



FOCAL ABNORMALITIES ARE THE MAIN ABNORMAL EEG FEATURES OF SYMPTOMATIC EPILEPSY (BRAIN TUMOR) IN NEUROLOGY CLINIC, SANGLAH GENERAL HOSPITAL DENPASAR 2016

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ABSTRACT

Approximately 30 – 50% of brain tumor patients show seizure symptom. Therefore, we would like to inquire EEG characteristics of brain tumor. This study is getting EEG features of symptomatic epilepsy due to brain tumor patient whose came to Neurology clinic Sanglah G

Method: This was a descriptive cross-sectional study. Data were collected from EEG database upon subjects with features of symptomatic epilepsy due to brain tumor who were admitted to Neurology Clinic Sanglah General Hospital EEG recording during January to December 2016.

Result: Brain tumor patients with s EEG , abnormal EEG 3 (30%patient with EEG feature spike wave at frontal region, 1 patient with ISA left temporal, 1 patient with ISA right temporal, 1 patient with ISA right frontocentral, 1 patient with ISA left parietal, 1 patient with ISA right parietal, 1 patient with ISA diffuse general) including one patient (9,09%) EEG seizure begin at parietooccipital, one patient (9,09%) with Periodic Lateralized Epileptiform Discharges, one patient (9,09%) with ISA diffuse general (Table 2) Distribution of abnormalities are focal in 6 (85,7%) and general in 1 (14,3%)

Conclusion: EEG features of brain tumor patients varied, including normal EEG and abnormal EEG. Abnormal EEG consists of ISA, epileptiform discharges (PLEDS, spike wave and EEG seizure) Normal EEG was the most common EEG features found in brain tumor (66,67%) Focal abnormalities were of symptomatic Sanglah General hospital Denpasar

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INTRODUCTION

The etiology of Brain tumor symptom consists of two factors, as follows: the volume of tumor and the location of tumor. Tumor volume is the cause of the increase of intracranial pressure and symptoms likely language impairment, weakness of extremity, coordination and other deficit neurology are the symptom's which depend on the location of tumor(1)

Approximately 30 – 50% of brain tumor patients show seizure as initial symptom's and therefore EEG can be the first tools to be considered and done before proceeding to other sophisticated imaging such as CT scan and/or MRI (2)

Therefore we would like to inquire EEG characteristics of symptomatic epilepsy patients due to brain tumor.

Purpose: The purpose of this study is getting EEG features of symptomatic epilepsy due to brain tumor patient whose came to Neurology clinic Sanglah General Hospital for EEG recording Method

This was a descriptive cross-sectional study. Data were collected from EEG database upon subjects with features of symptomatic epilepsy due to brain tumor who were admitted to Neurology Clinic Sanglah General Hospital for EEG recording during January to December 2016.

RESULT

In 2016, performed 21 EEG of brain tumor patients with seizure symptom's which classified as suspected primary tumor in 10 patients and suspected metastatic tumor in 11 patients. The classification of EEG features were normal EEG 14 (66,67%), abnormal EEG 7 (33,33%), Intermitten slow activity (ISA) 4 (19,05%) and epileptiform discharges like EEG seizure 1 (4,76%), spike wave 1 (4,76%), Periodic lateralized epileptiform discharges (PLEDs) 1 (4,76%)(table 1). EEG features of primary brain tumor; normal EEG 7 (70%), abnormal EEG 3 (30%) including 1 (10%) meningioma patient with EEG feature spike wave at frontal region, 1 (10%) oligodendroglioma patient with ISA left temporal, 1 (10%) glioblastoma patient with ISA right frontocentral. EEG features of metastatic brain tumor patients are; normal EEG 7 (63,64%), abnormal EEG 4 (36,36%) including one patient (9,09%) EEG seizure begin at left parietooccipital, one patient (9,09%) with Periodic Lateralized Epileptiform Discharges at right parietocentral, one patient (9,09%) with Intermitten Slo Activity (ISA) at right frontal, 1 patients (0,09%) with ISA diffuse general (Table 2) Distribution of abnormalities are focal in 6 (85,7%) and general in 1 (14,3%) (table 3)

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Table 1 EEG features of symptomatic epilepsy (brain tumor) in Neurology clinic, Sanglah General Hospital Denpasar 2016

EEG classification....	Frequency	Percentage
Normal EEG	14	66,67%
Epileptiform Discharges:		
• EEG Seizure	1	4,76%
• Spike wave	1	4,76%
• PLEDs	1	4,76%
• ISA	4	19,05%
Number	21	100%

Table 1 demonstrate that the largest percentage were normal EEG 14(66.67%) and abnormal EEG were 7 (33,33%), consist of ISA 4 (19,05%) and epileptiform discharges are 3(14,28%)

Table 2 EEG features of symptomatic epilepsy (primary and secondary tumor) in Neurology clinic, Sanglah General Hospital 2016

EEG Classification	Brain Tumor Primary	Secondary brain
	Brain tumor (n /%)	tumor (n/%)
Normal EEG	7 (70)	7 (63,64)
ISA ;		
• Focal	2(20)	1 (9,09)
• General	-	1 (9,09)
Epileptiformdischrges;		
• Focal	1 (10)	2(18,18)
• General	-	-
Number	10(100%)	11(100%)

Table 2 dmonstrate that percentage of epileptiform discharges of metastatic brain tumor 18,18% which larger than in primary brain tumor It is the same with seizure incidence of brain tumor metastatic (20-40%) (3) All of epiletiform discharges in EEG features of primary and secondary tumor have focal distribution. All of ISA in primary tumor have focal distribution. One of two ISA in metastatic tumor have focal distribution and the other one have general distribution.

Table 3 Distribution of abnormalities in EEG features of epilepsy symptomatic (brain tumor) in Neurology Clinic Sanglah General Hospital Denpasar 2016

EEG Abnormalities	Distribution Focal	General
ISA	3 (42,85%)	1 (14,3%)
Epileptiform discharges	3 (42,85%)	-
Number	6 (85,7%)	1 (14,3%)

Table 3 showed that 85,7% of abnormalities in EEG features are focal and 14,3% are general

DISCUSSION

This research showed In 2016, performed 21 EEG of brain tumor patients with seizure symptom's which classified as suspected primary tumor in 10 patients and suspected metastatic tumor in 11 patients. Almost ¾ of sufferers of brain tumors experience seizures (4,5) The classification of EEG features were normal EEG 14 (66,67%), abnormal EEG 7 (33,33%), Intermitten slow activity (ISA) 4 (19,05%) and epileptiform discharges like EEG seizure 1 (4,76%), spike wave 1 (4,76%), Periodic lateralized epileptiform discharges (PLEDs) 1 (4,76%) (table 1). The classification of EEG features based on International Federtion of Society for EEG and Clinical Neurophysiology 1974 (6,7) In this research EEG normal is most often found. This is probably because routine

EEG recording is only done for 30 minutes. During this time there is less chance of abnormal electrical activity. Distribution of abnormalities are focal in 6 (85,7%) and general in 1 (14,3%)(table 3) This data is consistent with previous studies and reviews that mention more clinical seizure and EEG abnormalities are focal. (8,9,10,11}

CONCLUSION

EEG features of brain tumor patients varied, including normal EEG and abnormal EEG. Abnormal EEG consists of ISA, epileptiform discharges (PLEDS, spike wave and EEG seizure) Normal EEG was the most common EEG features found in brain tumor (66,67%) Focal abnormalities were the main abnormal EEG features of symptomatic epilepsy (brain tumor) at Sanglah General hospital Denpasar

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