ETIOLOGY OF EPILEPSY

A PROSPECTIVE STUDY OF 210 CASES

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SUMMARY — The objective of this study was to establish the etiology of epilepsy in 210 chronic epileptics (110 female, 100 male), aged 14-82 years (34.2±13.3). Patients less than 10 years-old and alcoholism were excluded. All underwent neurological examination, routine blood tests, EEG and CT-scan. Twenty patients (10.5%) were submitted to spinal tap for CSF examination. Neurological examination was abnormal in 26 (12.4%), the EEG in 68 (45.5%), and CT-scan in 93 (44.3%). According to the International Classification of Epileptic Seizures (1981), 101 (48.1%) have generalized seizures, 66 (31.4%) partial seizures secondarily generalized, 25 (11.8%) simple partial and complex partial seizures, and 14 (6.6%) generalized and partial seizures. Four patients (2.0%) could not be classified. In 125 (59.5%) patients the etiology was unknown. Neurocysticercosis accounted for 57 (27.1%) of cases, followed by cerebrovascular disease 8 (3.8%), perinatal damage 5 (2.4%), familial epilepsy 4 (1.9%), head injury 4 (1.9%), infective 1 (0.5%), and miscelanea 6 (2.8%).

Etiologia da epilepsia: estudo prospectivo de 210 casos.

RESUMO — Foram investigados prospectivamente 210 pacientes epilépticos crônicos (110 mulheres, 100 homens), idade variando de 14 a 82 anos (34,2±13,3) no sentido de estabelecer a etiologia de suas crises epilépticas. Pacientes com menos de 10 anos e com alcoolismo foram excluídos. Todos foram submetidos a anamnese, exames físico e, neurológico, exames laboratoriais de rotina, EEG e TC. Vinte pacientes (10,5%) foram submetidos a punção lombar para exame do LCR. O exame neurológico foi anormal em 26 (12,4%), o EEG em 68 (46.5%) e a TC em 93 (44,3%). De acordo com a Classificação Internacional de Epilepsia (1981), 101 (48,1%) apresentavam crises generalizadas primarias, 66 (31,4%) crises parciais secundariamente generalizadas, 25 (11,8%) crises parciais simples ou complexas e 14 (6,6%) crises parciais e crises generalizadas; 4 (2,0%) pacientes não puderam ser classificados. Em 125 pacientes (59,5%) a etiologia da epilepsia não foi estabelecida. Neurocisticercose foi a causa identificável mais comum, 57 casos (27,1%), seguida pelos acidentes cerebrovasculares 8 (3,8%), sofrimento perinatal 5 (2,4%), epilepsia familial 4 (1.9%), trauma craniano 4 (1,9%), Infecção 1 (0.5%) e miscelânea 6 (2,8%).

The etiological profile of epilepsy in different parts of the world clearly shows variation. In Third World countries chronic infectious diseases, in special neurocysticercosis (NC), play an important etiological role[19»21].

The objective of the present study is to show the etiological spectrum of epilepsy in outpatients of a Service of Neurology in South Brazil.

PATIENTS AND METHODS

Two hundred ten patients were randomly and prospectively selected from a population of 580 chronic epileptics, which have been evaluated and followed by the author in the last three years. Most of the patients axe living in the urban area of Curitiba, State of Paraná, Brazil. Of the patients, 110 were women and 100 were men. The criteria of inclusion were: (1) age 10 or more; (2) at least two seizures in the six months before evaluation; (3) negative history of alcohol or drug abuse, syncope, hysterical episodes, and blackouts of indeterminate cause. Postraumatic seizures were diagnosed mainly on the basis of history evidence of concussion or cerebral contusion within two years prior to onset of seizures 10.

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The Cause of epilepsy was diagnosed by history, clinical examination, EEG recording, and CT scan. CSF examination was performed when indicated. The patients with more than one diagnosis as a cause of epilepsy were classified according to the diagnosis related to onset of epilepsy.

Seizures were classified according to the International System of Classification 6. After anamnesis, general physical and neurological examination, blood was collected for the following laboratory tests of each patient: complete hemogram, erythrocyte sedimentation rate, creatinine, urea, glucose, VDRL. A standard 8-channel EEG and a CT-scan were performed for each patient. For the purpose of the study, an EEG was considered abnormal if generalized or localized spike discharges were present or if paroxysmal slow activity was observed in the absence of spike discharges. All CT scans were read by a neuroradiologist and confirmed by the author. The diagnosis of NC was made by the following criteria: (1) CT-scan findings compatible to NC [14,17]; (2) positive CSF immunological test for NC; and/or (3) surgical diagnosis of NC.

RESULTS

The mean age of the patients was 34.2+13.3 years (range 14-82 years). Distribution of patients according to the present age and the age of onset of epilepsy is shown in Table 1. Seventy patients (34.3%) could be classified as late onset epileptics (first seizure after the age of 25 years). In six patients (2.9%) the agre of onset could not be determined. An abnormal neurological examination was found in 26 (12.4%). A spinal tap was performed in 22 patients (10.5%). Abnormal EEG was observed in 68 patients (45.5%). CT scan abnormalities were found in 93 patients (44.3%). The most common tomographic diagnosis was NC (57 cases, 27.1%). Twelve patients (21%) have active cysticercosis 22. Other abnormalities by order of frequency were focal cerebral atrophy 8, diffuse cerebral atrophy 7, calcification 7, infarct 6, ventricular dilatation 5, cerebellar atrophy 4, aneurysm 1, diffuse white matter lesion 1. One hundred fourteen (54.3%) CT scans were normal. Types of seizures observed In this study are depicted in Table 2.

The etiology of epilepsy could not be determined in 125 (59.5%). In 85 (40.5%) patients, an etiological factor could be identified, as depicted in Table 3.

Age	Present age		Age of onset	
	Nr.	%	Nr.	%
0-9	—	—	48	23.5
10-19	19	9.0	67	32.8
20-29	77	36.6	37	18.1
30-39	54	25.7	28	13.7
40-49	29	13.8	11	5,4
50-59	20	9.5	9	4.4
+60	11	5.3	4	2,0

Table 1 — Distribution of age groups.

Type of seizures	Number	%
Primary generalized	101	48.1
Partial with secondary generalization	66	31.4
Complex partial	18	8.5
Simple partial	7	3.3
Partial and generalized	14	6.6
Unclassifiable	4	2.0

Table 2 — Distribution of seizures types.

Etiology of epilepsy	Number	%
Cysticercosis	57	27.1
Cerebrovascular disease	8	3.8
Perinatal damage	5	2.4
Familial	4	1.9
Head injury	4	1.9
Infective	1	0.5
Other *	6	2.8

Table 3 — Distribution of etiologies of epilepsy.

** Other causes (one each): eclampsia, arachnoid cyst, Sturge-Weber disease, lightning, demyelinative disease, mitochondrial myopathy.*

COMMENTS

Neurocysticercosis is the most commonly identifiable cause of epilepsy in this study. This observation is in accordance with one Brazilian case series[21], which found cysticercosis in 13% of 455 patients. It also reflects the endemic condition of this disease in South Brazil, already observed in a study developed in rural communities-[2]. The relatively highg prevalence of epilepsy observed by Marino et al.[13] (11.9:1000) in São Paulo may be a consequence of the high prevalence of cysticercosis even in the urban zones. Epilepsy is the major clinical manifestation of cysticercosis[15>20], and cysticercosis was already demonstrated to be a major etiological factor of epilepsy in other countries[3].[4].[18]. Poor sanitary conditions, low levels of education and poor living standards should play a major role for the endemic condition of taeniasis/cysticercosis in developing countries[2>4>9].

The importance of CT in detecting cerebral lesions responsible for epilepsy was already appreciated by other authors 7,16,24. i„ f„„„j ,he best way to evaluate the actual importance of cysticercosis as etiological factor of epilepsy is CT scan 15,20,22. Some seroepidemiological studies (eg., Brazil, India, Mexico) have demonstrated a high prevalence of immunoreactive patients for cysticercosis suffering from epilepsy[4].[9]*[25]. However, these studies may understimate the actual prevalence of cysticercosis, for the inactive forms are frequently accompanied by 'negative immunological tests in the serum and CSF[15]»[16>22].[24]. In our study only 21% of the cysticercotic patients have the active form of the disease 22. Moreover most of the patients with cysticercosis evaluated by us did .not have an abnormal neurological examination (only 2 of 57). From the clinical and electrophysiological points of view, epileptic patients with NC and with «idiopathic» seizures can not be distinguished, except for a predominance of female patients in the cysticercotic group[1]. Therefore most of them would be erroneously classified as idiopathic epileptics if not submitted to CT scan.

Regarding the distribution of the seizure types, our results are in agreement with other studies developed in Brazil[13], Colombia[8], Lybia[23] and China[12], where a preponderance of generalized seizures was observed. Two studies in India[11] and Nigeria[5] showed a predominance of partial seizures. One possible explanation for this discrepancy would be the different methods employed in the studies. Another possibility is the greater awareness of patients with generalized seizures to look for a specialist (neurologist) to evaluate their problem. It is a commonplace to see patients with simple partial, absence or some minor complex partial seizures that do not seek medical care. Patients with complex partial epilepsy are frequently refered, evaluated and treated by psychiatrists. Mixed seizures (partial and generalized fits occurring independently) were mentioned only by Li et al.[12] (2.8%), and were much commoner in our study (6.6%).

Although poor perinatal care is claimed an important etiological factor of epilepsy in developing countries (11% and 14% in two Brazilian studies)[21], this was not observed in other studies (3.0-3.5%)5,n,23 and in our group of patients (2.4%). This may be due to the relatively small proportion of patients with age of onset of epilepsy in the first decade (23.5%). Moreover, most of our patients were 20 or more years old when evaluated and the perinatal conditions could be not recorded with precision in most of them.

In most studies, the proportion of patients with epilepsy of unknown cause is 2/3 to 3/4 of cases[19]. The more extensive the investigation, the more likely are etiological factors to be identified. Our rate of idiopathic epilepsy is lower than other studies (68—82.5%)[»>23], where CT was not routinely performed in each case. Danesi[5] reported the low rate of 57.2% without routine CT scan, but febrile convulsions accounted for 21.9% of the patients with an identifiable cause.

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