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Original Article

A Clinical Study on Etiological Diagnosis of Acute Seizure in Hospitalized Patient

Ashif Mashud Chowdhury[1], Kalimullah[2], Md. Kamrul Islam[3], Md. Osman Gani[4], A. K. M. Aminul Haque[5], Md. Ridwanur Rahman[6]

[1]Assistant Professor, Department of Medicine, Dhaka National Medical College, Dhaka. [2]Senior Medical Officer, Dhaka National Medical College Hospital, Dhaka. [3]Associate Professor and Head, Department of Cardiology, TMMSS Medical College & RCH, Bogra. [4]Assistant Professor, Department of Medicine, Central International Medical College, Dhaka. [5]Professor and Head, Department of Medicine, Dhaka National Medical College, Dhaka. [6]Professor & Head, Department of Medicine, Shaheed Suhrawardy Medical College & Hospital, Dhaka

Abstract :

Seizures refer to clinical phenomenon rather then a single disease entity, as there are many forms and causes of seizure to epilepsy. There are a group of disorders whose only one main symptom is seizure whilst other disorders seizure is just one of the manifestations. It is a common presentation of a wide variety of diseases like idiopathic epilepsy, cerebrovascular disease, ICSOL, metabolic disease (e.g. diabetes mellitus, uremia, hepatic failure etc).Central nervous system infection, electrolytes imbalance or poisoning. Among the diseases Intracerebral haemorrhage is the most common cause of seizure in this study remaining in the top of the list. Since infectious causes are important in seizure etiology, of which most are treatable with a relatively favorable out come, critical evaluation for infectious and early intervention is recommended.

Introduction :

A seizure (From the Latin Sacire "to take possession of") is paroxysmal event due to abnormal excessive, hypersynchronous discharges from an aggregate of central nervous system (CNS) neurons.

It is a common presentation of wide variety of diseases like Idiopathic Epilepsy, cerebro vascular disease, ICSOL, Metabolic diseases (e.g. diabetes mellitus, uremia, hepatic failure etc,) Central nervous system infection, Electrolyte imbalance or poisoning.)

During the last decade of the last century there had been major advances in understanding and management of Epilepsy. Now it is possible to expect good or complete control of seizures in more than 80% of patients[1]. Early diagnosis of seizure requires good knowledge about clinical features and using necessary investigating tools at an appropriate setting.

Seizure can occur in any age and sex and recurrent seizure is a major medical problem in all communities in developed as well as developing countries. My study is based on hospital admitted patients in different Medicine Units of Dhaka Medical College Hospital. Cases admitted below 16 years of age will not be included in this study. The study may to some extent reflect the major problems prevailing in the community.

Materials and Methods :

A fetal 100 cases of seizure admitted in medicine department of DMCH through emergency and outdoor were studied. Patient with seizure were interviewed by a structural questionnaire. A thorough clinical examination was carried out. Level of Consciousness was graded according to Edinburgh method when patient unconscious. Detailed neurological examination done to evaluate the abnormalities, laboratory investigations include complete blood current, serological tests for syphilis, blood glucose, fasting lipid profit, blood urea, creatinine, s. electrolytes, ECG, chest X-ray, additional diagnostic tests- liver function test, drug screen of blood and urine, EEG, MRI/CT scan of brain, carotid Doppler studies, angiogram, echocardiogram, CSF analysis, ANA, anti-cardiolipin antibody, Hb-electrophorosis Lupus anticoagulant, pANCA, cANCA was done where required. This was a prospective study form 01.01.2003 to 31.07.2003 with age ranging from is 16 to 90 years were purposely collected for conducting the study.

Results :

Table- 1: Aetiological distribution of seizure (n= 100)

Aetiology	Number of Patients	
	No.	%
Intra Cerebral Haemorrhage	28	28
Idiopathic	22	22
Meningo encephalitis	18	18
Hypertensive encephalopathy	15	15
Cerebral Infarction	6	6
Brain Tumor	6	6
Renal Failure (uremia)	3	3
Familiar hypoparathyroidism	1	1
Tuberous sclerosis	1	1

Table-2: Age group of study of patient (n=100)

Age group (Years)	Number of patient	Percentage
10-19	5	5
20-29	24	24
30-39	5	5
40-49	10	10
50-59	25	25
60-69	16	16
70-79	13	13
80-89	2	2

Table-3: Sex distribution (n=100)

Causes	Sex	
	Male	Female
Intra Cerebral Haemorrhage	16	12
Idiopathic	12	10
Meningo encephalitis	13	5
Hypertensive encephalopathy	12	3
Cerebral Infarction	5	1
Brain Tumour	1	5
Renal Failure (uremia)	1	2
Familial hypoparathyrodism	0	1
Tuberous- sclerosis	0	1

Table-4: EEG Sensitivity in Interictal record of IGTCS (n=22)

EEG	Number of patient	Percentage
Positive	13	59.09
Negative	9	40.91

Table-5: Aeitological distribution of meningo encephalitis (n=18)

Atiology	Number of Patient	Percentage
Pyogenic	13	72.22
Tubercular	3	16.67
Viral	2	11.1

Table-6: Gram staining of CSF (meningo encephalitis) (n=18)

Organism	Number of Patient	Percentage
Gram+ve Cocci	8	44.44
Gram-ve Cocci	3	16.67
Gram-ve bacilli	2	11.11
Not isolated	5	27.78

Table-7: Organism isolated in CSF culture (meningo encephalitis) (n=18)

Organism	Number of Patient	Percentage
Haemophylus Influenzae	2	11.11
Streptococcus pneumonae	6	33.33
N.Meningitides	2	11.11
Not isolated	8	44.44

Discussion :

The study was undertaken to assess the aetiological patterns of convulsive patient admitted in medicine units of Dhaka medical college hospital through emergency and outdoor during the period of 01-01-2003 to 31-07-2003. A total number of 100 cases were studied having seizure, associated with other symptoms and signs. Among them the percentage distribution of different cases of seizure were as follows; Intracerebral Hemorrhage 28 cases (28%), Idiopathic 22 cases (22%), Meningoencephalitis 18 cases (18%), Hypertensive encephalopathy 15 cases (15%), cerebral infarction 6 cases (6%), Brain tumour 6 cases (6%) Renal failure 3 cases (3%), Familial Hypoparathyroidism 1 case (1 %) and tuberous sclerosis 1 case (1 %) (Table- 1). This study was consistent with the study of KOTAGAL. P, LUDERs HO (eds).[2] In that study the commonest cause was, stroke followed by Brain tumour, Alcohol, Metabolic disorder (uremia, hepatic failure, Electrolytes abnormalities, hypoglycemia), Alzheimer's disease, Idiopathic, among the age group of >35 years where as in age group of 18-35 years trauma was the commonest, the next was

Alcohol. In my study in age group 12-18 yrs, Idiopathic was the commonest; the next was trauma, followed by Brain tumour, genetic disorders. On the other hand in LINDSAY[3] showed-potential causes are idiopathic (75%), CNS infection (5%), vascular (5%), head trauma (5%), congenital disorder (4%), neoplasm (2%), anoxia (2%), drugs and alcohol (2%). It differs from my study because LINDSAY studied on all age group, but my study was on 15-cKi yrs age group.

There was variation of age incidence of these patients. Minimum age was 16 yrs and maximum 85 yrs. Majorities were in the age group within 20-29 yrs, 50-59 yrs, and 60-69 yrs. Aetiology was mainly due to Intracerebral hemorrhage, in the middle age group. Idiopathic, meningoencephalitis and Hypertensive encephalopathy in the young age group. Another study has done by neurology department of IPGMR[4] where was found that 81.66% of patients age were less than 30 years, and most of the between 1-4 years, it was maximum (42.69%).It is not consistent of my study, because study of IPGMR was in all age group but my study was in age above 16 years.

Out of 100 cases male was found 60 (60%) and female 40 (40%), (Table-3) with male: female ratio was 3: 2 which is nearly consistent with the study of IPGMR.", where showed male was being 71.92% and in female 28.08%, with male: female ratio was 2.56: 1 Where the male preponderance over female could not be justified by adequate scientific ground in this study. The male preponderance of the study may be due to the fact that females are mostly neglected in our society that they did not get proper attention during their illness and female to male discrimination prevailing in all spheres. This is reflected indirectly to the present study.

In my study incidence of cerebrovascular disease with seizure was 25% in age group 50-59 yrs, followed by 16% in age group 60-69yrs. Agarwal1[5] et al. showed 28% between age group 50-59 years, Dulal33 et al. showed 34% in age group 51-60 years, which are fairly consistent with this study.

In this study out of 100 cases of seizure, neurological deficit found in 36 cases (36%) maximum deficit found in Intrcerebral heamorrhage 27cases (27%), meningoencephalitis 5 cases (5%), cerebral infarction 4 cases (4%), where as no deficit were found in rest of 64 cases (64%), WHO[6] showed 52% left hemiplegia and 48% right hemiplegia in their study. This is not consistent with my study because WHO study was only on CVD patient and in my study was on all types of convulsive patients.

Streptococcus pneumoniae caused 30-50% of cases in adults, Neisseria meningitidis caused 10-35% cases in adults and haemophylus influenzae type B was responsible for 40-60% cases in children but only 01-03% in adults.[7] In this study meningoencephalitis due to stretococcus pneumonae accounts for 33.33% and Neisseria meningitidis 11.11% and mycobacterium tuberculosis could not be isolated. This is in accordance with above figure.

In my study seizure due to Idiopathic (Epilepsy) consisted of 22 cases 22%, of which 12 (54%) were male, 10 (46%) were female patients, but Loiseau[8]; crespel-A; Picot-MC; Duche-B; Ayrivie-N; Jallon-p; Loiseau-P showed predominantly in women.

The male preponderance of the study may be due to females are mostly neglected in our society, they do not get proper attention during their illness and females to males discrimination prevailing in all spheres. This is reflected indirectly to the present study.

In my study (9 cases) 40% had positive family history but in study of Aziz H[9], Ali-SM 32% had a positive family history of epilepsy most common among siblings.

EEG records were abnormal in interictal period in 59.09%, in my study(Table-8) This is consistent with that of ALLEN CMC[1] where interictal records of EEG are abnormal in about 60% of patients.

Death directly due to epileptic seizure is uncommon in study of Lhatoo-S-D[7], It is consistent in my study.

Hypertensive encephalopathy were found in 15 cases, out of 100 cases of study, where male 9 and female 6. Age group were 10-19 yrs 6 cases,20-29 yrs 5 cases,30-39 yrs 3 cases, 50-59 yrs 1 case respectively. Table-12, and 13(86%) cases due to AGM, 2(13%) cases due to primary hypertension. This study showed that most common seizure due to hypertensive encephalopathy in early age due to renal pathology, it is consistent with Still JL, Cotton D.[10]

Conclusion :

From this discussion it is clear that disease-causing seizure are Intracerebral haemorrhage, Idiopathic, meningoencephalitis, Hypertensive encephalopathy, Cerebral Infarction, Brain Tumour, Renal failure, Famalial Hypoparathyroidism and Tuberous sclerosis. Among the diseases Intracerebral haemorrhage is the most common cause of seizure in this study remaining in the top of the list. Since infectious causes are important in seizure aetiology, of which most are treatable with a relatively favourable out come, critical evaluation for infectious and early intervention is recommended. This study did not depict or represent whole populations, because of limitations of available medical facilities, lack of adequate resources and short duration of study period (only 6 months) in a department of medicine. So multicentre approach should be taken to come to a definit conclusion regarding seizure aetiology.

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