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Symptomatic Epilepsies due to Cerebrovascular Diseases

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ABSTRACT

Introduction: Cerebro-vascular diseases (CVD) are the leading cause of symptomatic epilepsies. This study aims to investigate: a) Frequency of epilepsy in patients with CVD; b) Correlation of epilepsy with the type of CVD (ischemic and hemorrhage) and with age. **Methodology:** It is analyzed medical documentation of 816 hospitalized patients with CVD in the clinic of Neurology in University Clinical Center (UCC) during the period January - December 2010. The study included data on patients presenting with epileptic seizures after CVD, and those with previously diagnosed epilepsy, are not included in the study. The diagnosis of CVD, are established in clinical neurological examination and the brain imaging (computer tomography and magnetic resonance imaging). The diagnosis of epilepsy is established by the criteria of ILAE (International League against Epilepsy) 1983, and epileptic seizures are classified according to the ILAE classification, of 1981. **Results:** Out of 816 patients with CVD, 692 were with ischemic stroke and 124 with hemorrhage. From 816 patients, epileptic seizures had 81 (10%), of which 9 patients had been diagnosed with epilepsy earlier and they are not included in the study. From 72 (99%) patients with seizures after CVD 25 (33%) have been with ischemia, whereas 47 (67%) with hemorrhage. **Conclusion:** CVD present fairly frequent cause of symptomatic epilepsies among patients treated in the clinic of Neurology at UCC (about 10%). The biggest number of patients with epilepsy after CVD was with intracerebral hemorrhage.

Key words: Epilepsy, cerebro-vascular disease, CT, MRI.

1. INTRODUCTION

The most common cause of newly diagnosed epilepsies in elderly people is CVD. According to the time of appearance there are two types of epileptic seizures: early seizures which appear in the first 15 days after the CVD, and recent epileptic seizures. Intracerebral hemorrhages are more frequent causes of epileptic seizures compared with ischemic brain stroke. The predisposing factor for the appearance of seizures is the cortical localization of lesion of after a cerebro-vascular accident. The risk of reappearance of the seizures after CVD is bigger in recent crises, compared with earlier ones. The antiepileptic treatment should be selected according to the drug efficacy. It should also be taken into consideration the interactions with other drugs that are being used by the patient and tolerance of the drug. Epidemiological studies show increase of incidence of epilepsy manifestation on deferred ages. The incidence of manifestation is 30 to 50 new cases per 100 000 inhabitants for the general population. This incidence increases to 127 per 100 000 for elderly people from age 60 and above.

Cerebro-vascular diseases are responsible for approximately 50% of epilepsies which appear in elderly people (1,2). 24% of epilepsies which began after the age of 50 years old are due to the CVD, in most cases these are partial epilepsies (3). In a series of 341 patients aged more than 60 years old who have had one or more epileptic seizure, 33% have had a seizure in relation to the CVD. A quarter of these crises appeared in the first week, while

75% of the seizures occurred after an older CVD (4). Symptomatic crises are a lot more frequent in the elderly where 30% to 40% of the crises are due to CVD that occurred less than a week (1, 2). When seizures are not with vascular origin, they are more often metabolic or toxic. Prognosis of symptomatic seizures at the elderly are much worse, where, mortality reaches 22% due to the risk of organ failure as well as age and the severity of the underlying disease (2). In the other half of the cases, seizures occur without any particular reason. 50% to 70% of these patients have an older CVD. Other major causes of epilepsy in this context are dementia lesions and tumors. (1,2). Epileptic status at the elderly people is approximately twice more frequent than in the general population. Epileptic status is secondary to a newer or older CVD at 30 to 40% of cases (4, 5). This is an epileptic status partial or generalized, and very rarely the type of an absans status epilepticus (6). Mortality during the epileptic symptomatic status of an acute CVD is at least 30% at the elderly, mortality is even higher, at 50% of patients older than 80 years old. Symptomatic epileptic status of an old CVD is with a better prognosis, with a mortality rate of approximately 14% (5, 7).

In a prospective study that included 1897 patients who have suffered CVD, the risk of crises has been 8.9% after an average period of 9 months. Forty percent of the crises which have been as a result of cerebral ischemic stroke are presented in the first 24 hours, while this figure was 57% for patients with intra-cerebral hemorrhage (8).

2. METHODOLOGY

At the Clinic Neurology in UCC, during the periods from January till December 2010, there were total of 816 medically documented hospitalized patients with CVD. In this study, we only included patients with data for manifestation of epileptic seizures after CVD. Those patients that were diagnosed with epilepsy were excluded from this study. The diagnoses of CVD were made by clinical neurological examinations as well as imaging-scanning (CT, MRI). The diagnoses of epilepsy were done by ILAE (International League against Epilepsy) criteria of the year 1983, while the epileptic seizures are classified according to the ILAE classification of year 1981.

3. RESULTS

During the period January - December 2010 from the total number of patients hospitalized in the Clinic of Neurology at UCC, 816 have been patients with CVD. Out of 816 patients with CVD, 692 (85%) have been with cerebral ischemic stroke while 124 (15%) with intra-cerebral hemorrhage. From 816 patients, 81 patients had epileptic attack (10%) (Figure 1).

Out of them, 9 (11%) patients were diagnosed with epilepsy earlier, and these are not included in the study, while 72 (89%) patients presented epileptic seizures for the first time after the CVD (Figure 2).

Figure 1. The total number of patients with CVD and those with cerebral ischemia and hemorrhage

From the 72 patients with attacks after the CVD 25 (33%) have been with ischemia, of whom 13 (52%) female and 12 (48%) male. 47 (67%) other patients have been with intra-cerebral hemorrhage, 24 of them (51%) were females and 23 (49%) were

Figure 2. Number of patients with epileptic seizures as a result of CVD males (Table 1).

4. DISCUSSION

The risk of epileptic seizures after manifestation of CVD is approximately 7 to 8% (8.9). The approximate percentage of appearance of epileptic seizures after CVD was obtained in our study as well, and it was 10%. Factors that influence the risk of crisis manifestation are very essential to the nature of the CVD.

Type of cerebro-vascular disease	Male		Female		Total	
	N	%	N	%	N	%
Ischemic stroke	12	52	13	48	25	33
Intra-cerebral hemorrhage	23	49	24	51	47	67
Total	35	49	37	51	72	100

Table 1. Tabular presentation of patients with epileptic attack by type of cerebro-vascular disease and gender of patients

Numerous studies have shown that intra-cerebral hemorrhages give twice more often epileptic seizures than ischemia (9; 10). The results of our study are consistent with these studies and have shown that 67% of patients with epileptic seizures after CVD were with intra-cerebral hemorrhage, while 33% have been with ischemia.

The cortical localization of the CVDA is important, the existence of previous cerebral lesions, also favors the appearance of crisis during the CVA (8, 9, 10, 11). Although our study was not intending to evaluate the relationship between localization of cerebro-vascular lesion and appearance of symptomatic epilepsy, while reviewing our documentation we found out that in 72% of patients with epileptic seizures, after a CVD, the localization of the cerebro-vascular lesion was temporal and frontal, while in the other 15% of cases the lesion has been localized in other brain lobes. Structures that were mostly attacked were the cortical structures and the sub-cortical structures. The initiation of the antiepileptic therapy in patients with symptomatic epilepsy is questionable; therefore the frequency of seizures and the side effects of antiepileptic drugs in the elderly and the drug interactions should be taken into consideration (13). During the study, we found that in our patients the treatment of the symptomatic epilepsies as a result of CVD usually started after the second epileptic seizure.

5. CONCLUSION

CVD present a fairly frequent cause of symptomatic epilepsies among patients treated in the Clinic of Neurology at UCC (about 10%). The largest numbers of patients with epilepsy after CVD were patients with intra-cerebral hemorrhage.

CONFLICT OF INTEREST: NONE DECLARED.

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