

Aetiology of Convulsions in Relation to Clinical, Electrophysiological and Radiological Changes and Management

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ABSTRACT

Introduction: An epileptic seizure may be conceptualized as a paroxysmal pathological process in the brain of a heterogeneous etiology with heteromorphic clinical and electrophysiological manifestation. Current research aimed to study the aetiology of convulsions in relation to clinical, electrophysiological and radiological changes and management.

Material and methods: It was a prospective study carried out on 50 patients of convulsions admitted in the medical wards. Patients with convulsions of all age groups were included in this study.

Results: The incidence of convulsions in those people below 18 years of age was 30% and in adults above 50 years of age was 30%. The incidence is not in confirmation with porter's studies where it is highest above 80% in the children below 18 years age. Most common etiology in study was cerebrovascular accidents 13(26%) and followed by infraction in 10 cases(20%). Incidence of seizure was more in males than compared to females. Most of the patients with seizures were presented with generalised tonic clonic seizures(20 cases).

Conclusion: Focal seizures were more commoner than other groups of seizures. 20% of patients in this study remained undiagnosed with obscure aetiology.

Keyword: Aetiology of Convulsions, Relation to Clinical, Electrophysiological and Radiological

have competency in the diagnosis and treatment of seizure states.²

Current research aimed to study the aetiology of convulsions in relation to clinical, electrophysiological and radiological changes and management.

MATERIAL AND METHODS

It was a prospective study carried out on 50 patients of convulsions admitted in the medical wards in the department of General Medicine. Patients with convulsions of all age groups were included in this study. Routine Biochemical investigations like blood sugar, blood urea, serum electrolytes, VDRL and X-ray chest were done. In some cases of convulsions EEG and CT Scan of brain were done and results were correlated with clinical profile of seizures and aetiology.

Electroencephalography: Standard EEG recording was done during normal awake period with eyes closed for 1½ minutes, followed by activity methods like hyperventilation for 4 minutes and by photic stimulation.

C.T. Scan Brain: Both plain and contrast C.T. Scan using Ionic contrast, CONRAY-280.

Prodromes: Headache, irritability, change in behaviour, change in mood (Euphoria/depression), Mood swings, any other.

AURA: Hallucination of taste, smell, hearing or vision-un-structured. Illusions-micropsia, macropsia, sounds suddenly appearing louder. Deja vu; Jamais phenomena Masticatory movements, smacking movements of the limbs, tongue and jaw. Dazed or dreamy appearance, clouding of consciousness, giddiness, fear or fright, running to catch hold of some person.

Vital Data, Routine Investigations and C.N.S. Examination was done as Intellectual functions: nDepth of consciousness, Conscious, Drowsy, Stupor, Coma Speech.

INTRODUCTION

The word 'Epilepsy' was coined by the Greeks to signify something that seized him from without and is called by different names like 'Herculean Sickness'. Epilepsy is a group of disorders in which there are recurrent episodes of altered cerebral function associated with paroxysmal excessive and hypersynchronous discharge of cerebral neurones. Each episode of neurologic dysfunction is called a seizure. Seizure may be convulsive when they are accompanied by motor manifestations or may be manifest by other changes in neurologic function i.e., sensory, cognitive and emotional events.

In contemporary society the frequency and importance of epilepsy is much considered from the statistical studies of Hauser and Kurland who Determined the prevalence in a small urban community that more than 1 million individuals in the United States are subject to recurrent seizures.¹ They have estimated that between 0.5-2 percent of general population is effected by epilepsy and can effect at any age. The chronicity of many seizure states adds to their statistical importance. Epilepsy is the second most common neurologic disorder exceeded only by apoplexy. Therefore it is desirable for every physician to

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Age in years	Number of Patients	Gender		Percentage
		Male(n=29)	Female(n=21)	
0-2 (Infants)	4	2	2	8
3-12 (young children)	6	4	2	12
13-18 (Adolescents)	5	3	2	10
19-35 (young adults)	8	4	4	16
36-50 (Adults)	12	7	5	24
>50 (Elderly)	15	9	6	30

Table-1: Demographic details in present study

Cause	Number of patients	Percentage
Cerebrovascular accidents	13	26
Haemorrhage	3	6
Infarction	10	20
Tumours	4	8
Primary	3	6
Secondary	1	2
Tuberculomas	3	6
Meningo-encephalitis	3	6
Calcified granulomas	2	4
Cysticercosis	1	2
Intracranial birth injury	2	4
Alcohol induced	3	6
Trauma	3	6
Insulin/daonil induced	3	6
Metabolic disorders	3	6
No identifiable cause	10	20

Table-2: Incidence of aetiological presentation of seizures

Type of seizure	Gender		Number of cases	Percentage
	Males	Females		
Focal seizures	12	10	22	44
Focal with second generalisation	5	3	8	16
Generalised tonic clonic seizures	12	8	20	40

Table-3: Incidence of seizure presentation

RESULTS

50 patients with convulsions were studied and analysed for age and sex incidence. They were also analysed for type of seizure presentation and causative factors (Table – I).

The Seizure incidence in males was marginally high then in females. The incidence of convulsions in those people below 18 years of age was 30% and in adults above 50 years of age was 30%.

Most common etiology in study was cerebrovascular accidents 13(26%) and followed by infraction in 10 cases(20%) (table-2).

Incidence of seizure is more in males than compared to females. Most of the patients with seizures are presented with generalised tonic clonic seizures (20 cases) (table-3).

DISCUSSION

Aetiology of convulsions is multifactorial. The cause of the convulsions can be identified in most of the cases by correlation of history, clinical examination, investigations like X-ray skull, CT, EEG, CSF and biochemical analysis. In present study of 50 cases of convulsions the incidence

of convulsions was more above the age of 50 years (30%) followed by between 36-50 years of age (24%), between 18 to 35 years (16%) and least below 2 years (8%). The incidence of convulsions in males was marginally more than in females i.e., M:F = 29:21.

60% of patients studied presented with focal seizures. Among these focal seizures were only 44%, focal with secondary generalised seizures were 16% and 40% presented with generalised tonic clonic seizures. This incidence of focal seizures is in confirmation with Porter studies where the incidence of focal seizures in General population is 60%.^{3,4} Aetiologically 26% of patients studied presented with cerebrovascular accidents. Among these 20% patients were with infarctions and 6% with intracerebral haemorrhage. This was not in confirmation with Porter studies. The incidence of cerebrovascular accidents as a cause of convulsion was higher in this study then that of Porter et al study where the incidence of seizure of unknown aetiology is more than any other known causes.³

The study shows in children below 12 years, unknown aetiology accounts for majority of seizure cases and this

is confirmed by Porter studies where the incidence of seizure activity with unknown aetiology is maximum.³ In this study tumours accounted for 8% of all cases. Trauma, Tuberculomas, meningoencephalitis, Alcohol induction, metabolic disorders each accounted for 6%. Intracranial birth injury calcified granuloma 4%, Crysticercosis 2%. In 20% of cases with seizures studied no obvious cause was derived.

Among the cases without any obvious calls 10% of patients had hypertension and diabetes mellitus, 12% only hypertension, 4% only diabetes and the remaining 4% had no identifiable associated risk factors.

The study of clinical profile in relation to the investigations revealed that EEG was abnormal in 55% of patients, who presented with focal seizures and 42% with focal with secondary generalised convulsions. No abnormality was seen in patients presented with generalised tonic clonic convulsions. EEG was found to be abnormal in 59% of patients having neurological deficit, whereas EEG was completely normal in patients without neurological deficit. It had been observed that the C.T. Scan was abnormal in 73% of patients who presented with focal seizures. In 92% of patients with focal with secondary generalised convulsions and 25% in patients with generalised tonic clonic convulsions. But the C.T. Scan has been abnormal in all the patients presented with convulsions with focal neurological deficit. The C.T. Scan has been abnormal in 10% of patients with convulsions, without any focal neurological deficit. Biochemical investigations like blood glucose level was less than 30 mg % in Insulin,

All cases of cerebro-vascular accidents of acute onset were given anti-edema measures with mannitol and oral glycerol. The patients with more than one seizure were treated with anti-epileptic drugs like phenytoin and carbamazepine. Patients associate with Diabetes mellitus were given carbamazepine for convulsions. Whereas patients without diabetes were given phenytoin. Anti-epileptic drug therapy was given in single measure those who presented with neurological deficit. Tumours with convulsions were treated with anti-convulsions drugs. Tuberculomas with convulsions were treated with anti-tuberculosis therapy along with anti-epileptic drugs. In case of Crysticercosis albendazole, steroids and anti-epileptic drugs were given. Calcified granulomas were treated symptomatically with anti-convulsants. The convulsions induced by oral hypoglycaemic agents and Insulin were treated with IV administration of 25% dextrose. Among the 10% of status epilepticus patients. 8% cases were controlled with injection diazepam and phenytoin drip. Others like tumours, traumatic lesions are treated surgically. Metabolic disorders, intracranial birth injuries are treated accordingly.

The patients ratio of children to adults is 1:5 where out of 50 patients children account to 10. But this is not confirmed in general population where the paediatric group below 12 years accounts for 30% of general population.^{6,7,8}

In a study of 123 children with “difficult-to-control” epilepsy, onset below 2 years of age, male sex, other neurological

abnormalities, and certain seizure types emerged as risk factors for refractoriness. Perinatal insults seem to predominate the etiological spectrum.⁸ They contributed to about 50% of symptomatic epilepsies with onset in the first 3 years of life in the study.⁹ In later childhood and adolescence, symptomatic epilepsies due to an underlying structural cause tend to mainly constitute the refractory group. In children, NCC has been implicated in 0.4% of all neurological complaints.¹⁰

CONCLUSION

50 cases of epilepsy were studied. Incidence of convulsions were more in males than in females. Unknown aetiology was more common in children than in adults. Cerebrovascular accidents constituted the most common cause of convulsions in adults. Incidence of convulsions was more above the age of 50 years (30%). Focal seizures were more commoner than other groups of seizures. 20% of patients in this study remained undiagnosed with obscure aetiology. They needed further observation and evaluation.

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