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Clinico-demographic, Investigation and Outcomes Profiles of Subacute Sclerosing Panencephalitis (SSPE) Patients at A Referral Neurology Hospital in Bangladesh

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Abstract

Background: SSPE is a late complication of measles and is fatal in most cases. **Objectives:** The purpose of the study was to observe the clinico-demographic, investigation and outcome profiles of SSPE patients. **Methodology:** This prospective cohort study was conducted in the Department of Neurophysiology at National Institute of Neurosciences and Hospital, Dhaka, Bangladesh from September 2014 to August 2017. Patients of SSPE who were diagnosed by Dyken's Criteria were selected as study population. Details socio-demographic, clinical profiles, investigations and outcome were recorded. The outcome was assessed from the time of first onset of the symptoms till closing of the study. **Results:** The mean age of the study population was 14.3±4.209 years with the male predominance (73.5%). Majority were from rural area (70.6%) and were of low socio-economic condition (52.9%). The mean age of onset of disease was 13.6±4.30 years. History of previous measles infection was reported in 13(38.2%) cases among which 12(92.3%) cases were vaccinated. The mean age of measles infection was 17.0±15.44 months. The time of first symptom of SSPE from primary measles infection was 11.50±4.80 years. Recurrent fall (47.1%) and myoclonic jerks (17.6%) were the most frequent initial symptoms of the patient. Cognitive decline was observed in 28(82.4%) cases. EEG background was slow in 23(67.6%) patients and periodic burst was observed in all (100.0%) cases. Anti-measles antibody in CSF was positive in all cases. MRI was abnormal in 7(25.9%) cases out of 27 cases. Twelve (35.3%) patients died, 18(52.9%) were alive and 4(11.8%) were lost to follow up when the study was closed. **Conclusion:** Early aged male from lower socioeconomic condition are found to be suffering from SSPE. Recurrent fall is the commonest initial presentation. Spontaneous recovery can occur in very few patients. *[Journal of National Institute of Neurosciences Bangladesh, 2019;5(2): 97-100]*

Keywords: Clinico-demographic; investigation; outcomes profiles; subacute sclerosing panencephalitis; SSPE

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Introduction

Subacute sclerosing panencephalitis (SSPE) is a rare late complication of measles infection which involves the central nervous system. It is invariably fatal in most

cases. It has been reported that the latency period between acute measles infection and first symptoms of SSPE is usually 4 to 10 years which ranges from 1 month to 27 years[1]. Although in the post-vaccination era there has been a substantial decline in the incidence of the disease, it is still higher in the developing countries. Saha et al[2] reported an annual incidence of 21 per million populations in India in comparison with 2.4 per million populations in the Middle East[3-4].

Measles infection is still common in Bangladesh. Therefore, the chances of SSPE is still high in this country. There is no data about the incidence of SSPE in Bangladesh but it can be indirectly assumed from the high prevalence of measles in spite of wide vaccination coverage. This study was carried out to observe the clinico-demographic, investigation and outcome profiles of SSPE patients.

Methodology

This prospective cohort study was conducted in the Department of Neurophysiology at the National Institute of Neurosciences and Hospital, Dhaka, Bangladesh from September 2014 to August 2017. Patients fulfilling 3 out of the 5 criteria were included as study population (Dyken's criteria)[5]. These were progressive cognitive decline with stereotyped myoclonic jerks, generalized long-interval periodic complexes in the electroencephalography (EEG), elevated cerebrospinal fluid globulin levels, elevated cerebrospinal fluid measles antibody titers and typical histological findings in brain biopsy or autopsy. Patients were initially evaluated clinically which was followed by investigations including EEG, cerebrospinal fluid and serum examination to look for measles antibody titers. Neuroimaging, wherever possible, was carried out. Details socio-demographic, clinical profiles, investigations and outcome were recorded. The outcome was assessed from the time of first onset of the symptoms till closing of the study.

Results

A total of 34 patients fulfilled the above criteria and were included in the study.

Demographic profiles: The mean age of study population was 14.3±4.20 years (6 to 26 years) with the predominance of male sex (73.5%). Majority were from rural area (70.6%) and almost half were from low socio-economic condition (52.9%) (Table 1).

Clinical Profiles: The mean age of onset of disease was 13.6±4.30 years. History of previous measles infection was reported in 13(38.2%) cases among which 12(92.3%) cases were vaccinated. The mean age of measles infection was 17.0±15.44 months (range 1 to 48 months). The time of first symptom of SSPE from primary measles infection was 11.50±4.80 years (range 5 to 23 years). Recurrent fall (47.1%) and myoclonic jerks (17.6%) were the most frequent initial symptoms of the patient. Cognitive decline was observed in 28(82.4%) cases (Table 2).

Table 1: Socio-Demographic Profiles of Study Population (n=34)

Variables	Frequency	Percentage
Age		
• <15 Years	27	
• ≥15 Years	7	
Male	25	73.5
Rural Dwellers	24	70.6
Lower SE	30	52.9
Student	27	79.4

SE=Socio-economic status

Table 2: Clinical Characteristics of Study Population (n=34)

Variables	Frequency	Percentage
H/O Measles Infection	13	38.2
H/O Measles Vaccination	32	94.1
*Age of onset (Mean±SD)	13.6426±4.30749 (Range 5.80 to 25.90)	
**Time gap (Mean±SD)	11.50±4.804 (Range 5.10 to 23.20)	
Myoclonic Jerks	31	91.2
Focal Seizure	5	14.7
Speech difficulty	22	64.7
Swallowing difficulty	2	5.9
GTCS	16	47.1
Ataxia	14	41.2
Visual disturbance	9	26.5
Declining School Performance	28	82.4
Change of mood and personality	28	82.4
Intellectual deterioration	30	88.2
Apathy	21	61.8

H/O=History; GTCS= Generalized Tonic Clonic Seizure; *Age of the onset of disease; **Mean Time gap between measles infection and SSPE

Investigation Profiles: EEG background was slow in 23(67.6%) patients and periodic burst was observed in all (100.0%) cases. Anti-measles antibody in CSF was

Table 3: Investigation Profiles of Study Population

Variables	Frequency	Percentage
Positive CSF anti-measles Antibody (n=34)	34	100.0
Periodic Burst (n=34)	34	100.0
Abnormal MRI Findings (n=27)	7	25.9

positive in all cases. MRI was abnormal in 7(25.9%) cases out of 27 cases (Table 3).

Outcome profile: Twelve (35.3%) patients died, 18(52.9%) were alive and 4(11.8%) were lost to follow up when the study was closed. Among the 18 alive patients 11 were deteriorating and 5 were stable. Two patients experienced improvement in all aspects and has been able to go back to their profession.

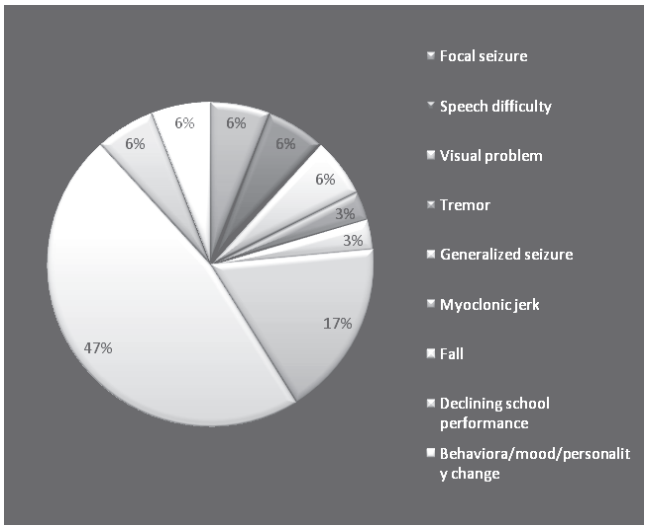

Figure I: First Symptoms of SSPE

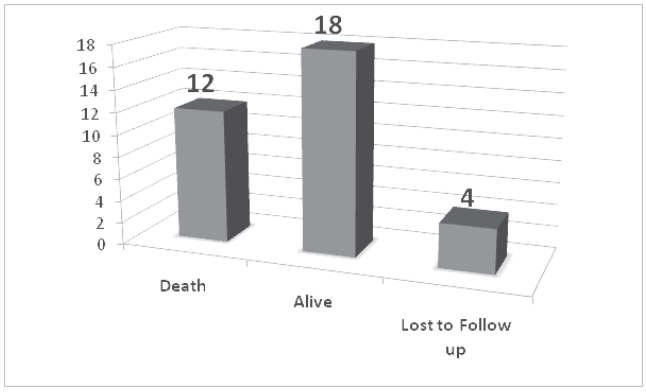

Figure II: Disease Outcome among the Study Population

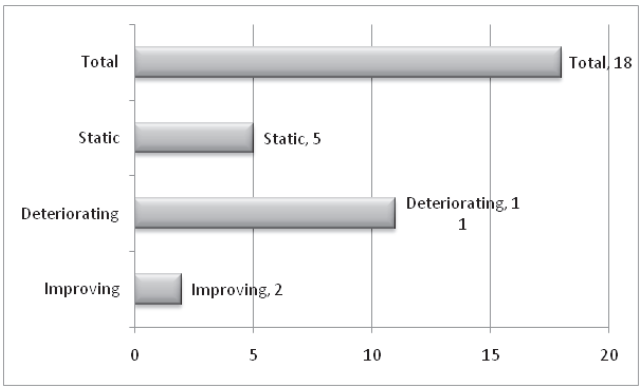

Figure III: Condition of the Alive Patients

Discussion

SSPE is still common in Bangladesh despite widespread measles vaccination under EPI programme. The incidence of SSPE is closely related to that of measles infection. In this study the mean age of study population was 14.3±4.20 years (6 to 26 years) with a male predominance (73.5%). A higher incidence in male (male/female ratio 3:1) has been noted in other studies as well, although primary measles infection shows no such sex disparity[6]. The cause of this disparity remains illusive although Dyken[7] has suggested that this observation may be related to hormonal influence while other experts believe that social circumstances are related to this disparity.

The mean age of onset of disease is 13.64±4.30 with the range of 5.80 to 25.90 years. The average age of presentation worldwide is between 5 and 15 years with the mean age being 9 to 10 years[5-6]. Majority are from rural area (70.6%) and almost half of them are from low socio-economic condition (52.9%) which is consistent with other studies[8-10]. History of measles infection has been reported in 13(38.2%) cases among which 12(92.3%) cases are vaccinated against measles. This is somewhat surprising that despite vaccination quiet a good number of patients has developed measles. The cause of this vaccine failure needs to be elucidated. In 21(61.8%) patients there has been no history of measles infection. This may be explained by the fact that these patients either have subclinical measles infection or the infection is not identified either by the parents or by the treating physicians. Thirty-two (94.1%) of the 34 patients are vaccinated against measles but later developed SSPE. This has been explained in several reports that the occurrence of SSPE in measles vaccinated patients may be due to high prevalence of malnutrition in developing countries, improper vaccine coverage, poor quality, improper storage and transport of vaccine, subclinical measle sinfection prior to vaccination, poor seroconversion or vaccine failure, or circulation of atypical / wild measles virus strain[1,11- 12].

In this study the time of first symptom of SSPE from primary measles infection (latency period) is 11.5±4.8 years (range 5 to 23 years). Other studies have revealed that SSPE usually occurs 7 to 10 years after measles infection, but the latency may vary from 1 month to 27 years[13].

Recurrent fall (47.1%) and myoclonic jerks (17.6%) are the most frequent initial symptoms of the patient in this study. Cognitive decline has been observed in 28(82.4%) cases. Although most studies have revealed

that the initial symptoms are usually subtle and include mild intellectual deterioration, behavioural changes, progressive deterioration in scholastic performance noted by parents and teachers without any apparent neurological signs or findings[5]. In this study fall, myoclonic jerks and cognitive decline have brought the disease to the notice of the parents first.

EEG has been done in all patients which has revealed a slow background in 23(67.6%) cases. The classical periodic burst is observed in all (100.0%) cases. Rafique et al[14] has found periodic burst in 84% children in their study.

Correlation of clinical findings and a past history of measles infection with the abnormal EEG warrants measles antibody testing in such children in order to arrive at a definitive diagnosis[15]. Anti-measles antibody in CSF is found to be positive in all cases.

Although neuroimaging is not diagnostic, it was done in most (27) cases to exclude any structural brain lesion. It was found to be abnormal in 7(25.9%) cases. MRI findings are slow to evolve and MRI brain can be usually normal in SSPE if done early in the course of disease[16]. Kumar[17] and colleagues from India have reported cerebral atrophy and white matter changes in most of the MRIs done in children diagnosed with SSPE. This difference could be in part due to the clinical stage of the SSPE during which an MRI was done. MRI done during stages 3 and 4 are more likely to be abnormal as MRI changes depend significantly on the duration of the disease[18].

In this study all 34 patients are discharged alive from the hospital. Later a follow up has been done over telephone. Twelve (35.3%) patients have died, 18(52.9%) cases are alive and 4(11.8%) cases are lost to follow up when the study was closed. Among the 18 alive patients 11 were deteriorating and 5 were stable. Two patients experienced improvement in all aspects and has been able to go back to their profession. Although most studies showed a high mortality some studies have shown spontaneous remission as well in few patients[19-20]. Approximately 5% of the patients can have substantial spontaneous long term improvement during any stage of the disease and last for a variable period of time before eventual relapse occurs.

Conclusion

In conclusion SSPE is more common in early aged male patients and those who are from lower socioeconomic group. Recurrent fall is the commonest initial presentation. Some patients might go into spontaneous remission.

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