

Aktif Epilepsili Hastaların Klinik ve Demografik Profili: Türkiye'deki Bir Üçüncü Basamak Hastanesinin Deneyimleri

Clinical and Demographic Profile of Patients with Active Epilepsy: Experience From a Tertiary Care Hospital in Turkey

Sehnaz Basaran¹, Muhammed Nur Ögün²

¹Derince Eğitim ve Araştırma Hastanesi, Nöroloji Kliniği, Kocaeli, Türkiye

²Bolu Abant İzzet Baysal Üniversitesi, Nöroloji Ana Bilim Dalı, Bolu, Türkiye

ÖZ

GİRİŞ ve AMAÇ: Üçüncü basamak bir hastanede epilepsi polikliniğine başvuran hastaların klinik ve demografik bulgularını araştırmak.

YÖNTEM ve GEREÇLER: Ocak 2016 - Şubat 2018 tarihleri arasında epilepsi polikliniğine başvuran aktif epilepsili 187 hasta retrospektif olarak incelendi. Demografik özelliklerin yanı sıra; nöbet sıklığı, hastalık süresi, nöbet tipi, antiepileptikler, elektroensefalografik (EEG) ve manyetik rezonans görüntüleme (MRG) bulguları kaydedildi.

BULGULAR: Hastaların yaş ortalaması $36,9 \pm 13,1$; ve % 54,5'i erkekti. Ailede epilepsi öyküsü 48 hastada (% 25.7) bulundu. 35 hastada (% 18.7) ebeveynler arasında akrabalık vardı. En sık görülen risk faktörleri kafa travması, febril konvülsiyon ve perinatal problemler idi. Fokal nöbetler % 67.9, jeneralize nöbetler% 29.3, sınıflandırılmayan nöbetler% 2.7 idi. 107 hastanın (% 57.2) beyin MR'ı ve 57 hastanın (% 30.5) interiktal EEG'si normaldi. Hastaların toplam 116'sı (% 62) monoterapi alırken, 71'i (% 38) polyterapiye almaktaydı.

TARTIŞMA ve SONUÇ: Bu çalışmada, hastaların klinik ve demografik verileri literatür ile uyumlu idi. Kapsamlı epilepsi kliniklerinde düzenli takip ile yapılan ayrıntılı muayenenin nöbetlerin önlenmesinde ve daha iyi sonuç alınmasında potansiyel bir fayda sağlayacağına inanıyoruz.

Anahtar Kelimeler: epilepsi, demografik, klinik

ABSTRACT

INTRODUCTION: To investigate the clinical and demographic findings of patients at epilepsy outpatient clinic of a tertiary care hospital.

METHODS: We retrospectively analysed one hundred and eighty-seven patients with active epilepsy who admitted to our epilepsy clinic between January 2016 and February 2018. In addition to demographic characteristics, we evaluated clinical variables such as; seizure frequency, duration of illness, type of seizures, antiepileptics, electroencephalographic (EEG) and magnetic resonance imaging (MRI) findings.

RESULTS: The mean age of the patients were $36,9 \pm 13,1$ years; and 54.5% were male. Family history of epilepsy was found in 48 patients (25.7%), and 35 patients (18.7%) had a kinship between parents. The most frequent risk factors were head trauma, febrile convulsions and perinatal problems. Partial seizures was seen in 67.9%, generalised seizures in 29.3% and unclassified seizures in 2.7%. Brain MRI of 107 patients (57.2%) and interictal EEG of 57 patients (30.5%) was normal. A total of 116 (62%) received monotherapy, while 71 (38%) continued on polytherapy.

DISCUSSION and CONCLUSION: In this study, clinical and demographic data of the patients were consistent with the literature. We believe that detailed examination with regular follow-up in comprehensive epilepsy clinics would provide a potential benefit in preventing seizures and better outcome.

Keywords: epilepsy, demographics, clinic

İletişim / Correspondence:

Dr. Muhammed Nur Ögün

Bolu Abant İzzet Baysal Üniversitesi, Nöroloji Ana Bilim Dalı, Bolu, Türkiye

E-mail: dr.mogun@gmail.com

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INTRODUCTION

Epilepsy is a clinical condition that results in abnormal, repetitive and synchronized neuronal discharges of the brain (1). This disease has a bimodal distribution with a peak in early childhood and late-middle aged adulthood (2). Generally one percent of people suffer from epilepsy in their lifetime. About 50 million people worldwide live with active epilepsy (2, 3). Epidemiologic studies revealed that these rates are increased in low and middle income countries (3). Consequently, detailed documentation of clinic and demographic variables would have a beneficial effect on prognosis in developing countries like Turkey.

In this study, we aimed to investigate sociodemographic and clinical characteristics of patients with active epilepsy who are treated and followed up regularly at our epilepsy outpatient clinic.

MATERIALS and METHODS

This study was conducted in epilepsy outpatient clinic of a tertiary care hospital. The epilepsy diagnosis was based on medical history, clinical radiologic electoronecephalographic and laboratory findings. We analysed 282 files from the epilepsy clinic between January 2016 and February 2018. Forty-one patients with inadequate documents, 34 with psychogenic non-epileptic seizures 12 patients with single attacks and 8 people with inappropriate drug use were excluded. After the exclusion period, we reevaluated retrospectively 187 patients with active epilepsy due to the seizure diary, medical records and treatment protocols.

Active epilepsy was defined according to the criteria of the International League Against Epilepsy (ILAE) that characterize patients with a seizure in the last five years or receiving antiepileptics at the time of the assessment (4).

Age, gender, hand dominance, employment, marital status, age of seizure onset, family history, seizure frequency, duration of disease, risk factors, seizure patterns, antiepileptic treatment, 16-channel scalp EEG and Brain MRI (with epilepsy protocol) findings were documented.

The study was performed in accordance with the Declaration of Helsinki by local ethics committee.

Statistical Analyses

Data analysis was performed using the Statistical Package for Social Sciences version 17.00 for Windows (SPSS Inc., Chicago, IL, USA) program. Descriptive statistics and frequency analysis were used. Data are presented as mean±SD for quantitative data, number (n) and percent (%) for categorical data.

RESULTS

In our study, 187 patients with active epilepsy including 102 males (54.5%) and 85 females (45.5%) were enrolled. The mean age of the patients was $36,9 \pm 13,1$ (min:17, max:74) years. The majority of the patients (77.6 %) were in the age group of 20 to 50 years. Age distribution of patients are shown in Figure 1.

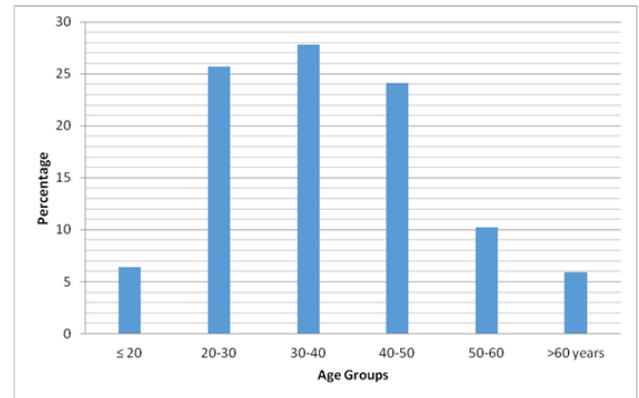


Figure 1. Age distribution of patients with epilepsy

Total of 170 patients (90.9 %) had a right hand dominance. Family history of epilepsy was positive in 48 patients (25.7 %) and 35 cases (18.7 %) had a kinship between parents. Neurological and physical deficits were evident in 22 patients (11.8 %). Mental retardation was found on 12 cases according to the criterias published in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5)(5). Sociodemographic characteristics of the patients are shown in Table 1.

Table 1. Sociodemographic characteristics of patients with epilepsy

	n	%
Age (years, mean± SD)	36.9± 13.1	
Age range	17-74	
Age groups		
≤ 20 years	12	6.4
20-30	48	25.7
30-40	52	27.8
40-50	45	24.1
50-60	19	10.2
>60 years	11	5.9
Gender		
Male	102	54.5
Female	85	44.5
Education (years, mean± SD)	8.6 ± 3.7	
62	33.2	
0-5 years	102	54.6
5-11 years	23	12.2
>11 years		
Hand dominance (right)	170	90.9
Socioeconomic Status		
Low	22	11.7
Middle	145	77.5
High	20	10.7
Occupation		
Unemployed	100	53.5
Employed	81	43.3
Retired	3	1.6
Student	1	0.5
Unemployed due to the seizures	2	1.1
Marital Status		
Single	52	27.8
Married	133	133
Widow/Divorced	2	1.1
Living Status (living with family,%)	183	97.9
Place of Living		
Village	8	4.3
Township	119	63.6
City Center	60	32.1
Smoking	60	32.1
Alcohol	16	8.6
Family history of Epilepsy	48	25.7
Kinship between parents	35	18.7
Neurological deficit	22	11.8
Mental retardation	12	6.4

The most common etiology of the seizures was idiopathic (39 %). Head injuries (25.7 %), febrile convulsions (21.4 %) and neonatal complications (7.5 %) were other common causes among patients. (Table 2)

Table 2. Etiologic Factors of patients with Epilepsy

	N	%
Febrile Convulsions	40	21.4
Head Injury	48	25.7
Neonatal Complications	14	7.5
Cerebrovascular Disease	4	2.1
Intracranial Infections	3	1.6
Brain Lesions	5	2.7
Idiopathic	73	39

The mean age of seizure onset was 19.6±13.7 and the mean duration of epilepsy 17.2 ±11.9 years. Frequency of seizures were 2.1±2.7 during last three months and 5.8±7.8 per year. The most frequent type of seizures was complex partial seizures (66.3 %), followed by myoclonic seizures (14.4%), generalised tonic- clonic seizures (13.9%) and simple partial seizures (%1,6). According to the ILAE 1989 classification; our study group consisted of 49 patients (%26,2) with extratemporal, 41 patients (21.9 %) with temporal and 27 patients (14.4 %) with juvenile myoclonic epilepsy. All the AEDs were taken for single or combination therapies by the patients. Sixty two percent were treated with single AED, while total of 38% were on polytherapy. (Table 3)

Table 3. Clinic characteristics of patients with Epilepsy

	n	%
Age of seizure onset (years, mean ± SD)	19.6 (±13.7)	
Duration of illness (years, mean ± SD)	17.2 (±11.9)	
Seizure frequency		
Last one year (mean ± SD)	5.8 (±7.8)	
Last three months (mean ± SD)	2.1 (±2.7)	
Seizure Types*		
Partial		
Simple	3	1.6
Complex	124	66.3
Generalised		
Tonic-clonic	26	13.9
Absence	1	0.53
Atonic	0	0
Myoclonic	27	14.4
Tonic	1	0.53
Unknown	5	2.7
Seizure Classification**		
Localisation Related (Focal) Epilepsies		
Temporal	41	21.9
Extratemporal	49	26.2
Generalised		
Juvenile Miyoclonic Epilepsy	27	14.4
Juvenile Absence Epilepsy	1	0.5
Other	27	14.4
Unclassified	42	22.5
Antiepileptic Treatment		
Monotherapy	116	62
Politherapy	71	38
*Clinical and electroencephalographic classification of seizures (International League Against Epilepsy (ILAE, 1981)		
**Classification of epilepsies and epileptic syndromes (ILAE, 1989)		

Brain MRI findings were unremarkable in 57.2 % of all cases. Most common cerebral abnormalities were encephalomalasia (13.4%), ischemic gliosis (11.2%) and structural malformations (4.3%). Interictal EEG recordings showed epileptiform discharges in 58.3 %, was normal in 30.5 % and non-

specific discharges was noted in 8% of patients. (Table 4).

Table 4. Electroencephalographic and Magnetic Resonance Imaging Findings of Patients with Epilepsy

	n	%
EEG Findings		
Normal	57	30.5
Epileptiform Discharges		
Lateralized	67	35.8
Generalised	42	22.5
Nonspecific Paroxysms	15	8
Unknown	6	3.2
MRI Findings		
Normal	107	57.2
Mesial Temporal Sclerosis	7	3.7
Encephalomalasia	25	13.4
Tumour	2	1.1
Cerebral Atrophy	5	2.7
Ischemic Gliosis	21	11.2
Structural Malformation	8	4.3
Shunt	1	0.5
Foreign Body	1	0.5
Cerebral Heterotrophy	1	0.5
Callosal Atrophy	1	0.5
Neuroglial Cyst	3	1.6
Intracerebral Calcification	1	0.5
Unknown	4	2.1

In our study, total of 62% were receiving monotherapy, while 38% were on polytherapy. The most frequent AED was Levetiracetam (24.1%), followed by sodium valproate (21.9 %), carbamazepine (7%) and oxcarbazepine (4.8 %). (Table 5) Distribution of antiepileptic agents used by patients with epilepsy are shown in Figure 2.

Table 5. Distribution of Antiepileptics used by patients with epilepsy

Drug	n	%
Levetiracetam	45	24.1
Sodium Valproate	41	21.9
Carbamazepine	13	7.0
Oxcarbazepine	9	4.8
Lamotrigine	5	2.7
Topiramate	1	0.5
Phenytoin	1	0.5
Clonazepam	1	0.5
Zonisamide*	0	0
Lacosamide*	0	0
Pirimidone*	0	0
Polytherapy	71	38.0
*Type of antiepileptics that placed in the polytherapy group		

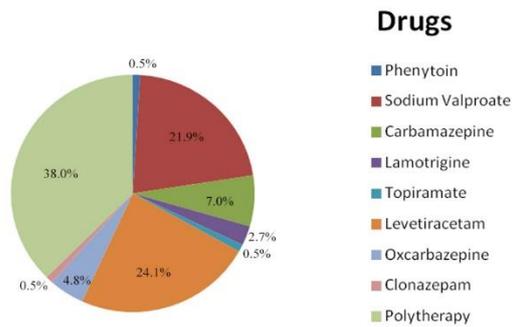


Figure 2. Distribution of antiepileptic drugs used by patients with epilepsy

DISCUSSION

Epilepsy is a serious and prevalent neurologic disease that occur in all countries worldwide (2). Assessment of sociodemographic and clinic features of epileptic patients at tertiary care hospital would simplify the treatment strategies and prevention methods for seizures. Accordingly, we aimed to evaluate and update the descriptive data of patients with active epilepsy. In our study, percentage of men (54.5%) was slightly more than women (45.5%). Studies about gender differences revealed that unprovoked seizures are more frequent in men, while idiopathic generalised epilepsies including juvenile myoclonic epilepsy and absence epilepsy affect more women (6, 7). Bharucha et al. reported that men's broad participation in social life may increase their exposure to trauma and provide the development of epilepsy (8). Additionally, some authors suggest that men predominance would depend on sociocultural reasons such as; women hide their illness in order to avoid themselves from unmarriageable beliefs or stigmatisation (3, 9). In contrast, some studies found no statistically significant gender differences among epileptic patients (10, 11).

Consanguineous marriage is a traditional issue, especially in eastern part of Turkey (12). Numerous studies have suggested that consanguinity is a frequent risk factor for seizure disorders in developing countries (13, 14). Our study was conducted in a hospital which is located in a north-west township established with massive rural-to-urban migration from eastern regions. We found that 18.7 % of epileptic patients had a kinship between parents. This result may depend on the property of our study

group's place of living. On the contrary, some studies reported no association between epilepsy and parental consanguinity at eastern regions. However, these studies reflected a limited population which was comprised of children or young-adult individuals with normal intelligence (15, 16).

Previous reports about risk factors of epilepsy had remarkable methodological limitations (17, 18). Consequently, these results were controversial due to different age groups, countries and seizure types (2, 13, 19). Moreover, researchers have focused on risk factors separately according to various types of epilepsy and epilepsy syndromes (19). Thus, comparing the frequency of certain risk factors between different studies was more difficult. In our study, the most common etiologic factors were family history of epilepsy and head trauma with the same percentage (25.7 %). Studies demonstrated that 15-37 % of epileptic patients have a positive family history (19, 20). Individuals who have epilepsy in their first-degree relatives have a risk about 3-6 times that in the general population (19).

Head trauma increases the risk for seizure development (21). In the United States, cumulative incidence of epilepsy after head trauma ranges between 2 % and 50 %, depending on injury severity (22). In a large population-based study in Rochester, Minnesota, 30 % of individuals with head trauma between 15-34 years developed epilepsy, while 8 % of adults older than 65 years (23). Our results were in good agreement with previous reports (21-23).

Strong association between febrile seizures and epilepsy has been well-established from both developed and developing countries for years. On the other hand, the mechanisms underlying this association remains unclear (18). In our study, the second common risk factor was history of febrile convulsions (21.4%) which is the most prevalent in studies from Sri Lanka and Iran (24, 25). Additionally, two reports at tertiary clinics from Turkey revealed that febrile convulsions are the second risk factor in epileptic patients (26, 27). Percentage of neonatal complications (7.5 %) took third place in our study. These results were similar with previous investigations (26-28).

Epileptic seizures after cerebrovascular diseases may occur in early or late stages. It has been estimated

that long-term cumulative risk of poststroke epilepsy (PSE) vary from 2 % to 15 % (29). In our study 2.1 % of patients had stroke before seizures.

In developing countries generalized epilepsy is reported to be more frequent, while complex partial seizures are more common in studies conducted in western countries (28, 30). Partial seizures are missing according to limited availability to EEG units in poor nations(31). In our study, complex partial seizures (66.3 %) were the most common type of epilepsy. Thus, our results were similar to that observed in industrial population (31, 32) . On the other hand, controversial results from developing countries may related to heterogeneity of study population at each region, differences between age groups and variations in methodological settings and diagnostic tests (8, 28).

Radiologic abnormalities were detected in 40.7 % of all patients who underwent MRI with standard epilepsy protocol (33). Our findings about neuroimaging abnormalities were correlated with previous studies (24, 34, 35). In addition, two studies conducted in Iran and Japan reported that brain CT/MRI was abnormal in 26.6% and 27.4% respectively, which was lower than our findings (25, 36). This difference may related to lower sensitivity of brain CT for detecting epileptogenic lesions.

Approximately 12.5-50 % of epileptic patients present interictal epileptiform discharges (IEDs) on standard EEG recordings. Sleep deprivation facilitates the appearance of these paroxysms (35). In our study, IEDs were detected in 58.3 % of all patients. Similar results have been shown in studies which were conducted in Japan, Jaipur and Sudan (34, 36, 37).

About 60-70% of patients with epilepsy respond well to monotherapy with an appropriate AED. Consistent with previous reports, the majority of the patients were receiving monotherapy as compared to polytherapy (62 % versus 38 %) in our study (38, 39). The most commonly used AED was Levetiracetam (24.1 %), followed by sodium valproate (21.9 %) and carbamazepine (7 %). The frequent usage of Levetiracetam can be explained by high percentage of partial seizures in the sample and/or physicians choice of new generation AEDs for partial epilepsy.

Limitations of The Study

Our study has some limitations. First, our sample was small with a retrospective design. Secondly, our study was hospital-based which may differ from population-based studies. Third, absence of pediatric age group in the sample provides a limited comparison. Further population based studies in large groups are needed to evaluate descriptive features of patients with epilepsy.

CONCLUSION

This report gives a valuable information and reflect a profile about the epileptic patients at a tertiary care hospital in Turkey. We believe that the evaluation of sociodemographic and clinic characteristics with comprehensive studies would provide a potential benefit for the development of treatment strategies and better outcomes.

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