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RESEARCH ARTICLE

ANTIEPILEPTICS IN TRAUMATIC BRAIN INJURY-COMPARATIVE STUDY

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ABSTRACT

Background: Road traffic accidents are common cause of head injuries followed by fall and combat injuries nearly 20 percent of traumatic brain injury patients develop seizures ,which may be early onset or late onset. **Materials & Methods:** Retrospective comparison of role of antiepileptics to control seizures in traumatic brain injury in a tertiary care centre the effectiveness to control seizures in traumatic brain injury patients admitted in rajiv Gandhi government general hospital either prophylactically or treatment is analysed. **Results and Principle Conclusion:** Phenytoin is drug of choice for early onset seizures in traumatic brain injury patients levetiracetam is a viable alternative, carbamazepine and sodium valproate are used as second line drugs.

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INTRODUCTION

Post traumatic seizures are important cause for mortality and morbidity in traumatic brain injury patients ,seizures lead secondary brain injury by influx of calcium ions into neuronal cells and causing damage by calcium induced cellular injury hence prevention and treatment of seizures is an important step in the care of traumatic brain injury patients .seizures may be primary or secondary ,primary are those occurring without any known cause and secondary seizures are caused by some pathology in brain

MATERIALS AND METHODS

Rajiv Gandhi government general hospital, Chennai is a tertiary care centre managing high volume of traumatic brain injury cases management of post traumatic seizures with various antiepileptics is analysed for the patients treated for traumatic brain injury during the month of october 2021. Mild cases of head injury are treated with antiepileptics only when they had seizures moderate and severe cases of head injuries are started with antiepileptics both as prophylaxis and treatment, while prophylaxis is weaned off after acute period of illness, antiepileptics are continued for one to two years for patients who have developed seizures and stopped only if the Electroencephalography shows no epileptic focus after that period. Clinical efficacy to control early onset post traumatic seizures by most commonly used antiepileptics are compared based on development of seizures in traumatic brain injury patients while on particular drug and thus requiring additional or alternate drugs.phenytoin is used in most patients followed by levetiracetam,carbamazepine ,sodium valproate,midazolam and other antiepileptics.

RESULTS

Severe and moderate traumatic head injury patients admitted in neurosurgery ward are about 136 all of them were started with antiepileptics. moderate and severe head injury were classified based on Glasgow coma scale (GCS) of patients during admission.GCS of 3to8 were classified as severe and GCS 8 to 12 as moderate TBI.

History of seizures during injury was seen in 17 patients. Five patients on phenytoin and one on phenobarbitone developed allergic reaction and changed with other antiepileptics. two patients developed status epilepticus managed by intravenous midazolam.14 patients developed seizures during course of treatment requiring increase in dose or additional antiepileptic drug.

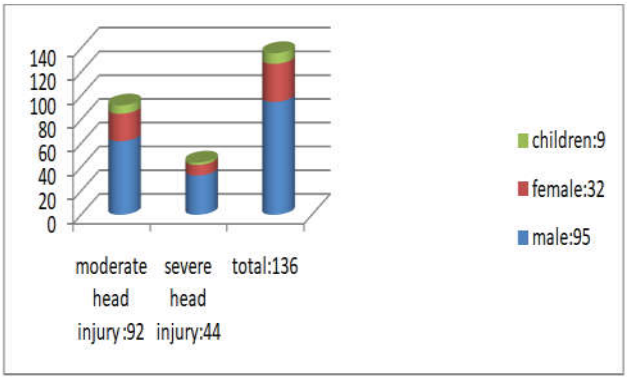

Figure 1.

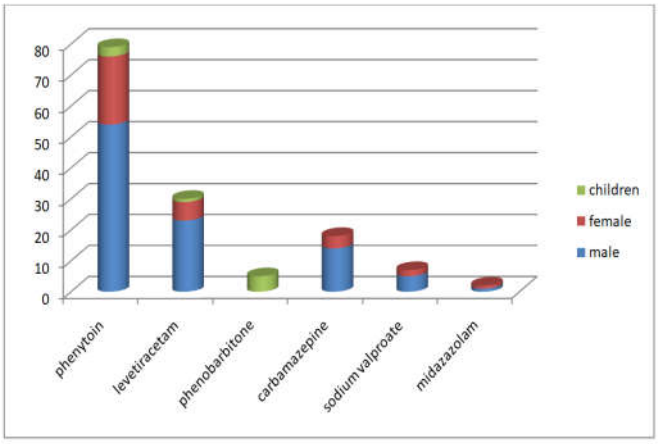

Figure 2.

DISCUSSION

Seizures generally are caused by increased excitability of neuronal tissue of brain leading to epileptic focus; such epileptic foci may be primary or secondary to other pathology. Post traumatic seizures are caused by various reason, direct neuronal injury, and degradation products of blood, derangement biochemical mechanism leading accumulation of excitatory neurotransmitters or loss of inhibitory neurotransmitters.

Most antiepileptics act by their membrane stabilizing action by various mode, phenytoin and carbamazepine acts by inactivating the sodium channels thereby prolonging the refractory period of neurons. Barbiturates and benzodiazepines act by facilitation of GABA mediated chloride channels, ethosuximide acts by inhibition of T type calcium channels. Sodium valproate acts by all three mechanisms. Phenytoin is drug of choice for early onset seizures in traumatic brain injury patients levetiracetam is a viable alternative, carbamazepine and sodium valproate are used as second line drugs, midazolam is used in status epilepticus, phenobarbitone is used in children. Prophylaxis for late onset post traumatic seizures with antiepileptic agents beyond the acute period of illness offers no benefits.

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