Active Epilepsy & its therapeutic Pattern in Baghdad/Al-Amen City

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Abstract:

Background: The prevalence of active epilepsy in a large number of studies has been shown to be fairly uniform at 4-10 per 1000 population.

Objective: In order to find the prevalence rate of active epilepsy, the possible etiology of epilepsy and to study the therapeutic pattern of epilepsy.

Methods: A cross section study which included 254 patients 120 female and 134 male in Al-Amen public clinic which serves a population of 145531. Epilepsy was classified into active and inactive epilepsy. Seizures were classified as symptomatic and idiopathic.

Results: The prevalence rate of active epilepsy was 1.66/ 1000. Active epilepsy rate was 95.3% of the total sample. The etiology was unknown in 77.9% of cases, symptomatic epilepsy 22.1 % which was due to mental retardation (9.4%). head trauma (7.5%). Brain tumour (2.4%), cerebro-vascular accident (1.6%), and meningitis (1.2%). The most frequent (75.2%) management strategy was monotherapy. The rate of patients on regular medical therapy was 57%. The mean duration of treatment was 10.7 ± 8.22 years. Last fit in 84.3% of cases occurred in a duration of one year prior to their participation in the study.

Conclusion: Availability of medication is not enough unless an appropriate education program is applied to provide all patients with in formation about regular use of the drug.

Key words: active epilepsy, seizure, compliance.
AEDs = antiepileptic drugs.

Introduction:

The prevalence of active epilepsy in a large number of studies has been shown to be fairly uniform at 4-10 per 1000 population [(1)]. Etiological differences have only a small effect on prevalence rates, perhaps because the majority of cases of epilepsy are cryptogenic, but higher incidence rates in parts of the tropical belt may reflect a high local prevalence of neurocysticercosis[(2)].

Epilepsy is a group of disorders in which seizures occur and not a homogeneous disease entity. The response to antiepi1eptic drugs may therefore differ[(3)]. Since treatment of epilepsy is often life long, noncompliance with medication regimens is widespread[(4)]. Failure to comply with treatment regimens leads to increased seizure recurrence. Poorly controlled seizures increase the likelihood of hospital admission, which raises healthcare costs. Indirect costs associated with seizure recurrence include injuries inflicted upon others, loss of employment, and loss of health insurance benefits, as well as social costs (e.g., lost workdays)[(5-6)]. Thus, the goal of treatment includes minimizing both the risk of recurrent seizures and the deleterious side-effects sometimes associated with AED therapy, and maintaining normal psychosocial and vocational adjustment[(7)].

This study had been designed to find the prevalence rate of active epilepsy in AI-Amen city/Baghdad, to find possible causes and to study the therapeutic care pattern.

Patients & Methods:

A cross section study was conducted during the period between March 22nd 2006 and October 18th 2006 in AI-Amen public clinic in Baghdad. This clinic serves a defined geographical area (AI-Amen city in Baghdad) with a population of 145531 persons. All epileptic patients were investigated by specialists who make the diagnostic work up and began therapy if needed from the public clinic. The public clinic supplies all patients with their drugs monthly using a special chronic disease card.

A total of 254 epileptic patients were included in the study (which represent all the patients in the city who receive their treatment from the clinic).

Active epilepsy was defined as any case of epilepsy in which there had been at least one unprovoked seizure in the previous five years; epilepsy was defined as inactive if there had been no seizure in the previous five years. Lifetime epilepsy was the sum of active and inactive epilepsy[8].

With reference to etiology, seizures were classified as symptomatic when the seizures could be attributed to history of intracranial infection, tumours or significant cranial trauma and idiopathic if none of these features was evident at the time of the study[9]. Physical examination and detailed history were the only tool available.

Family history: a first-degree relative includes monozygotic twins, parent-child, and brother-sister (including dizygotic twins)[10]. All used antiepileptic drugs and their doses were recorded from the chronic disease cards of the patients. Regular therapy when the patient is taking his drug every day without missing as prescribed in the chronic disease card. Statistical analysis: Statistical analysis was performed using Epi Info release 6 (centers for disease control and prevention USA).

Results:

A total of 254 cases were included in the study. The lifetime prevalence of epilepsy was 1.75/1000, while the prevalence rate of active epilepsy was 1.66/ 1000.

Of all epileptic patients 242(95.3%) had active epilepsy. 12 (4.7%) had inactive epilepsy. The peak prevalence was 25.2% occurred in 15-24 years age group followed by 20.1 % in 25-34 years age group. The lowest rate was 3.5% in (65 +) years age group as shown in table I. The differences in rates between females and males in age groups was not statistically significant p-value = 0.626.

Table-1: Distribution of epilepsy according to its activity by age and gender

Age (Years)	Gender								Total	
	Female				Male					
	Active		Inactive		Active		Inactive			
	No.	%	No.	%	No.	%	No.	%	No.	%
< 5	6	60	0	0	4	40	0	0	10	3.9
5-14	20	47.6	0	0	22	52.4	0	0	42	16.5
15-24	25	39.1	0	0	38	59.4	1	1.5	64	25.2
25-34	20	39.2	2	3.9	26	51	3	5.9	51	20.1
35-44	21	51.2	2	4.9	17	41.5	1	2.4	41	16.1
45-54	9	52.9	0	0	7	41.2	1	5.9	17	6.7
55-64	8	40	1	5	10	50	1	5	20	7.9
≥ 65	6	66.7	0	0	3	33.3	0	0	9	3.5
Total	**115**	**45.3**	**5**	**2**	**127**	**50**	**7**	**2.7**	**254**	**100**

No possible etiological factors could be determined in 77.9% of cases as shown in table 2. Mental retardation found in 9.4% of patients, head trauma in 7.5%, brain tumour in 2.4%, cerebro-vascular accident in 1.6% and history of meningitis in 1.2%. There were no significant differences between females and males. P-value was 0.408.

Family history of seizures in first degree relative was found in 46 (23.2%) of all patients with the unknown etiology, and family history of seizures in other relative was found in 22 patients (11.1 %).

Table 3 demonstrated that monotherapy was the most frequent (75.2%) management strategy, while the polytherapy constitute 24.8%. Carbamazepine was the most frequently prescribed drug (53.7%), followed by sodium valproate (21.5%). The rate of patients with regular medical therapy was 57%. and that of patients with irregular medical therapy was 43%.

Table-2: Possible etiological factors for the entire study group

Etiology	Gender				Total	
	Female		Male			
	No.	%	No.	%	No.	%
Unknown	99	50	99	50	198	77.9
Mental retardation	9	37.5	15	62.5	24	9.4
Head trauma	7	36.8	12	63.2	19	7.5
Brain tumour	3	50	3	50	6	2.4
Cerebrovascular accident	2	50	2	50	4	1.6
Meningitis	0	0	3	100	3	1.2
Total	**120**	**47.2**	**134**	**52.8**	**254**	**100**
Yates corrected χ^2 = 5.06, p value = 0.408						

Table-3: Treatment regimens and patients compliance

Type of therapy	Gender								Total	
	Female				Male					
	Regular therapy		Irregular therapy		Regular therapy		Irregular therapy			
	No.	%	No.	%	No.	%	No.	%	No.	%
Carbamazepine only	27	20.8	30	23.1	37	28.4	36	27.7	130	53.7
Sodium Valproate only	20	38.5	12	23.1	11	21.1	9	17.3	52	21.5
Polytherapy	18	30	8	13.3	25	41.7	9	15	60	24.8
Total	**65**	**26.8**	**50**	**20.7**	**73**	**30.2**	**54**	**22.3**	**242**	**100**

Table-4 shows the duration of treatment of active epilepsy was in 34.7% of patient's was 5 years, and 9.9% of patients were stilillsing medical treatment since 21+ years. There was no significant

difference between females and males rates in the duration of therapy, p -value equal to 0.623. The mean duration of treatment was 10.7 ± 8.22 years.

The date of last fit in 84.3% of cases occurred in a duration of one year prior to their participation in the study, while that of 2.5% occurred since four years, There were no significant differences between the duration of therapy and the date of last fit p-value equal to 0.809 as shown in table-5.

Table-4: Duration of treatment of active epilepsy

Duration (years)	Gender				Total	
	Female		Male			
	No.	%	No.	%	No.	%
≤ 5	43	51.2	41	48.8	84	34.7
6-10	30	51.7	28	48.3	58	24
11-15	13	37.1	22	62.9	35	14.5
16-20	18	43.9	23	56.1	41	16.9
≥ 21	11	45.8	13	54.2	24	9.9
Total	**115**	**47.5**	**127**	**52.5**	**242**	**100**
χ^2 = 2.62, p value = 0.623						

Table-5: Duration of therapy by date of last fit

Duration (years)	Date of the last fit (years)								Total	
	≤ 1 year		1.1-2		2.1-3		3.1-4			
	No.	%	No.	%	No.	%	No.	%	No.	%
≤ 5	70	83.3	9	10.7	4	4.8	1	1.2	84	34.7
6-10	50	86.2	4	6.9	2	3.4	2	3.4	58	24
11-15	27	77.1	4	11.4	3	8.6	1	2.9	35	14.5
16-20	37	90.2	1	2.4	1	2.4	2	4.9	41	16.9
≥ 21	20	83.3	2	8.3	2	8.3	0	0	24	9.9
Total	**204***	**84.3**	**20**	**8.3**	**12**	**4.9**	**6**	**2.5**	**242**	**100**

* 124 patients of them had their last fit within previous 30 days prior to their participation in the study

Discussion:

Epidemiological studies from various countries have shown prevalence rate variation for active epilepsy. In this study it was 1.66/1000 persons. In contrast to studies that done in UK 2000[11], China 2003[12], Tanzania 1992[13], Pakistan 1994[14], Bolivia 1999[15], Honduras 2005[16], the prevalence rates were (4, 4.6, 9.2, 9.99, 11.1, 15.4/1000 population) respectively. The difference may attribute to the case finding methods which had an impact on estimated frequency. The figure in this study was calculated from the number of patients attended the public clinic for receiving their treatment from an estimated catchments population and assumed that all patients received their treatment from the clinic, not like other studies were done by house to house survey. This study was not including patients who buy their medication from private pharmacies

avoiding over crowding in the public clinic or because of social stigma moreover some patients with less frequent or less sever type of seizure are not seeking medical treatment. The sharp decrease in the prevalence rate after the age of 44 which constitute (18.1 %) of the entire study sample may reflect high mortality rate of epileptic patients. The peak age prevalence of 25.2% occurred in the 15-24 years age group and then starts to decline reaching 3.5% in 65+ years of age. It has been reported that in industrialized countries like the United States, the prevalence rate is higher in the young which is in agreement with this study, levels off, and then in contrast to this study it will increases in the older than 65 years population[17].

In regard to the etiology, epilepsy was considered unknown in 77.9% of patients although detailed history and physical examination were the only tool available. Most of the cases were diagnosed on clinical bases and EEG findings, few patients had brain CT-scan but all cases were diagnosed by neurologists. This finding is similar to the studies that were done in Tanzania 1992[13], and Mali 2002[18]. The rate of unknown etiology was74, 83.3% respectively but it is higher than the rate of Kerala study 2002 which was found to be 63%[19]. This difference because of 27.2% of patients in Kerala study had CT and MRI investigations. Delineation of etiology of epilepsy is usually unsatisfactory in community based studies. Currently up to 40% of patients have no identifiable cause for their seizures. This proportion is rapidly decreasing as advances in neuroimaging, particularly magnetic resonance imaging (MRI), are made[20]. Head trauma is an important cause of symptomatic epilepsy and may account for up to 10% of all cases of epilepsy. The probability of epilepsy after head trauma depends on the severity of the injury and the presence of complicating factors; including prolonged loss of consciousness, post traumatic amnesia, intracranial bleeding, missile penetration, or depressed skull fracture[20]. In this study 7.5% of patients were due to head trauma which was higher than the United Kingdom, NOPSE study, in 1990 rate of 2%[21], and Kerala study rate of 4.3%[19]. This is may be due to increase war and other violence accidents. Another etiological cause is intracranial tumours which are responsible for about a fifth of seizures starting between the age 30 and 50 years, and about 10% of seizures starting after the age of 50 years[20]. In this study it was account for 2.4% of cases all of them were done operation for removal of the tumour which is sinlilar to Sridharan et aI, study that done in Libya in 1986[22]. Epilepsy is an unusual complication of acute bacterial meningitis, occurring in people given inadequate or late treatlTIent [20]. Meningitis was found in 1.2% of cases in this study.

In regard to treatment strategy, the 2004 England and Wales NICE guidelines on the use of new AEDs advise initially either carbamazepine (focal seizures) or sodium valproate (focal or generalized seizures)[23]. Monotherapy with first line drugs is desirable in children with epilepsy. Sodium valproate and carbamazepine are the accepted first line drugs and appear to be of equal efficacy in partial seizures[24]. In this study monotherapy with first line drugs (carbamazepine and sodium valproate) strategy was applied by different neurologists who prescribed these drugs in a rate of 75.2%, which is in agreement with the recommended guidelines and Bassilli et al study that done in Egypt, 2002 which found similar result[25]. In other developing countries Phenobarbital is accepted as the first line drug[26]. Despite the availability of these drugs and the application of the correct strategy in medical management, two problems was detected by this study: the first one that high rate of patients remain poorly controlled, 124 (51.2%) had their last fit within previous 30 days prior to their participation in the study and the majority of them with recurrent attack, and 95.3% of patients with active epilepsy while 65.3% of them receiving their medication for more than five years. The second problem is the high rate (43%) of patients with active epilepsy who were not taking their prescribed treatment regularly. It is essential to ensure good compliance with the chosen treatment regimen. Poor compliance is recognized as the commonest cause of treatment failure. Irregular therapy may be worse than no therapy at all, sometimes causing a withdrawal phenomenon, exacerbating seizures and worsening toxicity[27]. Stanaway et al found that over one third (38%) of seizures was due to either missed medication or inadequate

drug level[28]. Patient education is important because patients who understand the necessity of taking their medication are more likely to comply[6].

Conclusion:

The prevalence rate of active epilepsy is 1.66/ 1000 persons. One quarter of cases (25.2%) occurred in 15-24 years age group. About three quarters of patients (77.9%) with no known etiology. Three quarters of cases (75.2%) were on monotherapy with first line drugs regimens. Carbamazepine was the most frequently prescribed drug in (53.7%) of patients followed by sodium valproate in (21.5%). Regular using of drugs was observed in 57% of patients. In spite of medical therapy half of the patients (51%) had their last fit within 30 days preceding the date of their inclusion to the study. One tenth of the patients (9.9%) were still using medical treatment since 21 years and over. An appropriate education program is needed to provide individualized verbal and written information about regular use of the drug.

References:

1. ILAE Commission Report. The epidemiology of the epilepsies: future directions. Epilepsia. 1997; 38:614-618.
2. Pal DK, Carpio A, Sander JW. Neurocysticercosis and epilepsy in developing countries. .I Neurol Neurosurg Psychiatry 2000; 68(2): 137-143.
3. Lerman P. Benign partial epilepsy with centro-temporal spikes. In: Rogers I, Bureau M, Dravet CH, Dreifus FE, Perret A, Wolf P, eds. Epileptic syndrome in infancy, childhood and adolescence. (2nd ed.) John Libbey, 1992: 189-200. Cited in David Chadwick. Controversies in Management: Case for early treatment is not established. BMJ.1995: 310: 177-178.
4. Leppik IE. Compliance during treatment of epilepsy. Epilepsia. 1988; 29(suppl):S79-S84.
5. Buck D, Jacoby A, Baker GA, Chadwick DW. Factors influencing compliance with antiepileptic drug regimes. Seizure. 1997; 6: 87-93.
6. Leppik IE. How to get patients with epilepsy to take their medication: The problem of noncompliance. Postgrad Med. 1990; 88:253-256.
7. Scheuer ML, Timothy AP. The evaluation and treatment of seizures. N Engl .I Med. 1990; 323: 1468-1474.
8. Commission on epidemiology and prognosis, International League Against Epilepsy. Guidelines for epidemiologic studies on epilepsy. Epilepsia.1993; 34: 592-596.
9. Aziz H, Ali SM, Frances P, Khan Ml, Hasan KZ. Epilepsy in Pakistan: A population based epidemiologic study. Epilepsia. 1994; 35: 950-958.
10. Thompson IS, Thompson MW. Genetic in Medicine. Fourth edition .1986: P254.
11. MacDonald BK, Cockerell OC, Sander JW, Shorvon SD. The incidence and life time prevalence of neurological disorders in a prospective community based study in the UK. Brain. 2000; 123: 665-676.
12. Wang WZ, Wu JZ, Wang DS, et al. The prevalence and treatment gap in epilepsy in China. Neurology. 2003; 60: 1544-1545.
13. Rwiza HT, Kilonzo GP, Hallie J, et al. Prevalence and incidence of epilepsy in ulanga, a rural Tanzanian district: a community based study. Epilepsia. 1992; 33: 1051-1056.
14. Aziz H, Ali SM, Frances P. Khan MI, Hasan KZ. Epilepsy in Pakistan: a population based study. Epilepsia. 1994; 35: 950-958.
15. Nicoletti A, Reggio A, Bartoloni A, et al. Prevalence of epilepsy in rural Bolivia. Neurology. 1999; 53:2064.
16. Medina MT, Duron RM, Martinez L, etal. Prevalence, incidence, and etiology of epilepsies in rural Honduras: The Salama study. Epilepsia. 2005; 46: 124-131.
17. Hauser W, Hesdorffer D. Epilepsy: frequency, causes and consequences. New York: Demos medical publishing. 1990; 93-118. Cited in. Medina MT, Duron RM, Martinez L, etal.

Prevalence, incidence, and etiology of epilepsies in rural Honduras: The Salama study. Epilepsia. 2005; 46: 124-131.
18. Nimaga K, Desplats D, Doumbo O, Farnarier G. Treatment with Phenobarbital and monitoring of epileptic patients in rural Mali. Bulletin of the World Health Organization. 2002; 80: 532-537.
19. Radhakrishnan K, Pandian JD, Santhoshkumar T, etal. Prevalence, knowledge, attitude, and practice of epi lepsy in Kerala, south India. Epilepsia. 2000; 41: I0271035.
20. Sander JW. Etiology and risk factors. In: Epilepsy Atlas, Epilepsy care in the world. Geneva, WHO. 2005: 26-27.
21. Sander JW, Hart YM, Johnson AL, Shorvon SD. National General Practice Study of Epilepsy: newly diagnosed epileptic seizures in a general population. Lancet.1990; 336: 1267-1271.
22. Sridharan R, Radhakrishnan K, Asok PP, Mousa ME. Epidemiological and clinical study of epilepsy in Benghazi. Libya. Epilepsia. 1986; 27: 60-65.
23. NICE. NICE guidance (technology appraisal) 76. Newer drugs for epilepsy in adults. Issued March 2004. http://www.nice.org.uk/TA076guidance (accessed 29 Nov 2004). Cited in: Hadjikoutis S and Smith PEM. Approach to the patient with epilepsy in the outpatient department. Postgraduate Medical Journal. 2005; 81: 442-447.
24. Richens A, Perucca E. General principles in drug treatment of epilepsy. In: Laidlaw J. Richens A, Chadwick D. eds. Textbook of epilepsy. 4th ed.. Edinburgh: Churchill Livingstone Communications, 1993.cited in: Webb DW, Coleman H, Fielder A, And Kennedy CR. An audit of paediatric epilepsy care. Arch Dis Child. 1998; 79: 145-148.
25. Bassili A, Omar T, Zaki A, Abdel-fatah M, and Tognoni G. Pattern of diagnostic and therapeutic care of childhood epilepsy in Alexandria, Egypt. International Journal for Quality in Health Care.2002; 14: 277-284.
26. Pal DK, Das T, Chaudhury G, Johnson AL, Neville BG. Randomised controlled trial to assess acceptability of phenobarbital for childhood epilepsy in rural India. Lancet.1998; 351: 19-23.
27. Shorvon S. Management of epilepsy in adults. Medicine International. 1987; 2(46): 1874-1879.
28. Stanaway L, Lambie DG, Johnson RH. Noncompliance with anticonvulsant therapy as a cause of seizures. NZ Med J 1985; 98: 150-152.