

Tumor-Epilepsy in Southern Iran

Dear Editor,

Tumors are responsible for the primary pathology in 10%–30% of cases undergoing operation for chronic epilepsy.¹ Temporal lobe epilepsy is the most frequent epilepsy syndrome in adulthood which is drug-resistant in more than 50% of patients, but can successfully surgically managed in up to 70%.² This study aims to determine the surgical and epileptological outcome of patients admitted for brain tumor in Shiraz, southern Iran.

One hundred and twenty five patients with impression of brain tumor in Department of Neurosurgery of Shiraz University of Medical Sciences entered our study. The tumors were divided according to the location, above or below the tentorium (supratentorial or infratentorial). Histological type and grade of brain tumors were determined.

Epileptic seizure was observed in 27% of patients including 75 patients in supratentorial and 48 in infratentorial areas. The supratentorial cases comprised frontal (19), parietal (18), temporal (11), occipital (2), sphenoidal wing (6) and deeply situated areas (19) including pineal gland, pituitary basal ganglia and 3rd ventricle tumors. Seizure complicated the brain tumors most likely during the 30-50 years old. The seizure was higher in males (29%) than females (24%). The incidence of epilepsy in association with low grade astrocytoma (glioblastoma multiform) was 75% and in association with high grade astrocytomas and meningioma was 63% and 39% respectively. A 9% association was also visible with others including pituitary adenoma, colloid cyst of 3rd ventricle, pineal gland tumor, craniopharyngioma and papilloma of the lateral ventricles. Among the total frontal seizures, 78%, 22%, and 0% were grandmal, focal and psychomotor type while these figures for parietal area were 37%, 63% and 0% and for temporal region were 85%, 0% and 15% respectively. No patient presented status epilepticus. There were four cases of metastatic brain tumors, two were in the posterior fossa including malignant melanoma and a breast tumor. The other two were renal cell carcinoma in occipital lobe and lymphoma in the frontoparietal area of the brain; the latter was associated with convulsion, making roughly an incidence of 25% of seizure in metastatic brain tumors. 36 childhood tumors were noticed including 14 supratentorial, of which 3 were epilepto-

genic, and 22 were infratentorial of which one was epileptogenic.

Our epileptic seizure cases were lower than Penfield *et al.*'s study³ but in relation to infratentorial neoplasms were similar. True epilepsy can not result from a lesion limited to the posterior fossa, but tumors compressing the lower brain stem and cerebellum may lead to ictus subtentorialis.³ They consist of stimulation of lower cranial nerves, transient vertigo and syncope tonic postural seizures with extensor rigidity and opisthotonus.³ In our study, 30-50 years old patients with brain tumors experienced seizure which is similar to the results of Ketz⁴ who reported the peak incidence in the 4th decade of life. We identical to Hess⁵ showed more seizure incidence in men suffering from brain tumors, but in Bormann and Schiefer's study was different.⁵

When treating patients harboring a brain tumor, it is mandatory to have a comprehensive view of the natural history of each lesion. The frequency of seizures is widely different between low- and high-grade tumors due to different mechanisms of epileptogenesis.⁶ An incidence of 75%, 63% and 39% of seizure was seen in patients with low grade and high grade astrocytomas and meningiomas respectively which are higher than other reports.^{3,5,6} Penfield *et al.* found that fast growing tumors caused as many epileptic seizures as slow growing ones if the patient survived for similar episodes.³

The elasticity of the skull and possibility of suture diastasis resulted in the late development of increased intracranial pressure thus reducing the otherwise high risk of seizures in childhood age.⁴ Hess noticed epileptic seizure due to tumors of the posterior fossa caused stretching of the vasculature of the cortex resulting in secondary local ischemia.⁵

We can conclude when a middle-aged patient complains of epilepsy of recent onset, occurring without a previous history of trauma or infection, tumor of the brain may be the most probable diagnosis. The tumors with accompanying early seizures which are most likely grow slowly and are situated near the hemisphere surface are meningiomas or astrocytomas. Attention to this important sign and an early search for the lesion may help the patient by radical excision of the tumor before advanced stages of the disease.

Keywords: Tumor; Epilepsy; Seizure, Iran

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