Epilepsi 2021;27(2):127-130 DOI: 10.14744/epilepsi.2020.36450

CASE REPORT

Late-Onset Generalized Myoclonic Seizure: Case Report

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Abstract

Most of the epileptic seizures that begin at an advanced age are focal onset seizures due to an underlying structural lesion. Generalized myoclonic seizures, usually seen in adolescence, are very rare in elderly patients without a history of epilepsy. In this study, we present a 60-year-old patient with generalized myoclonic seizures with electrophysiological findings. Because of the late-onset, myoclonic jerks were first evaluated with the diagnosis of non-epileptic psychogenic attack in an external health center. The patient was diagnosed with seizure recordings in Electroencephalography-video monitoring. The patient responded well to the antiepileptic treatment and became seizure-free.

Keywords: Electroencephalography; idiopathic generalized epilepsy; late onset; myoclonic epilepsy.

Cite this article as: Özkan H, Güldiken B, Çakar MM, Sert Sunal A, Kehaya S. Late-Onset Generalized Myoclonic Seizure: Case Report. Epilepsi 2021;27:127-130.

Introduction

The majority of epileptic seizures that begin at an advanced age are due to an underlying structural lesion and are focal seizures or secondary generalized seizures with focal onset.[1,2] Seizure semiology, brain imaging, and electroencephalography (EEG) findings support the focal onset. Myoclonic seizures that are typical for generalized epilepsy are rare at advanced age. Cases with advanced age are those who have already been diagnosed with generalized epilepsy in childhood or in young age or who have entered myoclonic status epilepticus due to anoxic encephalopathy.

Although juvenile myoclonic epilepsy (JME), the most common syndrome of myoclonic seizures, starts in adolescence, JME cases that have started in adulthood have also been shown in recent years and this condition has been described as adult myoclonic epilepsy.[3] However, the reported cases are under the age of 50 years. New occurrence of myoclonic seizures has been rarely reported in patients that were over 60 years of age and had no prior history of epilepsy.[4–7]

In this study, a 60 years old patient with myoclonic epilepsy who was admitted to our clinic without a history of epilepsy is presented with the literature.

Case Report

A 60-year-old male patient was admitted to the emergency department because of jerks in his body, which occurred repeatedly during the day and which did not affect patient's awareness at that time. Fifteen days before the admission, hydronephrosis developed in the right kidney and percutaneous cannula was inserted in the external central health unit. Parenteral antibiotic treatment (which names could not be recollected from the patient) was given for 1 week due to fever rising up to 38°C. The patient stated that the seizures started with frequent short-term jerks in the arms when he was taking the antibiotics. His jerks were evaluated as a non-epileptic psychogenic attack in the external health center. The patient had no history of febrile convulsion, head trauma, previous neurological disease, or epilepsy. He did not describe any sleep disorder and did not have a history of alcohol use. There was no family history of epilepsy. The patient's neurological and psychiatric examination were normal.

The patient had a 30 min routine EEG with a preliminary diagnosis of epilepsy. The following day, the patient had my-

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Received 14.05.2020
Accepted 16.07.2020
Online date 01.04.2021

Geç Başlangıçlı Jeneralize Myoklonik Nöbet: Olgu Sunumu

Öz

İleri yaşta başlayan epileptik nöbetlerin çoğunluğu altta yatan yapısal bir lezyona bağlı fokal başlangıçlı nöbetlerdir. Genellikle ergenlik döneminde görülen jeneralize miyoklonik nöbetlerin ise epilepsi öyküsü olmayan ileri yaş hastalarda görülmesi çok nadirdir. Biz bu çalışmada 60 yaşında jeneralize miyoklonik nöbetleri başlayan bir olguyu elektrofizyolojik bulguları ile sunuyoruz. Olguda miyoklonik sıçramalar ileri yaşta başlamasından dolayı dış merkezde epileptik olmayan psikojen atak tanısı ile değerlendirilmişti. Yapılan video elektroensefalografi kayıtlamada hastaya kliniğimizde tanı konmuş, olgu antiepileptik tedaviye iyi yanıt vermiş, nöbetsizlik sağlanmıştır.

Anahtar sözcükler: Elektroensefalografi (EEG); geç başlangıç; idiyopatik jeneralize epilepsi; miyoklonik epilepsi.

oclonic jerks in the upper extremities in the early hours of the morning which started bilaterally within 1 h of waking up, which were followed by a generalized tonic-clonic seizure (GTCS). Video EEG showed simultaneous generalized 3–4 Hz multiple spike and wave complexes correlating with myoclonic jerks, which then turned into GTCS (Fig. 1).

Cranial magnetic resonance imaging showed no ischemic, neoplastic, or other pathological involvement. Metabolic, serological, and hematological laboratory findings were normal. Blood urea and serum creatinine levels were measured as 35 mg/dL and 1.2 mg/dL, respectively. Serum electrolyte levels were normal, and proteinuria was not present. Paraneoplastic antibodies of anti-NMDA receptors, anti-AMPA receptors 1 and 2, CASPR 2, anti-LGI, anti-GABAB receptors 1, anti-Hu, anti-Yo, anti-Ri, anti-PNMa2/ Ta, anti-CV2, and anti-amphiphysin were found to be negative.

The patient was diagnosed with generalized myoclonic epilepsy and valproic acid (1250 mg/day) was started. As myoclonies persisted, levetiracetam dose was added and gradually increased to 2500 mg/day. On the 3rd day, myoclonic seizures stopped completely with the addition of clonazepam 2 mg/day. The patient was diagnosed as urosepsis and parenteral antibiotic treatment (piperacillin+tazobactam and ertapenem) was started for the next 10 days. The patient was discharged on day 15 with three antiepileptic drugs without seizures and normal neurological examination. At the 16th and 12th months, two antiepileptic drugs were discontinued because of the seizure-free state and normal EEG, and the treatment was continued with clonazepam monotherapy.

Discussion

The prevalence of epilepsy in the elderly population is 3.7%, and most of the seizures beginning in this period are focal onset seizures with or without secondary generalization. [1,2] When an underlying structural lesion is investigated: Cerebrovascular disease, tumors, and trauma are the most

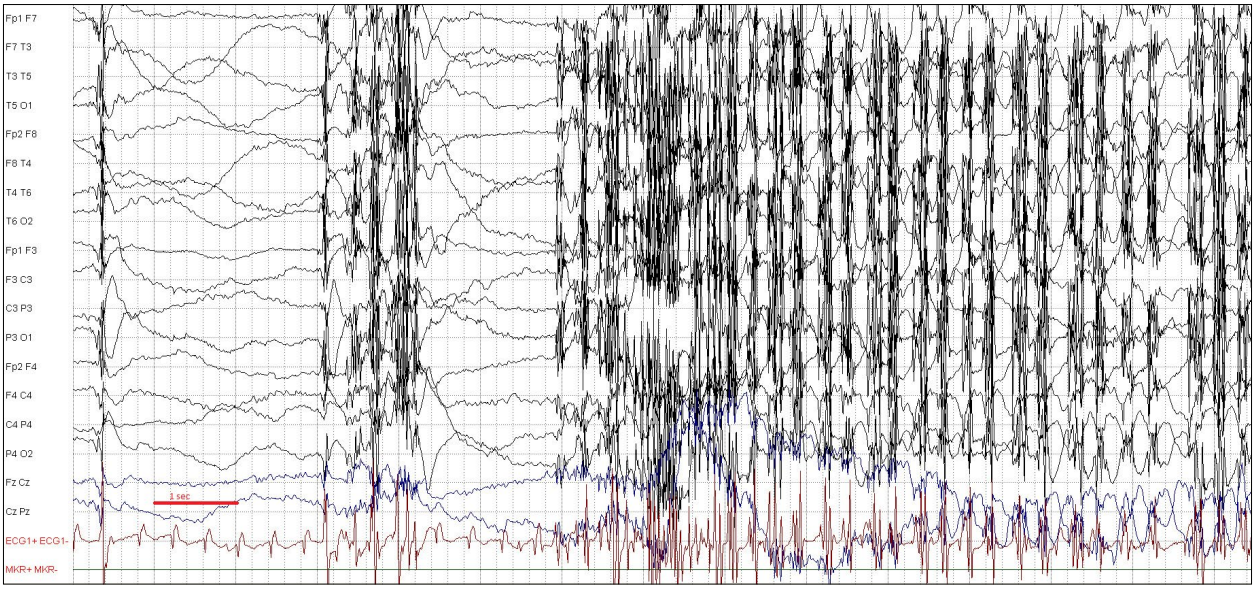

Fig. 1. Electroencephalography shows generalized multiple spike and wave complexes.

common findings. Other common causes are alcohol withdrawal and drugs. Focal seizures (71.3%), generalized seizures (17.4%), and seizures with unknown etiology (6.3%) are the most frequent seizure types in the elderly. About 87% of generalized seizures were idiopathic.[8] In another study, 67% of epileptic seizures in patients older than 65 years were partial, 27.3% were generalized tonic-clonic, and 2.2% were myoclonic type. It was reported that seizure type could not be determined in 2.7%.[9]

In this study, we presented an elderly patient who had no history of epilepsy and presented with generalized myoclonic seizures. Six other cases of idiopathic generalized epilepsy (IGE) with an onset of 60 years of age, with no previous history of epilepsy have been reported.[5–7,10] In two of these cases only GTCS were reported. Other two reported co-occurring GTCS and myoclonic seizures, while one report had only myoclonic seizures and the last one had GTCS and absence seizures. Family history was positive in four cases and negative in two cases. All patients had good response to valproic acid and lamotrigine; furthermore, seizure controls were maintained in the long term. While no triggering agent was seen in these cases, seizures occurred in the morning of a night with sleep deprivation in one case.

Whether myoclonic seizures seen in our case are caused by a drug-induced IGE or they are acute symptomatic seizures due to drugs is open to debate. Drug-induced seizures have been reported to be GTCS, whereas 18% of them showed a focal onset.[11] Antibiotics such as penicillin, cephalosporin, fluoroquinolone, and carbapenem have strong proconvulsive effect and can trigger epileptic seizure or epileptic status by suppressing the inhibitory system in the brain. Concomitant kidney failure or conditions that cause damage to the blood-brain barrier (such as head trauma and encephalitis) facilitate the development of seizures when the dose is not adjusted. Accumulation of guanidine compound methyl guanidine along with other organic compounds such as urea and uric acid as a consequence of decreased elimination secondary to renal injury may cause myoclonic jerks.[12] In addition, concomitant fever and the release of proconvulsant chemokines and cytokines lower the seizure threshold. It is also known that antibiotics can interact with antiepileptic drugs, causing a decrease in their plasma concentrations.[13,14]

Adolescent and adult-onset IGE have been suggested to share common genetic markers but the emergence of symptomatology in adults depends on triggering factors.[10] Sleep deprivation, stress, and alcohol consumption are the most common triggering factors for the first seizure in a group of adult-onset IGE patients. The occurrence of idiopathic seizures in the elderly period is shown as a result of a falling in epilepsy threshold. Increased silent cerebrovascular lesions in the elderly have been suggested to alter cortical excitability and cause seizures in individuals with genetic predisposition.[6,15] Age-related white matter lesions and increased ventricular cerebrospinal fluid distance have been reported to increase cortical excitability in individuals without dementia.[16]

In elderly patients, myoclonic seizures were mostly stopped by monotherapy at a rate of 80–90% and seizure-free states were sustained for a long time. Sodium valproate is the first drug of choice and both clonazepam and levetiracetam are recommended in patients that are resistant to treatment.[17] As a matter of fact, he did not need to use antibiotics after his discharge, his antiepileptic drugs were reduced gradually from three to one and the patient's seizure-freedom continued.

In this study, we want to emphasize that myoclonic seizures may start at an advanced age in patients without a prior epilepsy. Myoclonic jerks in the elderly should also be evaluated in terms of epilepsy and appropriate antiepileptic drugs should be selected.

Informed Consent– Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

Peer-review– Externally peer-reviewed.

Authorship Contributions– Concept: B.G.; Design: H.Ö.; Supervision: B.G.; Data collection &/or processing: M.M.Ç., A.S.S., S.K.; Analysis and/or interpretation: H.Ö.; Literature search: M.M.Ç.; Writing: H.Ö., B.G.; Critical review: B.G.

Conflict of interest– The authors declare that they have no conflict of interest.

Financial Disclosure: The authors declared that this study has received no financial support.

References

1. Choi H, Pack A, Elkind MS, Longstreth WT Jr, Ton TG, Onchiri F. Predictors of incident epilepsy in older adults: The Cardiovascular Health Study. Neurology 2017;88(9):870–7. [CrossRef]
2. Stephen LJ, Brodie MJ. Epilepsy in elderly people. Lancet 2000;355(9213):1441–6. [CrossRef]
3. Gilliam F, Steinhoff BJ, Bittermann HJ, Kuzniecky R, Faught E, Abou-Khalil B. Adult myoclonic epilepsy: a distinct syndrome of idiopathic generalized epilepsy. Neurology 2000;55(7):1030–3.
4. Brigo F, Tavernelli V, Nardone R, Trinka E. De novo late-onset absence status epilepticus or late-onset idiopathic generalized

epilepsy? A case report and systematic review of the literature. Epileptic Disord 2018;20(2):123–31. [CrossRef]
5. Michel VH, Sebban C, Debray-Meignan S, Ourabah Z, Rousseau-Lavallard MC, Piette F, et al. Electroclinical features of idiopathic generalized epilepsies in the elderly: a geriatric hospital-based study. Seizure 2011;20(4):292–8. [CrossRef]
6. Tóth V, Rásonyi G, Fogarasi A, Kovács N, Auer T, Janszky J. Juvenile myoclonic epilepsy starting in the eighth decade. Epileptic Disord 2007;9(3):341–5.
7. Yenjun S, Harvey AS, Marini C, Newton MR, King MA, Berkovic SF. EEG in adult-onset idiopathic generalized epilepsy. Epilepsia 2003;44(2):252–6. [CrossRef]
8. Hiyoshi T, Yagi K. Epilepsy in the elderly. Epilepsia 2000;41(Suppl 9):31–5. [CrossRef]
9. Hauser WA. Seizure disorders: the changes with age. Epilepsia 1992;33(Suppl 4):S6–14. [CrossRef]
10. Marini C, King MA, Archer JS, Newton MR, Berkovic SF. Idiopathic generalised epilepsy of adult onset: clinical syndromes and genetics. J Neurol Neurosurg Psychiatry 2003;74(2):192–6.
11. Messing RO, Closson RG, Simon RP. Drug-induced seizures: a 10-year experience. Neurology 1984;34(12):1582–6. [CrossRef]
12. Gopi M, Arumugam A. Acute myoclonic jerk terminated by a simple procedure - A case report. J Clin Diagn Res 2016;10(2):OD16–7. [CrossRef]
13. Czapińska-Ciepiela E. The risk of epileptic seizures during antibiotic therapy. Wiad Lek 2017;70(4):820–6. [Article in Polish]
14. Calandra G, Lydick E, Carrigan J, Weiss L, Guess H. Factors predisposing to seizures in seriously ill infected patients receiving antibiotics: Experience with imipenem/cilastatin. Am J Med 1988;84(5):911–8. [CrossRef]
15. Marosi M, Luef G, Schett P, Graf M, Sailer U, Bauer G. The effects of brain lesions on the course of chronic epilepsies. Epilepsy Res 1994;19(1):63–9. [CrossRef]
16. Silbert LC, Nelson C, Holman S, Eaton R, Oken BS, Lou JS, et al. Cortical excitability and age-related volumetric MRI changes. Clin Neurophysiol 2006;117(5):1029–36. [CrossRef]
17. Mantoan L, Walker M. Treatment options in juvenile myoclonic epilepsy. Curr Treat Options Neurol 2011;13(4):355–70. [CrossRef]