paroksizmlerin göz kapama ile ortaya çıktığı, ışığa duyarlılığın olduğu idiyopatik refleks bir epilepsi türüdür. Bu yazıda JS'nin, bu tanı ile izlediğimiz 12 olgu aracılığıyla gözden geçirilmesi amaçlanmıştır.

Gereç ve Yöntem: Cerrahpaşa Tıp Fakültesi Hastanesi Çocuk Nörolojisi Polikliniği'nde JS tanısı ile takip edilmekte olan hastaların dosya kayıtları incelenmiş, hastalarla görüşülmüş ve elde edilen veriler değerlendirilmiştir.

Bulgular: Yaşları 7 ile 22 arasında değişen sekiz kız, dört erkek hasta değerlendirmeye dahil edilmiştir. Nöbet başlangıç yaşı, 18 ay ile 14 yaş arasında değişmekle birlikte sıklıkla 6–12 yaş arasıdır. Hastaların çoğunda doktora başvuru sebebi jeneralize tonik klonik (JTK) nöbetler olmuş, hastaların tümüne yapılan video EEG monitorizasyonu (VEM) sonucu tamamında göz kapağı miyoklonileri, büyük bir kısmında da absans nöbetleri görülmüştür. Hastaların tamamında, bazıları asimetrik özellikler gösterebilen ve bir kısmına göz kapağı miyoklonilerinin ve absans nöbetlerinin eşlik ettiği jeneralize diken-multiple diken dalga deşarjları görülmüştür. Bununla birlikte sekiz hastada EEG'de fokal bulgular saptanmıştır. Tedavide en çok tercih edilen ilaç valproik asit olmuştur.

Sonuç: Göz kapağı miyoklonileri hatta absans nöbetleri çoğu zaman farkedilmemekte ya da tik bozukluğu, gündüz düşleri gibi durumlarla karıştırılmaktadır. Hastayı doktora getiren sebep çoğu zaman JTK nöbet olmaktadır. JS'de, EEG'de fokal/asimetrik bulgular nadir değildir. EEG'de görülen fokal bulgular yanlış yorumlanabilmekte, tanıda ve ilaç seçiminde hatalara sebep olabilmektedir.

Anahtar sözcükler: Göz kapağı miyoklonili absans epilepsisi; göz kapağı miyoklonisi; Jeavons sendromu.

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Introduction

Epilepsy with eyelid myoclonia (EEM) or Jeavons syndrome (JS) is an idiopathic generalized reflex epilepsy syndrome whose clinical and electroencephalographic (EEG) features were first described by Jeavons in 1977.[1,2] Eyelid myoclonias can be accompanied by absence seizures [Eyelid myoclonia and absences (EMA)], and are characterized by seizures starting with blinking or generalized spike-and-wave paroxysms in EEG and photosensitivity.[3]

Seizures generally occur between the ages of 2 and 14 years, but often between the ages of 6 and 8 years.[4] They are approximately twice as common in girls.[2] The prevalence of JS is about 3% among all epilepsies and 7–13% among typical idiopathic generalized epilepsies with absences.[5,6] Seizures occur after blinking, last 3–6 s, and recur many times a day.[2] Intermittent photic stimulation leads to a seizure or photoparoxysmal response in EEG. However, blinking is a more potent precipitating factor than photic stimulation.[7] The photosensitivity attenuates with aging and treatment. It is almost unavoidable compared with generalized tonic-clonic (GTC) seizures, which usually occur with precipitating factors such as insomnia, drug disruption, and alcohol and are seen throughout the disease course.[8] Generalized myoclonias cane seen rarely. Voluntary or involuntary eye closure or a blinking as a reflex may trigger seizures, while it does not occur in the dark.[2] Self-induction has been reported in some patients.[9]

This study aimed to draw attention to JS, in which clinical and EEG findings are not clearly identified occasionally, and also diagnosis and treatment may be difficult.

Materials and Methods

This study was conducted with patients who were diagnosed with JS based on their clinical and EEG features and followed up in the pediatric neurology clinic of the Department of Neurology at Istanbul University Cerrahpaşa Medical Faculty Hospital. The patients were identified and interviewed, and their file records were reviewed. Data on demographic characteristics, disease history, EEG analyses, neuroimaging, treatment, and disease course of the patients were obtained and evaluated.

Results

Twelve patients (eight females and four males) aged between 7 and 22 years (median age 13 years) were included in the evaluation. The follow-up duration of the patients in the polyclinic varied between 3 months and 12 years. The seizures started between the ages of 6 and 12 years in seven patients; the earliest and the latest first seizures were seen in 18 months and 14 years, respectively.

The reason for visiting the doctor was GTC seizures for seven patients (58%). It was learned that five of these patients had eyelid myoclonias or absence seizures; however, they did not visit the doctor with this complaint. Three patients visited the doctor because of "blanks" and one patient with " eyelid blinking" complaint. One of the patients who had no seizures or other neurological complaints was diagnosed with psychiatric complaints after EEG examination; his anamnesis revealed that he had episodes consist of sudden activity arrest with staring and blinking complaints, which his family did not care about. JTK seizures were not seen in only three patients from the onset of the complaints to the present day.

Seven patients (58%) had a family history of epilepsy. Only 1 of the 11 patients at school age was reported as successful at school; others were reported as moderate–poor. Examinations of all patients who underwent cranial imaging were normal, and no pathological findings were found on neurological examination of any patient.

Sleep–wake video EEG monitorization (VEM) was performed for all of the patients. Eyelid myoclonias, which were the reason behind doctor visit for only one patient, were observed in all patients. The absence seizures, which were the reason behind doctor visit for three patients, were seen in nine patients, and several generalized myoclonias, which were not noticed before, were observed in three patients. Ten of the patients (83%) were sensitive to the eye closure, nine (75%) to photic stimulation, and seven patients were sensitive to both. In three patients, hyperventilation sensitivity was seen as well.

In all patients, 3- to 6-Hz generalized multiple spike-and-wave discharges lasting almost 2–5 s (some of them with asymmetric features and some with associated eyelid myoclonus and absence seizures) were observed. In patient number 7, the generalized epileptiform discharges were seen in EEG during the eyelid myoclonias, as shown in Figure 1. However, no focal findings were seen in EEG of eight

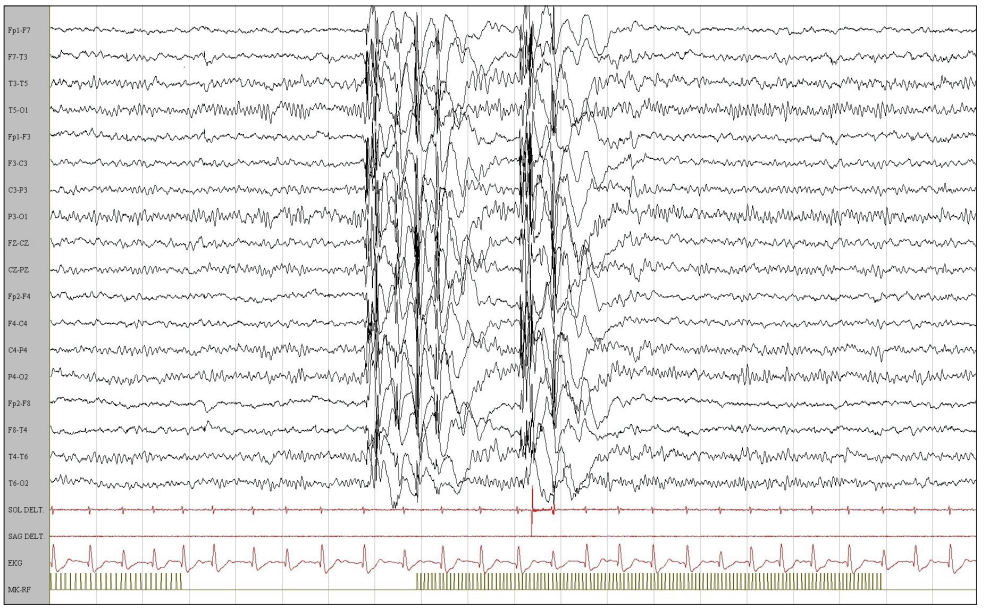

Fig. 1. About 2–3 s of generalized multiple spike-and-wave discharges accompanying clinically observed eyelid myoclonus during VEM of a 12-year-old male patient with JS.

patients (66%). These focal findings were in the bilateral frontal region in four patients, bilateral occipital region in three patients, and left central and parieto-central region in one patient. Seizures and EEG findings were evident in the post-awakening period. However, the pathology was detected after the awakening of two patients whose pre-sleep, wakefulness, and sleep EEGs were found to be normal. Moreover, one patient had only focal findings in the beginning, but he/she(Authors should let us know whether it is boy or girl) had generalized findings in the EEG after awakening.

Ten patients received monotherapy (valproic acid for seven patients, levetiracetam for two patients, and ethosuximide for one patient), and two patients received polytherapy (valproic acid and ethosuximide, valproic acid and topiramate). It was learned that drug discontinuation was tried in two patients. Since these patients visited the clinic because of recurrence of seizures, drug treatment was started again. Eyelid myoclonias in one patient and generalized myoclonias in one patient continued in patients receiving valproic acid monotherapy. Eyelid myoclonias in one patient using

Table 1. Demographic features and clinical and laboratory findings of patients with JS

Patient	Age	Gender	Age at onset of seizure	Family history	Absence seizure	GTC seizure	Focal sign in EEG	Treatment
1	19	Male	12	–	–	+	Occipital	VPA
2	9	Female	8	+	+	–	Occipital	VPA
3	7	Female	1.5	+	+	+	–	VPA
4	12	Male	11	+	–	+	Central	LEV
5	16	Male	12	+	+	+	Frontal	VPA+TPM
6	22	Female	8	+	+	+	Occipital	VPA+ETS
7	12	Male	11	–	+	+	–	VPA
8	15	Female	14	+	–	+	Frontal	LEV
9	13	Female	6	+	+	+	–	VPA
10	16	Female	14	-	+	–	–	VPA
11	11	Female	8	+	+	+	Frontal	ETS
12	10	Female	5	-	+	–	Frontal	VPA

JS: Jeavons syndrome; GTC: Generalized tonic-clonic; ESM: Ethosuximide; LEV: Levetiresetam; TPM: Topiramate; VPA: Valproic acid.

levetiracetam and eyelid myoclonias and absence seizures in one patient using ethosuximide also continued. One patient using two antiepileptic drugs still had absence seizures, and another patient still had absence seizures and eyelid myoclonias together. Since the duration of follow-up for some of the patients was not insufficient, treatment regimens still continued. A summary of the demographic data and clinical and laboratory findings of the patients is shown in Table 1.

Discussion

Eyelid myoclonias or even absence seizures are usually not distinguished or confused as tic disorders or daydream. The reason that brings a patient to the doctor is often the GTC seizures. Hence, it is obvious that EEM is not a rare disorder. It is recognized and reported less frequently than its actual prevalence.[6,10,11] These seizures can be better diagnosed with a detailed examination and especially with VEM.

Similar to the patient in the present case, some behavioral problems or low success rate at school may be reasons to seek a medical advice. It is not known how JS affects cognitive functions. Although normal cognitive functions in JS were reported, Ashley et al. evaluated cognition in 10 patients in 2015 and reported that global intelligence quotient, verbal learning, calculation rate, memorization, and average nonverbal reasoning and attention parameters were below the average, but mental retardation in these patients was not emphasized.[4] Joshi and Patrick reported a success rate at school as 77% in patients with JS.[12] It was remarkable that nearly all of the patients (91%) were not successful at school. Hence, more detailed evaluation is needed to determine the cognitive aspects of the patients. Possible causes of cognitive impairment were thought to be uncontrolled seizures and epileptiform discharges.[12,13]

Genetic predisposition in JS has also been discussed earlier.[14] A study has reported the rate of positive family history of epilepsy to be as high as 83%.[15] Four monozygotic twins with JS have been reported so far.[16] Also, 58% of the patients in our study had positive family history of epilepsy. It is thought that the identification of the genetic basis of this disease can help in finding out whether JS is a separate epileptic syndrome.

Although JS, which is a well-defined epilepsy syndrome with clinical and EEG findings, is considered as an idiopathic generalized epilepsy by many authors, its place in International League Against Epilepsy Epilepsy (ILAE) classification is still not clear.[3] Panayiotopoulos suggested that JS was a reflex idiopathic generalized epilepsy. When JS is not found in the ILAE epilepsy classification, eyelid myoclonia with and without absence is considered as a generalized seizure type s.[17] This type of seizure can occur not only in JS, but also in many epilepsies, such as idiopathic, symptomatic, or cryptogenic.[2,18]

Focal/asymmetric EEG findings in EEM are not uncommon. More than half of the patients had focal/asymmetric EEG findings in this study. These focal EEG findings may be misinterpreted, leading to errors in diagnosis and drug selection. A study suggested that JS was generalized epilepsy originating from occipital cortex due to posterior focal abnormalities detected in EEG.[19] However, three of the patients in our study had EEG abnormalities in the occipital region during the interictal period, whereas focal EEG findings were detected in the frontal region in four patients. Similarly, Senol et al. found focal EEG findings in the occipital region in 3 of 31 patients with EEM and in the frontal region in 4.[18] Further studies are required to interpret these focal EEG findings in the occipital or frontal region of patients with JS.

It is known that the seizures and the EEG findings in JS are evident in the post-wake period.[2] When the pre-sleep wakefulness and sleep EEGs were normal in two patients in the present study, some seizures and/or epileptiform discharges were observed in post-awakening period EEGs. It was also remarkable that when the focal findings were seen at pre-sleep period, a generalized discharge was also seen in the post-wake period in one of the patients in the study. These results showed that some significant findings could be overlooked if no examination was done after waking.

As well as the prognoses of the patients with an appropriate antiepileptic treatment were not properly evaluated because of insufficient follow-up time in our hospital, more than half of the patients in the present study were not yet seizure-free and their eyelid myoclonus was resistant to treatment as accordance with literature. The drug discontinuation in two patients and oxcarbazepine treatment in one patient were the examples of mistreatment.

Conclusion

JS is an epileptic syndrome that should be diagnosed by identifying seizure types and EEG characteristics properly.

Conflict of interest

None declared.

Authorship contributions

Concept: C.Y., A.V.D.; Design: C.Y., A.V.D.; Data collection &/or processing: S.T.T., C.Y., A.V.D.; Analysis and/or interpretation: S.T.T., C.Y., A.V.D.; Literature search: S.T.T., C.Y.; Writing: S.T.T., C.Y., A.V.D.; Critical review: C.Y., A.V.D.

References

1. Jeavons PM. Nosological problems of myoclonic epilepsies in childhood and adolescence. Dev Med Child Neurol 1977;19(1):3–8.
2. Panayiotopoulos CP. Syndromes of idiopathic generalized epilepsies not recognized by the International League Against Epilepsy. Epilepsia 2005;46 Suppl 9:57–66.
3. Giráldez BG, Serratosa JM2. Jeavons syndrome as an occipital cortex initiated generalized epilepsy: Further evidence from a patient with a photic-induced occipital seizure. Seizure 2015;32:72–4.
4. Fournier-Goodnight AS, Gabriel M, Perry MS. Preliminary neurocognitive outcomes in Jeavons syndrome. Epilepsy Behav 2015;52(Pt A):260–3.
5. Giannakodimos S, Panayiotopoulos CP. Eyelid myoclonia with absences in adults: a clinical and video-EEG study. Epilepsia 1996;37(1):36–44.
6. Striano S, Striano P, Nocerino C, Boccella P, Bilo L, Meo R, et al. Eyelid myoclonia with absences: an overlooked epileptic syndrome? Neurophysiol Clin 2002;32(5):287–96.
7. Wakamoto H, Nagao H, Manabe K, Kobayashi H, Hayashi M. Nonconvulsive status epilepticus in eyelid myoclonia with absences-evidence of provocation unrelated to photosensitivity. Neuropediatrics 1999;30(3):149–50.
8. Striano S, Capovilla G, Sofia V, Romeo A, Rubboli G, Striano P, et al. Eyelid myoclonia with absences (Jeavons syndrome): a well-defined idiopathic generalized epilepsy syndrome or a spectrum of photosensitive conditions? Epilepsia 2009;50 Suppl 5:15–9.
9. Destina Yalçin A, Forta H, Kiliç E. Overlap cases of eyelid myoclonia with absences and juvenile myoclonic epilepsy. Seizure 2006;15(6):359-65.
10. Wang XL, Bao JX, Liang-Shi, Tie-Ma, Deng YC, Zhao G, et al. Jeavons syndrome in China. Epilepsy Behav 2014;32:64–71.
11. Pérez-Errazquin F, Chamorro-Muñoz MI, García-Martín G, Romero-Acebal M. Does Jeavons syndrome exist? A report of a series of 10 cases. Rev Neurol 2010;50(10):584–90.
12. Joshi CN, Patrick J. Eyelid myoclonia with absences: routine EEG is sufficient to make a diagnosis. Seizure 2007;16(3):254–60.
13. Yang ZX, Liu XY, Qin J, Zhang YH. Clinical and electroencephalographic characteristics of Jeavons syndrome. Zhonghua Er Ke Za Zhi 2012;50(6):445–9.
14. Yagi S, Matsuzawa J, Hongou K, Yamatani M, Miyawaki T, Konishi T. Two siblings with eyelid myoclonia with absences. No To Hattatsu 2001;33(6):517–22.
15. Sadleir LG, Vears D, Regan B, Redshaw N, Bleasel A, Scheffer IE. Family studies of individuals with eyelid myoclonia with absences. Epilepsia 2012;53(12):2141–8.
16. Yang T, Liu Y, Liu L, Yan B, Zhang Q, Zhou D. Absence status epilepticus in monozygotic twins with Jeavons syndrome. Epileptic Disord 2008;10(3):227–30.
17. Engel J Jr. Report of the ILAE classification core group. Epilepsia 2006;47(9):1558–68.
18. Nar Senol P, Tezer FI, Saygi S. Eyelid myoclonia seizures in adults: An alternate look at the syndrome paradox. Epilepsy Behav 2015;45:265–70.
19. Viravan S, Go C, Ochi A, Akiyama T, Carter Snead O 3rd, Otsubo H. Jeavons syndrome existing as occipital cortex initiating generalized epilepsy. Epilepsia 2011;52(7):1273–9.