CHARACTERISTICS OF SYMPTOMATIC EPILEPSY IN PATIENTS WITH BRAIN TUMOURS

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Abstract

The aim of our work is to determine the total number, age, gender of the patients with the symptomatic epileptic seizures associated with brain tumours, tumour location, clinical signs and characteristics of epileptic seizures. We have analyzed medical documentation of the patients with brain tumours hospitalized at the Department of Neurology, University of Sarajevo Clinics Centre. This study is retrospective and includes time period from 1st January 2000 until 31st December 2005.

During the observed period at the Department of Neurology in Sarajevo there were in total 9753 hospitalized patients, from which 101 (1,1%) patients with the brain tumour diagnosis. Average patient's age was 62,60 ± 1,28 years. In one third of the patients (32%) were recorded epileptic seizures, without significant difference between genders. In case of symptomatic epilepsy, significantly more frequent locations of tumours were: in several lobes (28%), parietal lobe (25%), as well as frontal and temporal lobe (18,8% each), while there were no changes in cerebellum and brain stem (χ^2 =7,174, p<0,05).

The most prominent signs of illness in our sample were hemiparesis with the cranial nerves lesion (56,3%), speech problems (25%). Normal neurologic findings were significantly more frequent among patients with the symptomatic epilepsy (χ^2 =6,349, p<0,05). The most often was a single seizure (59%), in 38% of cases there were recorded series of seizures, and only 3% of patients had status epilepticus. In relation to the type of seizures, the most often are simple partial seizures with or without secondary generalization (66%), than generalized convulsive (31%), and the rarest one are complex partial seizures (3%).

Symptomatic epilepsy in case of brain tumours occurs in one third of patients, at older age, and in both genders. The lesion usually affects several lobes and cause simple partial seizures with or without secondary generalization. The most often clinical signs in case of all brain tumours are cranial nerves lesion and hemiparesis, while the normal neurologic findings are significantly dominant in the group of patients with the epileptic seizures.

KEY WORDS: symptomatic epilepsy, brain tumours

Introduction

Brain tumours account for 85-90% of all central nervous system neoplasms (1). Clinical manifestations depend on the location, histologic type and rate of tumours growth. Typical symptoms include signs of increased intracranial pressure and focal neurologic signs. Seizures are a common complication of the expansive processes in the brain and occur in approximately 35% of patients. According to literature data 70% of patients with primary brain tumour, and 40% with brain metastases develop seizures as one of the symptoms (2). Seizures in children are rarely due to brain tumours. In this age group idiopathic epilepsy or fever are the most common causes of seizures. On the other hand, seizure occurring for the first time in adults is probably caused by brain neoplasm. Age increases the risk of epilepsy being caused by a tumour, especially after age 45. This category of organic epilepsy is present among 16% of patients older than 25 years. Although brain tumours are relatively uncommon, they have great importance because of their generally poor prognosis and increased lethality. Goal of this paper The aim of is to determine total number, age, gender of patients with symptomatic seizures associated with brain tumours, tumour location, clinical findings, characteristics of seizures, and its treatment.

Patients and Methodology

We have analyzed medical documentation of the patients with brain tumours hospitalized at the Department of Neurology,University of Sarajevo Clinics Centre. This study is retrospective and includes time period from 1st January 2000 until 31st December 2005. Neuroimaging methods, primarily CT, and less often MRI, were used for diagnostic evaluation of all brain tumour patients.

Results

During the observed period at the Department of Neurology in Sarajevo there were in total 9753 hospitalized patients, from which 101 (1,1%) patients with the brain tumour diagnosis (Figure 1).

	Age
Mean	62,6040
Standard deviation	1,28780
Standard error mean	12,94224
Minimum	20
Maximum	84

TABLE 1. Mean age

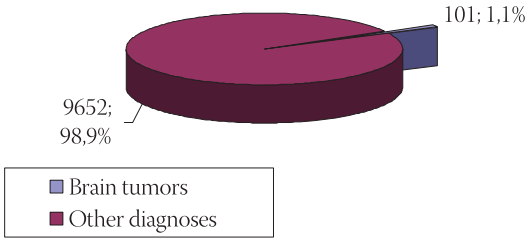

FIGURE 1. Rate of brain tumours occurrence within total number of admissions

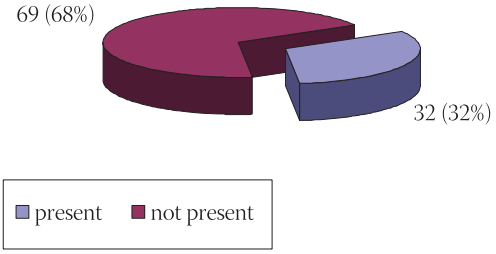

FIGURE 2. Presence of symptomatic epilepsy

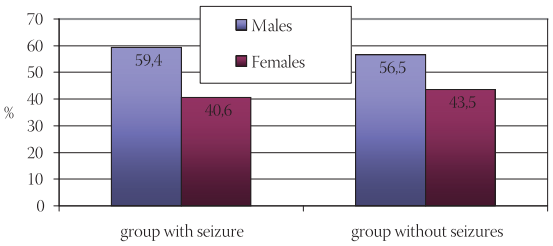

FIGURE 3. Gender ; χ^2=0,003, p=0,9573

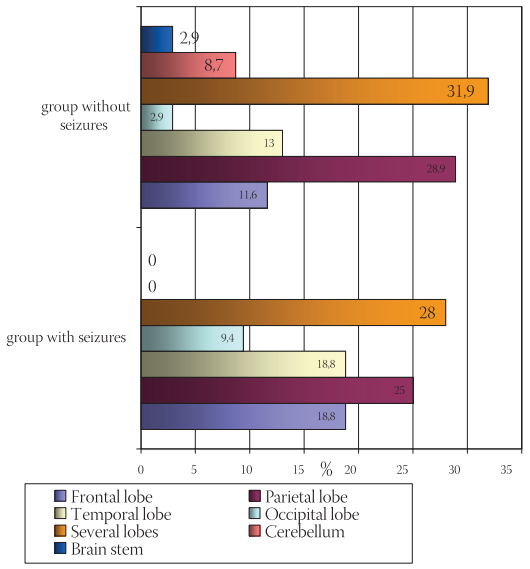

FIGURE 4. Tumour location; χ^2=7,174, p=0,0425

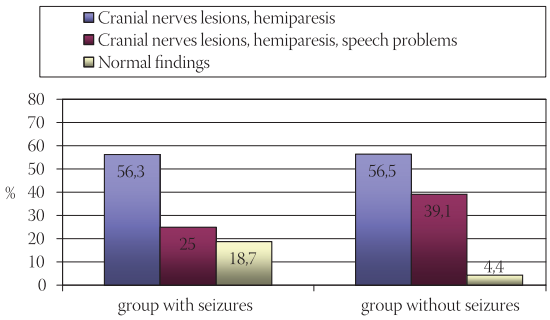

FIGURE 5. Neurologic findings; χ^2=6,349, p=0,0418

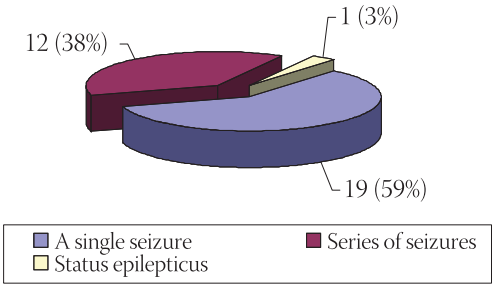

FIGURE 6. Frequency of seizures

Average patient's age was 62,60 ± 1,28 years (Table 1). In one third of patients (32%) were recorded seizures, without significant difference between genders (Figures 2.). In case of symptomatic epilepsy, significantly more frequent locations of tumours were: in several lobes (28%), parietal lobe (25%), as well as frontal and temporal lobe (18,8% each), while there were no changes in cerebellum and brain stem (χ^2 =7,174, p<0,05) (Figure 4).

The most prominent signs of illness in our sample were hemiparesis with the cranial nerves lesion (56,3%), speech problems (25%). Normal neurologic findings were significantly more frequent among patients with the symptomatic epilepsy (χ^2 =6,349, p<0,05) (Figure 5).

The most often was a single seizure (59%), in 38% of cases there were recorded series of seizures, and only 3% of patients had status epilepticus (Figure 6). In relation to the type of seizures, the most often are simple partial seizures with or without secondary generalization (66%), than generalized convulsive (31%), and the rarest one are complex partial seizures (3%) (Figure 7).

In a treatment of symptomatic epilepsy the most frequently used medication was carbamazepine and diazepam in combination (69%), diazepam alone in 13% of patients, than carbamazepine and phenobarbital (each 9%) (Figure 8).

DISCUSSION

In this research we have analyzed occurrence and clinical characteristics of the organic epilepsy caused by brain tumours. In adulthood brain neoplasms are often a cause for seizures. In that case, any brain tumour, benign or malignant, can lead to a seizure (3). Seizures are present in approximately one-third of patients, and they can occur at any stage of disease in 40-60% of patients (4, 5). In our research 32% of patients had seizures which correspond to the above listed data. In a study conducted in Minneapolis, which included 714 patients with the primary malignant brain neoplasms, occurrence of seizures was more common among younger and middle age groups (33% and 35%) compared to the patients older than 75 years (8%). According to pathohystological evaluation, seizures was more frequent in case of astrocytomas, and rarely they were recorded in case of lymphomas compared to all other types of malignant tumors (6). Tumour location is also important in determining the frequency of seizures. Supratentorial tumours are particularly likely to cause seizures, while tumours in the thalamus and the posterior fossa are much less epileptogenic. Typically, in our sample symptomatic epilepsy resulted from tumours located in the cerebral hemispheres, and it was not recorded in case of tumours in the brain stem or cerebellum. The most often tumour lesion affected several lobes, than pa-

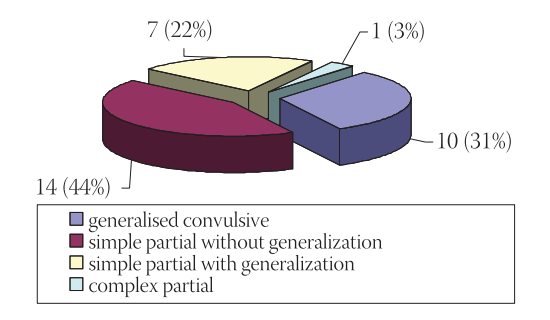

FIGURE 7. Type of seizures

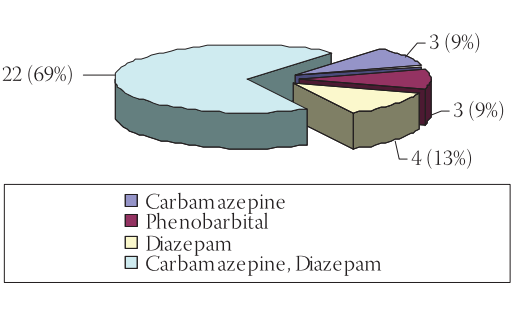

FIGURE 8. Treatment of seizures

rietal lobe, and equally frontal and temporal lobes. By frequency, the leading seizure type were simple partial seizures, than generalized tonic-clonic, while references mentioning equal presence of focal and generalized types of seizures (3). Brain tumours that are the most likely to cause seizures in adults are: ganglioglioma, glioblastoma multiforme, meningioma, metastatic tumours and oligodendroglioma (3). Because the treatment of many patients was continued at the other departments (neurosurgery and oncology), we are lacing data on the histological tumour type. In treatment of seizures, commonly used medications were carbamazepine and diazepam alone or in combination, than phenobarbital, without use of newer antiepileptic drugs. There is no consensus in the literature about which antiepileptic drug is the most effective in treatment of these patients. Newer antiepileptics, such as gabapentin, lamotrigine, levetiracetam may offer better efficacy, greater tolerance and fewer drug interactions (3). Occurrence of seizures presents an additional difficulty to this group of patients, besides neurologic deficit, side effects of the oncology treatment and uncertain prognosis. Appropriate treatment and seizure control are important for the optimal quality of life.

Conclusion

Symptomatic epilepsy in case of brain tumours occurs in one-third of patients, at older age, and in both genders. The lesion usually affects several lobes and cause simple partial seizures with or without secondary generalization. The most often clinical signs in case of all brain tumours are cranial nerves lesion and hemiparesis, while the normal neurologic findings are significantly dominant in the group of patients with seizures. Carbamazepine and diazepam are medications that are mostly used for the treatment of these patients.

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