The prevalence of epilepsy in Denizli city center

Denizli il merkezinde epilepsi prevalansı

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Abstract

Purpose: In this study we aimed to evaluate the prevalence of epilepsy in Denizli, a city of Turkey, and to compare it with both studies from the world and Turkey.

Methods: With this purpose 4666 people were included to the study. Primarily they filled a questionnaire form face to face. The ones suggested to have seizure were evaluated by clinicians and EEG was performed.

Results: The prevalence of epilepsy was found 5.7 /1000 in Denizli. The beginning of the disease was more frequent in the first two decades.

Conclusion: This prevalence value was lesser than the ones using the same questionnaire in Turkey suggesting a higher educational grade and development in Denizli. On the other hand when compared worldwide, the results were similar to the ones observed in the developing countries.

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Key words: Epilepsy, prevalence, epidemiology

Özet

Amaç: Bu çalışmada Türkiye`nin Denizli ilindeki epilepsi prevalansının değerlendirilmesi ve Türkiye`nin diğer şehirlerinde ve dünyanın değişik bölgelerinde yapılan diğer prevalans çalışmaları ile karşılaştırılması amaçlandı.

Gereç-Yöntem: Bu amaçla 4666 kişi çalışmaya dahil edildi. Öncelikle bu kişiler yüz yüze görüşme ile bir sorgulama formu doldurdu. Nöbeti olabileceği düşünülen olgular klinisyenler tarafından değerlendirildi ve tumüne EEG uygulandı.

Sonuçlar : Denizli de epilepsi prevalansı 5.7/1000 idi. Hastalık başlangıçı ilk dekadda daha sıktı.

Tartışma : Elde edilen prevalans değeri, Türkiye de benzer sorgulama formu ile yapılan diğer çalışmalara göre daha düşük saptandı. Bu durum Denizli ilinde eğitim ve gelişmişlik düzeyinin diğer çalışmalarda taranan illere göre daha yüksek olması ile açıklanabilir. Diğer taraftan dünya genelindeki çalışmalar ile karşılaştırıldığında, elde ettiğimiz sonuçlar gelişmekte olan ülkelerin sonuçlarına benzerdi.

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Anahtar sözcükler: Epilepsi, prevelans, epidemiyoloji

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Introduction

Epilepsy is a chronic neurological disorder by seizures which may follow symptoms called aura but sometimes it may come alone avoiding patients to take care. Cause of chronic course, epilepsy decreases the quality of life and drugs or other treatment strategies have high economical costs.

Epidemiological studies about epilepsy help us to predict the incidence, prevalence of epilepsy [1]. These studies demonstrated that epilepsy may affect all age groups and both gender worldwide [2,3]. There are many studies reporting different results probably caused by different methodologies or differency in the genetic and environmental factors.

The prevelance was 4-10 /1000 in developed countries [4,5]. But recent data demonstrated that frequency of epilepsy seems to be higher in developing countries than developed countries [6,8].

Epilepsy mostly affects older people in developed countries [9,10] while peak incidence was higher in younger ages in developing countries [11,12].

There are a few epidemiological studies about epilepsy in Turkey. Most of them assessed prevalence [13,17] while one studied the incidence after 15 years old population [18].

These studies reported the epidemiologic aspects of the Northeast, Middle and the Northwest regions of Turkey. There is only one study evaluating the epilepsy prevalence in school children in Aegean region, Izmir [20]. As to our best knowledge there is no study designed to demonstrate the prevalence of epilepsy at all ages in the internal Aegean region of Turkey.

The aim of this study is to determine the prevalence of epilepsy in Denizli and to compare it with other studies. Moreover we also aimed to demonstrate the classification and the frequency of the seizure types, the frequency of drug usage and the common antiepileptic types.

Materials and methods

This descriptive and cross sectional study was performed between 15.01.2003 to 20.09.2004.

With this purpose, individuals from all 20 primary health care center in the city center were sampled and the ones who accepted to participate the study performed a questionnaire face to face.

Determining the amount of sample size

After the newborns were excluded, 330.243 citizens were recorded in these 20 primary health care center. And with the estimation that 4 people were leaving in each house, the amount of houses needed to be contacted was calculated.

The prevalence frequency was 1% ± 0.2 and the safety limits were 99.99% in the previous epidemiologic studies [13], so using the EPIINFO program the estimated sample size was calculated as 4650 people. So 4666 people were questioned.

Data collection

The permissions were taken from the Pamukkale University and the Healthy Department. The questionnaire form previously used in Silivri [13] which included 15 questions and had a sensitivity of 99 % and specifity of 76% was chosen. Five questions about demographical data were added to the form with the permission of the definers. Nurses were educated about both epilepsy and the form. In the first step, people were questioned face to face by these nurses.

The patients who had a history of seizure were included to the study. The patients experiencing their last convulsion more than 5 years ago were marked as inactive epilepsy, while the ones who had seizure history in the last 5 years were named as active epilepsy.

After the first step, the forms were adressed by the investigators and the ones who had the suspicion of epilepsy were questioned again by the investigators. EEG was performed to the ones who were thought to have epilepsy. Finally 34 persons of the 4666 were diagnosed as epilepsy. 27 of them who had active epilepsy were classified using ILAE 1981.

Data was inserted to SPSS programme and chi-Square test was performed for statistical analyses.

Results

The active epilepsy prevalence was 5.7/1000 (Table 1). The whole life prevalence was 7.2/100. Mean age of the patients with active epilepsy was 18.9± 16.1 (48.1% of them were male). The active epilepsy prevalence was 5.4/1000 among males and 5.8/1000 among females (Table 1). The difference between the groups was not significant ($p > 0.05$).

Table 1. The age and gender specific prevalence rates of patients with active epilepsy

Age (years)	Population (n)	Female (/1000)	Male (/1000)	All (/1000)
1-9	866	4 (9.6)	5 (11.1)	9 (10.3)
10-19	605	4 (13.5)	1 (3.2)	5 (8.2)
20-29	1027	4 (6.3)	4 (10.1)	8 (7.7)
30-39	945	1 (2.2)	2 (4.1)	3 (0.3)
40-49	570	-	-	-
50-59	344	1 (5.9)	-	1 (2.9)
60+	309	-	1 (6.9)	1 (3.2)
All ages	4666	14 (5.8)	13 (5.4)	27 (5.7)

Table 2. Seizure types of the patients with active epilepsy

Seizure type		Number (n)	Ratio (%)
Partial		12	44.4
	Simple partial	1	3.7
	Complex partial	4	14.8
	Secondary generalized	7	25.9
Generalized		14	51.9
	Absence	1	3.7
	Tonic	2	7.4
	Tonic-Clonic	9	33.3
	Myoclonic	2	7.4
Unclassified		1	3.7
All		27	100

Table 3. Starting age of the seizures

Age (years)	Male (n)	Female (n)	All (n)
1-9	6	9	15
10-19	4	3	7
20-29	1	2	3
30-39	1	-	1
40-49	-	-	-
50-59	-	-	-
60+	1	-	1
All ages	13	14	27

51.9 % of the cases had generalized, 44.4 % had partial and 3.7 % had unclassified seizures (Table 2). The starting age of seizure was younger than 20 years in 22 of the patients (Table-3) 54.5% of EEGs were abnormal while 45.5 % were normal.

Six patients had computerized tomography (CT) and 8 had magnetic resonance imaging (MRI) which only revealed arachnoid cyst in two of them. 1.5% of the people who were included to the study had non-epileptogenic seizures.

17 of the epilepsy group (62.9%) were regularly using antiepileptic agents. Eleven of them were using valproic acide (VPA), 3 of them were using carbamazepine (CBZ), 2 of them were using phenobarbital, and one of them were using VPA plus CBZ. 10 of the patients were not using any agents and 7 patients had used non-pharmaceutical methods to handle the seizures.

Etiological reasons of the ones having partial seizures are presented in Table-4.

From the 27 patients diagnosed as epilepsy, 9 (33.3%) believed that epilepsy was a disorder caused by the brain, 8 (29,6%) thought that it was a psychiatric disease, 1 (3.7%) believed

Table 4. Probable etiologic causes of partial seizures

Causes	Number(%)
Perinatal injury	2 (%16.6)
Head trauma	1 (%8.3)
Stroke	1 (%8.3)
Unknown	8 (%66.6)

that it was transferred from the mother milk. Nine (33.3%) patients said that they had no idea about the disease.

The seizure frequencies were 1 in a month in 9 patients (33.3%) 1 in every 3 months in 9 (33.3%), 1 in every 6 months in 2 patients (7.4%) and one in every year in 7 patients (25.9%). There was a history of febrile convulsion in 48.1% and a family history of epilepsy in 11.1 % of the patients. The probable etiologic reasons of partial seizures were perinatal injury in 16.6%, head trauma in 8.3%, cerebrovascular disease in 8.3% and could not be classified in 66.6% of patients.

Discussion

Variable results were reported in many epidemiological studies of epilepsy among different studies probably caused by the differences in the methodology and the classification.

Recent studies from our country reported a prevalence of 10.2/1000 in Silivri [13], 8.0/1000 in İstanbul [17], 6.0/1000 in Trabzon [14] and 5.6/1000 in Izmir [19]. Prevalence of active epilepsy was 8.5 per 1000, and lifetime prevalence was 12.2 per 1000 in the central district of Bursa [15] .

The active epilepsy prevalence was 5.7/1000 and the whole life prevalence was 7.2/1000 in our study. These results were compatible with some studies [15,20].

The prevalence of epilepsy in Silivri was higher in a recent study which used the same questionnaire form with us [13] may be explained by the place it was designed. Silivri may mostly be named as a rural area when compared with Denizli. Because previous studies have demonstrated that frequencies were higher in the rural areas [20] cause hereditary factors may play a role.

Our prevalence was lower than some other recent studies from our country [15]. This may be the result of higher education level of that cities and also maybe caused by some environmental factors.

According to the ILAE 1981 classification, 51.9% of the patients had generalized, 44.4% partial seizures in our study. The type of the seizure could not be classified in 1 patient (3.7%).

The frequency of generalized seizures was 40.8% in Silivri which was lesser than ours. But there are also many studies who had reported compatible results with ours like 47% [17]. There are also some studies reporting controversial results. A study from Trabzon reported the frequency of partial seizures 63% and over half of these were secondary generalized seizures [14]. On the other hand another study from Turkey reported higher prevalence of %65 in Bursa [15]. The different values in these studies maybe caused by misclassification of seizures. The lack of clear history and existence of secondary generalization would had been the cause of misclassification of parital seizures as primary generalized seizures. Similarly the variable complaints described at the beginning of the seizure may lead the over diagnosis of secondary generalization. EEG was not performed in many field study but we were able to perform EEG to 81.5% of our patients.

Prevalence ratio was highest between 0-9 years (10.3/1000) and lowest between 30-39 years (0.3/1000). 88.8% of the seizures started before the age of 20 in our study. This result is compatible with some recent studies reporting a prevalence of 80/1000 in the age group between 0 to 16 years [16].

Most of recent studies reported first two decades to have the highest prevalence in developing countries while older ages had higher prevalence in developed countries. The inadequate medical employment and higher prevalence of hereditary diseases in developing countries may explain the increased frequency of seizures in first two decades. Also lower expectance of life duration may be the result of lower prevalence in elderly [21,22].

Nearly sixty-three percent of the patients were using drugs regularly while 37% were not receiving any drugs. Also 7 patients had tried non-pharmaceutical methods which were

higher than the developed countries. This may be caused by the relatively lower levels of education and the social medical assurance.

Conflict of interest: The authors declared no conflict of interest.

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