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Occurrence of Epileptic Complications in Patients with Cerebrovascular Disease in Charge to the Home Care Center: A Clinical Experience

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ABSTRACT

Most studies in literature about the occurrence of the so-called vascular epilepsy suggest that this complication is an episodic and relatively rare event mostly due to clinical conditions related to haemorrhagic ictus while chronic vascular disease (multifocal vascular encephalopathy, vasculopathy with lacunar infarcts or minor stroke and ischemic strokes) is not usually considered as risk factors for the onset of secondary epilepsy. Furthermore, the epilepsy of the elderly is often ascribed to the atrophy of the brain tissues linked to both age and chronic hypoxia induced by Atherosclerosis (ATS) or a complication of pharmacological therapies in the elderly (anticholinesterases, neuroleptics, anticoagulants). In fact, in our clinical and practical experience in the district outpatients clinic and home care center, numerous clinical cases have been subject to diagnosis and treatment of late epilepsy following an ischemic stroke. In this study we had thepurpose to describe our experience of occurrence of epileptic complications in patients with morewide Cerebrovascular Disease (CVD) patterns. We studied a group of 15 patients (8 Male and 7 Female) affected by CVD and by recent recently onset epilepsy. Our study found that Cerebrovascular disease CVD constitutes a significant risk factor for secondary epilepsy in the groups with elder age even though younger subjects can be involved after being affected by relevant cerebrovascular events. In opposition to the opinion assumed in common clinical practice an important part of these causal events are ischemic and non-haemorrhagic as previously known.

INTRODUCTION

Due to the increased average age in the western population, it can be assumed that the frequency of epilepsy caused by CVD and stroke events increased likewise. Moreover it is likely assuming an almost preponderance of vascular determined secondary epilepsy compared to the other causes of epilepsy itself.

Insofar as the common causes of the epilepsy are more extensively described in the official statistical reports and in the literature, the real frequency of late epilepsy as a complication of stroke remains mostly submerged and its diagnosis and treatment are delegated to the district physicians. There are reports in literature about the occurrence of the so-called vascular epilepsy that claim this complication as an episodic and relatively rare event mostly due to clinical conditions like haemorrhagic ictus. On the contrary chronic vascular disease (multifocal vascular encephalopathy, vasculopathy with lacunar infarcts or minor stroke and ischemic strokes) is more difficult to be considered as risk factor for the onset of secondary 'vascular'epilepsy. Furthermore, the epilepsy of the elderly is often ascribed to the atrophy of the brain tissues linked to both age and chronic diffuse hypoxia

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induced by lack of circulatory efficiency (senile ATS) or as a complication of pharmacological therapies in the elderly (anticholinesterases, neuroleptics, anticoagulants). On the opposite in our clinical and practical experience in the district outpatients clinic and home care center, numerous clinical cases have been subject of diagnosed and treated for late epilepsy following cerebrovascular events. The description below is based on the management of a group of patients with cerebrovascular disease during home care clinical practice. A group of patients who were diagnosed with a new onset of epilepsy in comorbidity with post-stroke CVD or chronic CVD were involved in the study. The patients were investigated with a retrospective and observational study to detect the frequency of this complication in the different types of brain vascular damage and their impact on the patient's management also from a therapeutic point of view. The results of the study highlighted a high frequency of epilepsy as a complication of CVD.

CASES REPORT AND RESULTS

Cerebrovascular Disease (CVD) constitutes a significant risk factor for secondary epilepsy [1,2]. We studied a group of 15 patients, 8 Male and 7 Female, age range 58 - 92 years. The patients had known risk factors for vascular disease such as hypertension and other endocrine-metabolic disorders such as diabetes, hypercholesterolemia, hypertriglyceridemia in treatment.

The population recruited in the study includes the different types of CVD commonly found in clinical practice: multifocal vascular encephalopathy, lacunar infarcts and single or multiple minor stroke, ischemic and haemorrhagic stroke with focal lesion, ATS chronic hypoxia. In these patients there were found the vascular risk factors known according to the International Guidelines for Stroke; in particular, the following vascular risk factors were recorded in the observed group: hypertension, diabetes, chronic atrial fibrillation (under treatment with anticoagulant), hypercholesterolemia. The neurological medical examination was requested following the onset of crises of dubious interpretation which are not frequently recognized immediately as having an epileptic nature. In fact there is a resistance in patients and their parents to admit this possibility both because the patient has never previously suffered from epilepsy and because the seizures are not recognized as such owing to they do not correspond to the commonly known description moreover the GPs interpret the seizure as Transient Ischemic Attacks (TIA). The group of patients studied presents a different type of clinical manifestation of epilepsy: out of 15 patients 7 are described as affected by episodic but frequent 'loss of contact' with the environment (often interpreted like TIA); 4 affected by stroke hemisindrome consisting of facio-brachio-crural hemiplegia with or without aphasia, showed onset of focal Jackson-like epileptic seizures with or without bilateral evolution; 4 with other vascular pathological conditions were affected by tonic-clonic seizures (Table 1).

$\label{eq:table_transform} \textbf{Table 1:} Scheme of the relationship between epileptic seizures and type of CVD$		
Patiens	CVD	Type of seizures
7	Lacinar brain infarcts, chronic Hypoxia vasculophaty, leukoaraiosis	Episodic loss of contact with environment TIA-like
4	hemispheric stroke, multinfarct vascular encephalopathy	Focal Jackson-like seizures
4	multi-infarct vascular disease, chronic hypoxia, minor stroke	Tonic-clonic seizures with or withou focal onset

As can be seen, it is also possible to make a clinical association between the type of CVD and the type secondary epilepsy: in fact, more often the focal-starting forms of seizures characterize the conditions of localized hemispheric stroke, while bilateral seizures (tonic-clonic and absence-like seizures) are seen in patients with multiinfarct encephalopathy or chronic hypoxic atrophy. In the 15 patients with acute event classified as stroke the onset of epilepsy was diagnosed 6 to 24 months after the stroke and showed a relatively frequent seizures (multi-day or 1 to 4 times a week). Patients with chronic vasculopathy had a lifelong period of onset of epilepsy that was not definable in time compared to CVD; in particular, we noted that epilepsy occurred in very elderly subjects with late onset and absent clinical focal neurological signs, chacterized by vascular dementia. The patients were suffering from vascular disease with chronic hypoxia and atrophy, leukoaraiosis, diffuse junctional microinfarcts. The group of 7 patients with seizures characterized by 'loss of contact with the environment' had a standard EEG with minimal signs compatible with age; only one patient showed minimal sharp anomalies in the EEG with no side prevalence. Of the 4 patients with faciobrachio-crural hemisindrome, 3 had a standard EEG hat showed focal anomalies (spikes, slow waves and slow sharp waves) with bilateral evolution compatible with the vascular lesion site, while 1 had a standard EEG within normal limits. In fact, according with what is known in clinical practice, the evidence of neurophysiological signs is linked to the depth of the lesion site. Of the 4 patients with tonic-clonic seizures, the standard EEG was characterized according to the following: presence of diffuse slow anomalies, presence of irritative anomalies without side prevalence, EEG within normal limits (unexpectedly 2 patients with tonic-clonic critical events presented the EEG recorded during the intercritical interval within normal limits). This confirms the importance of clinical evaluation in diagnosis and in the choice of therapy because many of the patients with late and / or vascular epilepsy are found to have a 'negative' EEG. The different groups of patients were treated with different therapeutic approaches. In particular, patients with focalonset epilepsy were treated with Anti-Crisis Medications (ASM) Na-blockers with complete resolution of the symptoms. Instead non-Na-blockers ASMs have been used in subjects with bilateral epileptic seizures, also in this case with complete resolution of symptoms as required by the indications of the international guidelines [3]. Obviously, the clinical experience in the district is fundamental to guide the choice of the most effective and tolerable ASM in each individual patient.



DISCUSSION

The aim of the study is to highlight and bring to the attention of the scientific community the relevance of epileptic complications in patients with cerebrovascular disease whose occurence is largely underestimated and leads to an incorrect or late diagnosis. This study highlights the importance of early diagnosis and the consequent appropriate choice of therapy for a disorder that significantly affects the quality of life of the home patient and the caregivers. Thanks to our clinical experience in the district and in particular in the home care center, an overwhelming number of clinical conditions referable to epileptic disease in some way connected to the wide spread of CVD has come to light; in fact epilepsy that develops in patients with CVD is much more frequent than is commonly believed. This indicates the importance of enhancing and bringing out with systematic studies the areas of clinical action that are currently poorly investigated from a scientific-systematic point of view to advantage more traditional scientific studies normally reserved exclusively in traditional research centers. Because of a large amount of cases escapes those observations, it results that there is a misleading interpretations and underestimation of some clinical phenomena as regards their frequence, as in the case of vascular epilepsy. In addition, clinical experience in the distict provides valuable details on the therapeutic strategies to be adopted. In our study the group of patients has a predominantly older age but in other observations we have noticed that even in younger patients with CVD the epileptic complication may be subsequent not only to haemorrhagic strokes but also to ischemic events or to multinfarct encephalopathy [4]. The limit of this particular study was the restrict possibility to collect data of a small number of patients. Therefore it will be necessary to create a larger and systematic database on all patients in the district in order to allow more significant statistical processing.

CONCLUSIONS

We have shown that epilepsy is a relevant unrecognized comorbidity in patients with CVD and in need of greater attention for early diagnosis and appropriate therapy. In consideration of the wide availability of clinical cases collected in the experience of specialist physicians on the territory it is advisable that further devoloping studies are promoted to expand clinical data and to improve current knowledge.

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