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Epidemiological study of epilepsy in Yazd-Iran



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ABSTRACT

Background: Epilepsy is a common neurological disorder. This study was aimed to investigate the epidemiological features of epilepsy patients admitted to neurology ward of Shahid Sadooghi hospital, Yazd, Iran.

Methods: In an epidemiological descriptive study the data of 121 epilepsy patients admitted in neurology ward of hospital during 2015 and 2016 was gathered from hospital records and telephone contacts with patients or their families in some cases. The gathered data was analyzed through SPSS16 and by using descriptive statistics.

Results: 50.4% of studied patients were in the age group below 10 years old and 57% of them were female. The majority of

research sample (84.3%) had less than high school education. The type of disease was generalized tonic-clonic epilepsy in 76% of patients. In 49.6% of studied patients, epilepsy was idiopathic and 87.7% of them had been admitted in hospital due to seizure. Also a single drug treatment had been prescribed for 60.3% of studied patients.

Conclusion: Based on our results in the studied population the prevalence of epilepsy is more common among children, females and people with lower education. Also, the general and idiopathic types of epilepsy are more common.

Keywords: Epilepsy, Seizure, Epidemiology, Neurology, Hospital

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INTRODUCTION

Epilepsy is one of the most serious and common chronic neurological problems throughout the world which is created as a result of sudden and severe nervous system disorder due to abnormal electrical activity of nerves¹⁻⁴ and can affect any people of all ages, races and social classes.⁵ So, by definition, epilepsy is the sudden, excessive and abnormal discharges of nerve cells in the context of brain. These discharges can be happened in any severity at any ages due to many factors. In the other words recurring epileptic seizures called epilepsy. Epilepsy has different types.⁶ In a general classification, it can be divided into 2 types named generalized and partial epilepsy.⁷ Although the cause of the most cases of epilepsy is unknown and in some texts it is said that about 70% of epilepsy cases have no known cause,¹ but some of the possible causes of this disorder include impaired brain development before birth, lack of oxygen during or after birth, severe trauma or brain injury, the unusual shape of the brain, tumors, brain infections such as meningitis or swelling of the brain, genetic factors, family history and stroke. Also, some other factors such as sleep disorder, food allergy, stress, flash light or drug abuse can trigger this disease.^{6,7} Epileptic seizures have a broad range of protests because brain is responsible for a wide range of activities and depending on which part

of the brain is involved a broad range of functions could be impaired due to seizure.⁴ Epilepsy is often associated with loss of consciousness or abnormal expression of physical, emotional and psychological functions.² Epilepsy is diagnosed with the occurrence of two or more seizures without any reactive causes. In clinical practices diagnosis of epilepsy is made based on the patients' medical history, some screening tests such as visionary, hearing or reaction ability and the neurological tests such as CT or CAT scan or MRI. Existing treatments for the epilepsy include some medications, Ketogenic diet, Vagus nerve stimulation (VNS) and surgery.⁵ As noted epilepsy is a common problem around the world. Approximately 50 million people worldwide have epilepsy, making it one of the most common neurological diseases globally. It is claimed that up to 10% of the world population experience at least one seizure during their lifetime. According to the World Health Organization, nearly 80% of the people with epilepsy live in low- and middle-income countries.⁵⁻⁸ Epilepsy has many negative physical and psychological consequences. It suffers the quality of individual and social life of affected people severely. Some of these negative effects of epilepsy are due to physical effects of the disease such as the frequency of the seizures and some others are due to the long-term use of medications.

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Epilepsy patients often have a wide range of psycho-social problems that affect various aspects of their daily lives beside their health problems.^{2,5,9} According to the aforementioned issues and also because epidemiological studies are required to identify the incidence and prevalence of disease and the patients' characteristics in a specific geographical area and time due to this fact that the findings of cross-sectional epidemiological studies cannot be generalized to other locations or times,⁶ in this study we attempted to describe the epidemiological features of epilepsy patients who admitted in Shahid Sadoughi hospital of Yazd city, Iran during 2015 and 2016.

METHODS

This is a descriptive epidemiological study which was done in Shahid Sadoughi hospital of Yazd city, Iran. The study sample was consisted of all epilepsy patients who had been admitted to the neurology ward of the hospital in the years 2015 and 2016. The required data including the patients' age, gender, education, the beginning age of disease, disease type, disease cause, hospitalization cause and the treatment approach (described medications), was gathered from the patients' records and telephone call with patients or their families in some cases. Data analysis was done through SPSS version 16 and by using descriptive statistics.

RESULTS

In this study the epidemiological data of 121 epilepsy patients was gathered. The mean age and the mean age at beginning of disease (the first diagnosis) were 20.13 ± 22.27 and

16.58 ± 22.20 years. The minimum and maximum ages of studied patients were 1 and 92 years old, respectively. 50.4% of patients were below 10 years old. The minimum and maximum ages of disease beginning, also were 1 and 90 years old, respectively. Table 1 shows the distribution of patients by gender.

Also, table 2 shows the distribution of studied patients by education.

Our other findings showed that the majority of studied population has generalized tonic-clonic epilepsy. Table 3 shows the distribution of patients by the type of disease.

Our data showed that the majority of epilepsy cases in the studied population are idiopathic. Table 4 presents the distribution of patients by the cause of their disease.

Also, the majority of studied patients had been admitted to hospital due to seizure. Table 5 presents the distribution of patients by the hospitalization cause.

Our other finding regarding to treatment approach showed that for 73 (60.3%) patient a single drug has been prescribed while for 48 (39.7%) of

Table 1 Distribution of studied patients by gender

Gender	N	Percent
Female	69	57.0
Male	52	43.0
Total	121	100.0

Table 2 Distribution of studied patients by education

Education	N	Percent
Below the formal education age	56	46.3
High school	46	38.0
Diploma and higher	19	15.7
Total	121	100.0

Table 3 Distribution of studied patients by epilepsy type

Epilepsy type	N	Percent
Generalized tonic-clonic	92	76.0
Myoclonic	10	8.3
Atonic	9	7.4
Tonic	6	5.0
Focal	3	2.5
Status	1	0.8
Total	121	100.0

Table 4 Distribution of studied patients by the cause of disease

Cause of disease	N	Percent
Idiopathic	60	49.6
Vascular causes	21	17.3
Brain structural disorders	16	13.2
Cerebral palsy	10	8.3
Head trauma	6	5.0
Metabolic	4	3.3
Meningitis	1	0.8
Other	3	2.5
Total	121	100.0

Table 5 Distribution of studied patients by the hospitalization cause

Hospitalization cause	N	Percent
Seizure	106	87.7
Status	8	6.6
Fatigue, weakness and tiredness	1	0.8
Other causes	5	4.1
Other disease (non relevant to epilepsy)	1	0.8
Total	121	100.0

them a combination of drugs has been prescribed. Also, the most common prescribed medication for the studied patients were sodium valproate, phenytoin and phenobarbital which has been prescribed for 34 (28.1%), 29 (24.0%) and 13 (10.8%) patients, respectively.

DISCUSSION

This descriptive study was aimed to investigate the epidemiological features of epilepsy patients in Yazd, Iran. For this purpose, a total of 121 patients admitted to neurology ward of Shahid Sadoughi hospital were included in the study. Our findings showed that the average age of patients is 20.13 and the average age of affected people in the onset time of disease is 16.58. Also, the higher number of patients was in the age group below 10 years old. The prevalence of epilepsy in women was a slightly more than men and in people with low education more than educated people. According to disease type, generalized tonic-clonic epilepsy was found as the most common type of epilepsy among the studied population. In addition, in about half of patients, the cause of epilepsy was unknown (idiopathic) and the cause of hospitalization in the majority of studied patients was seizure. According to the treatment modality, sodium valproate, phenytoin and phenobarbital were the most commonly prescribed drugs for the studied patients. Ahsan et al. (2013) in a similar study have examined the prevalence of epilepsy in children and adults in Tohid Hospital of Sanandaj city. The results of their study showed that in children, 63.1%, and in adults, 51.8% were men.¹⁰ In another study by Tabatabai et al. (2012) in the Qom city, which has been performed on adults with epilepsy, the authors have found that generalized epilepsy is the most common type of disease in studied population and the tonic-clonic seizure is the main clinical sign of epilepsy.¹¹

Also, Ebrahimi et al. (2012) in an epidemiological study in Kerman city have reported the generalized epilepsy as the most common type of disease in this city. Also, they have the prevalence of

epilepsy in people with lower education is significantly more than those with higher education but the prevalence of epilepsy is not differing between men and women.¹ Inaloo et al. (2011) in another study in northern Iran have found that the most common age of onset in patients with epilepsy is less than 2 years old ages and the most common type of disease is generalized tonic-clonic epilepsy.¹² Negahi et al. (2011) in another study on the students in Bandar Abbas also have reported that the highest prevalence of epilepsy is in the ages between 6 and 11 years old. In this study, also generalized tonic-clonic type has been found as the most common type of epilepsy among the studied population and the prevalence has been reported to be more in women than men.¹³ Also, Feizollahzadeh et al. (2011) in their study in pediatric hospital of Tabriz have reported that about 75% of affected patients have but the prevalence of disease in women is same as men.⁶

Banerjee et al. (2009), in a review study have reviewed the published findings of all primary population-based studies on the prevalence and incidence of epilepsy in English language between 1965 and 2009. Their findings showed that generalized epilepsy is more common than partial and the rate of partial epilepsy in reviewed studies is varying from 20 to 66 percent.⁸

In the study of Winkler et al. (2009) in Tanzania also, generalized idiopathic epilepsy has been reported as the most common type of disease.¹⁴ Picot et al (2008), in another study have investigated the prevalence of epilepsy in the French. In their study, the prevalence of epilepsy in men has been more than women. Also, in this study, the highest prevalence has reported in the age group 25-49 years old while the authors have showed that the prevalence of this condition is low in the elderly groups of study population.¹⁵

Mac et al. (2007), in a review study have studied the epidemiology, etiology and clinical management of epilepsy. In this study, the authors examined the existing literature from 23 Asian countries. The results of this study showed that in the studied countries, the first peak incidence and prevalence of epilepsy is in childhood and the second is in elderly. Also, the most important causes of epilepsy in the studied population include head trauma, cerebral vascular diseases, central nervous system infections and birthtrauma.¹⁶

Nachvak et al. (2002), also in a study have investigated the prevalence of epilepsy in children with mental retardation in Tehran. In this study, authors have found that the prevalence of epilepsy is statistically different between men and women ($P = 0.001$). Also, the age of onset of epilepsy in 51.1% was the first year of life and 46.1% of the patients the pattern of treatment was multiple drug prescription.¹⁷

Clinprok (1996), in another study has studied the epidemiology of epilepsy in Minnesota, America. In this study, 60% of epilepsy cases were focal and two-thirds of all cases had no known cause. Also, the cerebrovascular disease was found as the most important predictor of epilepsy.¹⁸

CONCLUSION

In summary, based on the findings of this study and similar studies it can be concluded that the prevalence of epilepsy is higher in children and in people with lower education. Also the generalized epilepsy is the most common type of disease. Indeed, the majority of epilepsy cases are idiopathic but the findings of different studies about the prevalence of epilepsy in men and women are contradictory and seizure is the most common cause of hospitalization of epilepsy patients.

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COMPETING INTEREST

None declared

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