Srp Arh Celok Lek. 2013 Jul-Aug;141(7-8):434-440
ОРИГИНАЛНИ РАД / ORIGINAL ARTICLE
DOI: 10.2298/SARH1308434J
UDC: 616.853-053.2 ; 616.831-053.2-06:616.98

Epilepsy in Children with Subacute Sclerosing Panencephalitis

Nebojša J. Jović[1,2]

[1]Clinic of Neurology and Psychiatry for Children and Youth, Belgrade, Serbia;
[2]School of Medicine, University of Belgrade, Belgrade, Serbia

SUMMARY

Introduction Subacute sclerosing panencephalitis (SSPE) is a rare, progressive, fatal neurodegenerative disease of childhood and early adolescence caused by defective measles virus. The initial symptoms of SSPE usually involve regression in cognitive functioning and behavior or recurrent myoclonic jerks. Seizures revealing SSPE and epilepsy during the clinical course can occur.

Objective The aim of the study was to analyze clinical and EEG characteristics of both initially occurred seizures and epilepsy which developed in the course of the disease.

Methods Retrospective study was carried out on 19 children (14 boys, 5 girls) with SSPE diagnosed and treated at our Clinic from 1995 to 2010. Seizures revealed SSPE in our patients aged from 6.5 to 11.5 years (mean 8.6 years).

Results SSPE onset ranged from 4.5 to 16.5 years (mean 10.05). Complete vaccination was performed in nine patients. Cognitive and behavioral decline was preceeded by 6-18 months in two children with intractable focal motor seizures with secondary generalization, one child with complex partial seizures and one with atypical absences. During the clinical course of the disease epilepsy developed in 10 (52.6%) cases, including four patients with seizures as the initial SSPE sign. It occurred mainly in the first year, while in three cases seizures appeared between 1 and 5 years of the disease evolution. Myoclonus was present independently from seizures. No significant inter-group differences were found relating to the type of SSPE progression and history of epilepsy. The only child with fulminant SSPE presented with initial seizures. Favorable seizure control was achieved in 60.0% patients. Intractable epilepsy developed in four patients.

Conclusion Atypical SSPE presentation can include mainly focal intractable seizures. Epilepsy developed during clinical course in 52.6% cases. No significant influence was found of the history of epilepsy on the type of SSPE progression.

Keywords: subacute sclerosing panencephalitis; children; epilepsy; antiepileptic therapy

INTRODUCTION

Subacute sclerosing panencephalitis (SSPE) is a rare, progressive, neurological disease of the brain, caused by persistent defective measles virus. Although its frequency has declined because of measles eradication, we still have endemic areas throughout the world, mainly in countries where effective vaccination programs have not been completely realized. The estimated annual incidence of SSPE in most of the developed world is $1/10^6$ population [1]. Greater annual rate are seen in Eastern Europe, Middle East ($2.4/10^6$) and on the Indian subcontinent ($21/10^6$). This incidence increases to as high as 20-100 per 10^6 populations in underdeveloped countries where measles is still endemic because of indifferent vaccination compliance [2, 3].

The diagnosis of SSPE is based upon characteristic clinical and EEG findings and the presence of elevated antibody titers against measles in the serum and cerebrospinal fluid. The diagnosis is not difficult when typical clinical and EEG features appear, but it is difficult during the early stage when such signs are minimal or absent [4]. The initial symptoms of SSPE usually involve regression in cognitive functioning and behavior or recurrent myoclonic jerks. There is a specific EEG abnormality consisting of periodic generalized discharges – Radermecker's complexes (RC), recurring at regular intervals of 5-10 seconds and having clear relationship with myoclonic jerks. The prognosis of the disease is usually poor [2]. The first clinical symptoms and signs attributable to SSPE are usually observed in children and adolescents 6 to 15 years of age after acute measles infection. Usually, the progression of disease lasts about 2 to 3 years until the lethal outcome, but in about 10% of patients atypical forms with acute or fulminant course have been reported [5]. The atypical initial presentation and unusual clinical features seem to be more often seen in the post-immunization decades. This could make significant diagnostic difficulties [6, 7]. Oral inosiplex (Isoprinosine) combined with intraventricular/intrathecal alpha-interferon or ribavirin has been recommended as the best treatment, although unconfirmed by a randomized treatment study [2, 8]. However, the disease shows relentless progression and only 5% of individuals with SSPE undergo spontaneous remission, with the remaining 95% dying within 2-5 years of diagnosis [2, 9]. Unusual initial symptoms were reported as visual impairment, headache, hemiparesis, seizures, nausea, vomiting, psychotic behavior and acute disseminated encephalomyelitis [6, 7, 10, 11].

Correspondence to:
Nebojša J. JOVIĆ
Clinic of Neurology and Psychiatry for Children and Youth
Dr. Subotića 6a, 11000 Belgrade
Serbia
nebojsa.jovic.npk@gmail.com

Seizures in SSPE, especially those revealing the disease, are generally of focal origin. Epilepsy was reported in at least one third of SSPE patients [12, 13]. Seizures could be either well controlled by anti-epileptic drugs (AEDs) [12] or intractable [14]. Generalized seizures, mainly of the tonic-clonic (GTC) type, usually develop in the course of SSPE. Atypical absences or myoclonic-astatic seizures as a first symptom of SSPE are extremely rare [10].

OBJECTIVE

The aim of the study was to analyze clinical and EEG characteristics of both initially occurred seizures and epilepsy which developed in the course of the disease.

METHODS

A group of 19 children (14 boys, 5 girls) with SSPE onset ranged from 4.5 to 16.5 years (mean 10.5, SD 3.34) was diagnosed and treated at our Clinic from 1995 to 2010. All cases fulfilling the diagnostic criteria of SSPE were analyzed. Retrospective study was carried out. Medical records were critically reviewed for age at disease onset, gender, measles immunization, initial clinical symptoms and interval (delay) between the onset of SSPE revealing seizures to diagnosis. In patients with epilepsy we analyzed onset, type and frequency of seizures, EEG features, antiepileptic treatment and clinical course.

The guidelines of the International SSPE Consortium for the diagnosis and staging of SSPE [5] and Dyken's diagnostic criteria of SSPE [1] were used. These criteria include typical clinical (progressive cognitive decline with stereotyped myoclonic jerks), laboratory (elevated both cerebrospinal fluid globulin levels and measles antibody titers with oligoclonal CSF pattern), EEG pattern with generalized periodic RC or typical histological findings in brain biopsy/autopsy [2]. Neurological condition was measured by the Neurological Disability Index (NDI) ranging from 0-100% [8]. According to the NDI values, four subgroups were formed: a) NDI = 80-100%; b) NDI = 50-80%; c) NDI = 30-50% and <30%. Typical features such as myoclonus and periodic EEG complexes might be absent, or might be transient to be detected. Low cerebrospinal fluid (CSF) measles antibody titer was reported in some atypical cases [15].

Majority of our cases (17 of 19) fulfilled all diagnostic SSPE criteria [6]. Measles vaccination was given in nine children, while six children were non-immunized, mainly because of non-compliance. There were no reliable data about vaccination in four children. Disease onset ranged from 4.5 to 16.8 years. Delay between the onset of symptoms and the SSPE diagnosis ranged from 1 month to 2.5 years (mean 4.7 months). Cranial MRI at initial diagnosis was normal in five out of 15 patients. It was not done in four children. Cranial CT scans were done in six patients [6].

Two subgroups of patients were studied: A – in four patients, seizures occurred as initial SSPE event, and B – in 10 patients (including four with SSPE revealing seizures), epilepsy developed during the clinical course of the disease. The rate of both revealing and later developed epilepsy in our group of SSPE patients, clinical semiology of seizures, EEG patterns and predictive values of seizures in the prognosis of SSPE course were studied. Parents or caregivers gave written informed consent for children to participate in the study. The Ethics Committee of our University Clinic approved the study.

Descriptive statistics included means, standard deviations and standard errors of achieved scores. The non-parametric Mann-Whitney test was also used.

RESULTS

As previously said, six children were non-immunized against measles. There was no available medical data to confirm the immunization in additional four children. Complete vaccination was performed in nine patients. Eight children received two doses of vaccine when aged 1 and 6-7 years. Vaccination was performed two months after measles infection in one of them. Eight children had a history of documented measles infection, and they were either not vaccinated against measles (5) or the data on immunization were lacking (2). In the remaining already cited case, immunization against measles was performed at age 9 months despite probable measles infection which had occurred two months earlier. Apart from this case, three children had measles at the age of less than one year and five were infected at 2 to 5 years of age. Four children were infected during measles outbreaks. The mean interval between documented measles infection and onset of SSPE was 5.4 years (range 4-7.5).

Learning difficulties of various severities and/or behavior disorder followed by myoclonic jerks were recognized as initial typical clinical picture in eight (42.1%), while more than half (11; 57.9%) of our patients initially presented with uncommon clinical features. They presented with focal motor deficits (2), seizures (4), hyperekplexia (1), cortical blindness (2), optic disc swelling (1) and psychotic behavior (1). Periodic myoclonic jerks followed the first clinical finding in 15 days to 6 months with the exception of two patients [6].

Epileptic seizures in four (21.05%) patients (three boys and one girl) aged 6.5, 7.5, 8.5 and 11.5 years (mean 8.5 years) preceded cognitive and behavioral decline for 6 months to 1.5 years. Delay between onset of symptoms and the diagnosis of SSPE ranged from 7 months to 2.5 years. Two of these children were non-immunized against measles. Focal motor seizures with secondary generalization in two, complex partial seizures in one and atypical absences in the remaining child occurred as the initial SSPE presentation. Focal spike-slow waves over temporal (2) or frontal-parietal (1) regions and/or bilateral spike-wave discharges correlated with seizure type before the appearance of SSPE typical EEG abnormalities. Therapeutic response to initial carbamazepine in 15 to 25 mg/kg/day (3) for focal seizures was poor. Absence seizures were reduced by valproate (35 mg/kg/day).

Table 1. Clinical course of 19 SSPE patients with and without epilepsy

Variable		SSPE patients		
		With epilepsy	No epilepsy	%
Type of SSPE progression*	Fulminant	1	0	5.2
	Acute	1	2	15.8
	Subacute	5	4	47.4
	Chronic	3	3	31.6
	Total	10	9	100.0
Neurological disability index**	80–100%	4	2	31.6
	50–80%	3	5	42.1
	30–50%	3	0	15.8
	<30%	0	2	10.5
	Total	10	9	100.0

* p=0.081; ** p=0.0093

Epilepsy developed in 10 (52.6%) cases, including four patients with focal (3) and absence (1) seizures as revealing SSPE sign continued to occur. It occurred during the course of SSPE, mainly in the first year of the disease (7), while in three cases seizures appeared between 1 and 5 years of evolution. In a 14.5 year-old male patient hyperekplexia as initial SSPE manifestation was soon followed by drop attacks combined with rare generalized tonic-clonic seizures (GTCS) intractable to antiepileptic medication. Radermecker's complexes were not observed in his EEG. He was classified as having chronic SSPE, lasting for >24 months. GTCS occurred in four of 10, while complex or simple partial and secondary generalized were observed in five patients and atypical absence occurred in the remaining case. Focal and GTCS frequency counted for one/daily to >20/weekly. A 7.5 year-old boy with SSPE revealing absence seizures achieved complete long-term seizure control during the follow-up. Myoclonus was independent from seizures and nearly continuous in all epileptic patients.

Male predominance found in both subgroups of children with epilepsy (8 of 10; 80%) and without seizures (6 of 9; 66.7%) was evident but with no significant inter-group difference.

Distribution of the type of SSPE progression, following Dyken's criteria [1] and NDI values in relation to the history of epilepsy is summarized in Table 1. High NDI (80-100% and 50-80%) was noted equally in seven SSPE patients with and without epilepsy, but most severe neurological disability was noted in four (21.05%) patients with epilepsy comparing to two (10.5%) children with SSPE without epilepsy. Low NDI (<30%) was scored in two patients only, both without epilepsy. No significant inter-group differences were found relating the type of SSPE progression and epilepsy history (p=0.081), but this difference was significant for the NDI (p=0.0093), indicating higher neurological disability in children with epilepsy.

Two of the six non-vaccinated children had initial seizures while the remaining patients presented with early visual loss (2) or had cognitive dysfunction (1) and hyperekplexia (1) as initial clinical sign. The two last mentioned children developed epilepsy during the course of SSPE.

Background EEG activity was disorganized in 15 of 19 patients. Typical RCs were recorded in 17 cases. Paroxysms of bilateral high amplitude and slow spike-waves

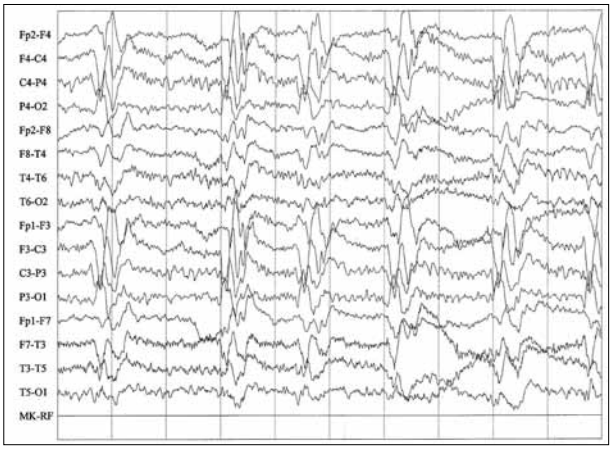

Figure 1. Female, 15 years, SSPE stage IIa, initial presentation with behavioral disorder and cognitive decline. Radermecker's complexes.

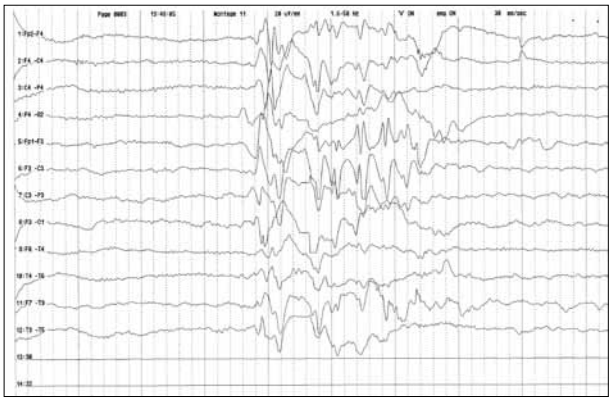

Figure 2. Male, 6.5 years. EEG record: SSPE stage IIIa, disease started with secondary generalized focal motor seizures. Background activity is disorganized and with Radermecker's complexes. Focal spike-waves are predominating over the left frontal-central regions.

were recorded in five of 10 patients with epilepsy during the clinical course. Focal spikes and spike-waves mainly localized over temporal or frontal regions were seen in four patients, while focal slow wave activity was recorded in the remaining case. In eight of 10 patients an association of epileptic abnormalities and RC was recorded. Epileptiform abnormalities were noted only in two children without epilepsy. After the IV injection of diazepam (10-15 mg), epileptic discharges decreased, but not periodic complexes (Figures 1 and 2).

Inosiplex (100 mg/kg/day) was administered in 13 patients after the diagnosis was made. In four patients it was given together with interpherone-alpha2b (100 000 U/m^2). Antiepileptic drugs were applied in all cases. In addition, high doses of IV immunoglobulin G (IgG) were administered in two patients.

Therapeutic response to initial carbamazepine with 15 to 25 mg/kg/day for focal seizures revealing SSPE in three patients was poor. Absence seizures were completely controlled by valproate (42 mg/kg/day). Therapy with valproate (30-45 mg/kg/day) or topiramate (5-12 mg/kg/day) alone or with adjunctive benzodiazepines (clonazepam, clobazam, lorazepam) resulted in better, but non-complete seizure control. Antiepileptic monotherapy was used in six cases while polytherapy was applied in four patients.

doi: 10.2298/SARH1308434J

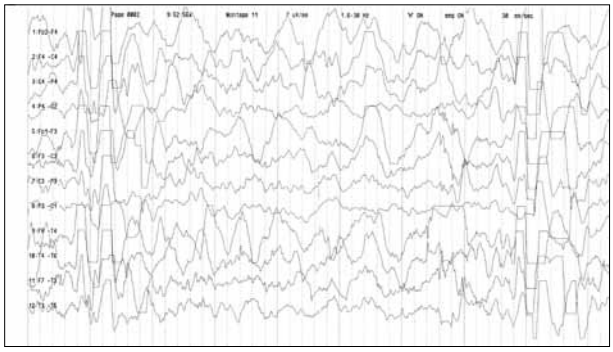

Figure 3. Male, 16.5 years, SSPE stage IIb. Visual loss revealed the disease. Radermecker's complexes and diffuse slowing of the background activity

Table 2. Clinical course of 19 SSPE patients with and without epilepsy

Variable		Number of patients		p
		With epilepsy	No epilepsy	
Type of SSPE progression	Duration (months)	14.7±8.0	23.1±18.1	
	Death	8	6	NS
	Chronic	2	3	NS
	Total	10	9	

Levetiracetame of up to 2000 mg/day was ineffective in three patients. Favorable therapeutic response (>50% reduction of seizure frequency) was noted in six (60.0%) cases. Seizure freedom during clinical course of SSPE was achieved in three cases. The remaining four cases had intractable complex partial (2), focal motor (1) or generalized tonic-clonic seizure (1) (Figure 3).

Four to 35 months (mean 14.2, SD 8.48), after the disease onset, 15 of 19 children deceased. Mean period of survival in patients with epilepsy was shorter (14.7 months) than in those without seizures (23.1 months). Although the mortality rate was similar (p=0.23, NS) in patients with and without epilepsy (Table 2), seizure occurrence affected SSPE duration.

DISCUSSION

SSPE was detected in nine of our patients with a history of measles vaccination. The disease in vaccinated children is thought to be a result of a) subclinical or unrecognized measles infection that occurred before the immunization, b) poor seroconversion, c) vaccine failure (faulty storage, improper cold chain), or d) it could be attributable to the wild type of measles virus [3]. Detection of the wild-type viruses was not carried out [6]. The measles immunization in Serbia is compulsory, but often without rigorously pursued vaccination in previous practice, especially in the region of Kosovo and Metohija.

SSPE initial symptoms can be so atypical that several months or even years could elapse before the diagnosis is reached. The unusual initial presentation of SSPE includes epilepsy as a first symptom [6]. Yet most of these cases are with partial epilepsy, a corresponding focal EEG abnormality, and mainly a long evolution of refractory seizures [9, 15].

Seizures, as an initial SSPE clinical manifestation, are mainly of the focal or secondarily generalized type [6, 12]. Kissani et al. [12] reported epilepsy in 30 of 70 (42.8%) Moroccan cases. Seizures revealing SSPE occurred in 23% (7 of 30 cases). In majority of patients (6 of 7) seizures were classified as intractable partial, suggesting a focalized encephalitic process. Conversely, seizures that occurred later were in most cases of the GTC type [12]. In a group of 48 Brazilian patients, 11 started with GTCS as initial manifestation [11]. Six (18.7%) out of the 32 Indian patients had SSPE onset with seizure disorder. They had a prolonged history of generalized seizure with average duration of 15 months before cognitive decline set in [16]. Prashanth et al. [13, 15] reported 102 of 307 (32.2%) South Indian patients with epilepsy. Seizures as an initial event occurred in four of 19 (23.5%) our patients. Except in one case with atypical absences, intractable focal motor or complex seizures preceded the typical SSPE course. Our results match the findings reported in the Moroccan study [12]. Differently from both Brazilian and Indian group [11, 15], there was only one patient with generalized seizures revealing SSPE.

Namer et al. [17] reported a case of a patient with initial complex partial seizure (oral-alimentary automatisms, hemifacial spasms, and clonic movements of one hand) which occurred 5 months before the SSPE picture. CT scan showed mild right temporal cortical atrophy. Myoclonic jerks appeared 9 months after the first seizure. Two months later he died. Another case of SSPE with atypical onset with complex partial seizures and a fulminant course (he died 6 months after the symptom onset) in an 8-year-old immunized Brazilian boy was reported. Infection by a wild strain which was not included in the vaccine used was speculated [18].

Seizure history in some cases with an SSPE initial epileptic event could be very difficult to define. Kubota et al. [19] reported a case of a girl with first unprovoked seizures at 2 years of age. Her EEG showed focal spikes. At 9.5 years of age she presented with second complex focal seizure with right hemiconvulsions. Her MRI was normal, seizures were well controlled by valproate, but the EEG showed diffuse periodic synchronous discharges. At 12 years of age she presented with progressive mental regression and was further diagnosed with stage I of SSPE. First seizure occurred 9 months after measles infection and it was not related to SSPE, second seizure was associated with characteristic EEG abnormalities and could be considered as an initial SSPE event.

We have already discussed and published our CT/MRI brain findings [6]. Initial CT scans, performed in six patients showed moderate cortical atrophy in all but one patient. Neuromaging -MRI studies in early clinical stages of SSPE were performed in 15 patients. First MRI disclosed no lesions in five patients. Bilateral and diffuse abnormalities in the white matter, focal parenchymal changes, and lesions localized in the basal ganglia or in the brain stem were disclosed in the remaining patients. No consistent association was found between focal seizures or lateralizing neurological deficits and imaging findings [6].

Atypical clinical onset could result in both diagnostic and therapeutic errors. A 24-month-old male with history of measles infection at the age of 7 months, presented with flexor spasms and sudden head drops. He was initially diagnosed with infantile spasms. Vigabatrin was ineffective. With ACTH, his seizures increased up to 200-250 myoclonic jerks/day and his clinical findings deteriorated rapidly. Based on the clinical and laboratory findings, a fulminant SSPE was diagnosed. The typical EEG pattern later developed. He died within a month [20].

Early atonic spells and atypical absences are unusual. Dunand and Jallon [21] reported a case of an 18 month old girl with SSPE initially presenting one week history of repeated episodes of sudden flexion of the head and trunk and frequent falls. A video-EEG recording showed RC correlating with brief episodes of atonia. A case of SSPE with atypical absences and myoclonic-atonic seizures as the first symptom was reported in a 10-year-old boy [10]. Seizures occurred at a daily frequency of up to 50-70. The initial therapy was temporarily effective. After 6 months of the active epilepsy, the child developed chorioretinitis and demonstrated dramatic intellectual decline. The typical RC replaced the epileptic EEG abnormalities. Our patient with SSPE revealing atypical absence epilepsy achieved complete seizure control, but his disease had subacute course and he died 12 months after the seizure onset.

Normal initial MRI does not exclude SSPE, even when the presentation is unusual [5]. Cranial MRI at initial diagnosis was normal in five out of 15 our patients including the boy with initial complex partial seizures and normal MRI, who later presented with fulminant course of SSPE [6].

Epilepsy developed in 76.7% Moroccan cases during the course of SSPE, mainly in the first year of the disease (40%), while in 26.7% cases seizures appeared between 1-5 years of evolution and in 10% after 5 years. Generalized tonic-clonic seizures were frequent (10 of 23), while partial and secondary generalized occurred in 13/23. Epilepsy developed in 52.6% of our cases. They showed similar distribution of seizure type – partial seizures occurred in five, while GTCS were observed in four patients and initial absences in the remaining case. SSPE revealing focal seizures continued to occur. In seven patients epilepsy developed mainly in the first year of the disease, while in three cases seizures appeared between 1-5 years of evolution.

Kissani et al. [12] stated favorable evolution of epilepsy in SSPE and seizure freedom in 84.6% of cases. Complete therapeutic response was noted with average AEDs doses. Most of Indian patients with disease revealing seizures (6 of 32) continued to experience generalized seizures in spite of antiepileptic medication and progressed slowly with evolution of myoclonus and cognitive decline as the time elapsed [17]. Seizure freedom during the clinical course of SSPE was achieved in three of 10 of our cases.

Praveen-kumar et al. [22] reported seizures in 65% of patients with SSPE from South India. The prevalence of generalized (48%) over focal (17%) seizures was noted. Epileptiform discharges were noted in 72.4% and comprised of spike and sharp waves with or without slow waves. They were generalized in 28 and lateralized, focal or multifocal in 14 cases. Focal discharges were noted mostly from frontal and parietal regions. In 17.2% of the EEG records, periodic lateralized epileptiform discharges were shown. Focal EEG abnormalities over temporal or frontal-parietal regions and/or bilateral spike-wave discharges correlated with the initial seizure type in our patients.

Two boys with epilepsia partialis continua occurring in terminal phase of SSPE have been reported [14]. The children were not vaccinated against measles. In both cases, the onset of SSPE was characterized by altered behavior and cognitive decline with very fast mental and neurological deterioration. Despite the treatment, the period from the onset of the disease till death lasted less than 3 months, suggesting fulminant course. Epilepsia partialis continua could be regarded as the predictor of poor prognosis in patients with SSPE. Non-convulsive status epilepticus during the static period of SSPE has rarely been reported [23].

Non-specific initial or early EEG epileptic abnormalities in SSPE could make diagnostic difficulties. In the advanced stage, periodic activity usually disappears. Atypical EEG abnormalities include absent pathognomonic or unilateral RC resembling paroxysmal lateralized epileptiform discharges, focal slowing and spikes before the clinical presentation, slow wave and random spikes in the frontal regions, multifocal paroxysmal, absence-like EEG and high-amplitude slow waves alternating with fast waves etc [4, 6, 9, 10, 15]. Atypical EEG patterns are more frequent in later SSPE stages [21]. Praveen-kumar et al. [22] recorded atypical EEG findings in more than a third of patients. Periodic generalized bursts of fast sharp and spiky waves of 11-13 Hz in early stage of SSPE were described in an 8-year-old boy with slurred and hardly intelligible speech. These periodic bursts were concurrent with myoclonic jerks and preceded the appearance of the typical RC [24]. Focal spike-waves could appear along with the periodic RC [17], as seen in our patients.

Seizure occurrence was not found to have a significant impact in the clinical course of SSPE [12]. Our results mainly confirmed that finding. Descriptive analysis of 6.2% of South Indian patients with a relatively "benign" SSPE course, who survived beyond 3 years, showed that seven out of 19 patients with long-term survival had seizures as the initial symptoms in comparison to 30.3% of patients with seizures and unfavorable course [13]. Significantly higher NDI was found in our patients with epilepsy. Despite similar mortality rate, the mean period of survival in our patients with epilepsy was shorter (14.7 months) than in those without seizures (23.1 months).

Oral isoprinosine, intrathecal or intraventricular alpha-interferon and ribavirin were reported as effective to varying degree (30-35%, depending on the study design) and for different lengths of time in SSPE [1, 9]. Antiepileptic treatment is often effective for seizures, but with no impact to the SSPE course and outcome [12]. Sodium valproate with clonazepam, trihexyphenidil combined with isoprinosine, ketogenic diet, and topiramate have been shown to relieve temporarily myoclonus in some patients. Low-dose carbamazepine (200 mg twice daily) was reported to be effective in some patients for disabling

doi: 10.2298/SARH1308434J

dystonic movements and myoclonic jerks [25]. Both SSPE revealing focal seizures and focal EEG abnormalities were unresponsive to carbamazepine in our patients.

Steroid therapy could cause a fulminant progression of SSPE in infants with myoclonus that was misdiagnosed as epileptic myoclonic spasms [21]. Becker et al. [26] reported a case of a 12-year old boy with SSPE and levetiracetam producing dramatic improvement in myoclonus, encephalopathy and generalized periodic discharges. Our three patients had no benefit of this drug in seizure control and EEG abnormalities.

CONCLUSION

Although the frequency of SSPE declined because of measles eradication, we still have cases of that fatal disease. Retrospective study was carried-out on 19 children with SSPE diagnosed from 1995 to 2010. Epilepsy during the clinical course of disease developed in more than half of cases, including four patients with seizures as the initial SSPE sign.

Myoclonus was independent from seizures. No significant influence of epilepsy history on the type of SSPE progression was noted. Higher neurological disability in children with epilepsy was found. The mean period of survival in patients with epilepsy was shorter than in those without seizures. Although the mortality rate was similar in patients with and without epilepsy, seizure occurrence affected SSPE duration. An association of epileptic EEG abnormalities and RC was recorded. Antiepileptic medication was partially effective for seizures, with no influence on the clinical course.

REFERENCES

1. Dyken PR. Neuroprogressive disease of postinfectious origin: a review of a resurging subacute sclerosing panencephalitis (SSPE). Ment Retard Dev Disabil Res Rev. 2001; 7:217-25.
2. Garg RK. Subacute sclerosing panencephalitis. J Neurol. 2008; 255:1861-71.
3. Campbell H, Andrews N, Brown KE, Miller E. Review of the effect of measles vaccination on the epidemiology of SSPE. Int J Epidemiol. 2007; 36:1334-48.
4. Takayama S, Iwasaki Y, Yamanouchi H, Sugai K, Takashima S, Iwasaki A. Characteristic clinical features in a case of fulminant subacute sclerosing panencephalitis. Brain Dev 1994; 16:132-5.
5. Cece H, Tokay L, Yildiz S, Karakas O, Karakas E, Iscan A. Epidemiological findings and clinical and magnetic resonance presentations in subacute sclerosing panenecephalitis. J Int Med Res. 2011; 39(2):594-602.
6. Jovic JN. Subacute sclerosing panencephalitis with atypical early features. Child Neurol. 2010; 38(19):19-26.
7. Goraya J, Marks H, Khurana D, Legido A, Melvin J. Subacute sclerosing panenecephalitis (SSPE) presenting as acute disseminated encephalomyelitis in a child. J Child Neurol. 2009; 24(7):899-903.
8. Gascon GG. Subacute sclerosing panencephalitis. Semin Pediatr Neurol. 1996; 3:260-9.
9. Gutierrez J, Issacson RS, Koppel BS. Subacute sclerosing panenecphalitis: an update. Dev Med Child Neurol. 2010; 52(10):901-7.
10. Dimova PS, Bojinova VS. Case of Subacute Sclerosing Panencephalitis with Atypical Absences and Myoclonic-Atonic Seizures as a First Symptom. J Child Neurol. 2004; 19(7):548-52.
11. Nunes ML, da Costa JC, Stancher VM, Diament A, Arita F, Rosemberg S, et al. Subacute sclerosing panenecephalitis. Clinical aspects and prognosis. The Brazilian Registry. Arq Neuropsiquiatr. 1999; 57(2-4):176-81.
12. Kissani N, Ouazzani R, Belaidi H, Ouahabi H, Chikili T. Epileptic seizures and epilepsy in subacute sclerosing panencephalitis (report of 30 cases). Neurophysiol Clin. 2001; 31:398-405.
13. Prashanth LK, Taly AB, Ravi V, Sinha S, Rao S. Long term survival in subacute sclerosing panencephalitis: An enigma. Brain Dev. 2006; 28:447-52.
14. Kravljanac R, Jovic N, Djuric M, Nikolic Lj. Epilepsia partialis continua in children with fulminant subacute sclerosing panencephalitis. Neurol Sci. 2011; 32:1007-12.
15. Prashanth LK, Taly AB, Sinha S, Ravi V. Subacute sclerosing panencephalitis (SSPE): an insight into the diagnostic errors from a tertiary care University hospital. J Child Neurol. 2007; 22(6):683-8.
16. Khadilkar SV, Patil SG, Kulkarni KS. A study of SSPE: early clinical features. J Pedat Neurol. 2004; 2(2):73-7.
17. Namer IJ, Tan E, Ciger A, Zileli T. Crises epileptiques partielles complexes – premier symptom d'une panencephalite subaigue sclerosante. Rev Neurol. 1986; 142:12:921-5.
18. Cruzeiro MM, Vale TC, Pires LA, Franco GM. Atypical subacute sclerosing panencephalitis. Case report. Arq Neuropsiquiatr. 2007; 65(4-A):1030-3.
19. Kubota T, Okumura A, Takenaka J, Ishiguro Y, Takahashi H, Ueda N, et al. A case of subacute sclerosing panencephalitis preceded by epileptic seizures: evolutional EEG changes. Brain Dev. 2003; 25:279-82.
20. Serdaroglu G, Kutlu A, Tekgul H, Tutuncuoglu S. Subacute Sclerosing panencephalitis: A Case with Fulminant Course After ACTH. Pediatr Neurol. 2004; 31:67-70.
21. Dunand AC, Jallon P. EEG-mediated diagnosis of an unusual presentation of SSPE. Clin Neurophysiol. 2003; 114:737-9.
22. Praveen-kumar S, Sinha S, Taly AB, Jayasree S, Ravi V, Vijayan J, et al. Electroencephalographic and imaging profile in a subacute sclerosing panencephalitis (SSPE) cohort: A correlative study. Clin Neurophysiol. 2007; 118:1947-54.
23. Aydin OF, Senbil N, Gurer YK. Non-convulsive status epilepticus on electroencephalography in a case with subacute sclerosing panencephalitis. J Child Neurol. 2006; 31(3):256-60.
24. Martinovic Z. Periodic generalized bursts of fast waves in subacute sclerosing panencephalitis. Electroenceph Clin Neurophysiol. 1986; 63:236-8.
25. Yigit A, Sarikaya S. Myoclonus relieved by carbamazepine in subacute sclerosing panencephalitis. Epileptic Disord. 2006; 8(1):77-80.
26. Becker D, Patel A, Abou-Khalil BW, Pina-Garza JE. Successful treatment of encephalopathy and myoclonus with levetiracetam in a case of subacute sclerosing panencephalitis. J Child Neurol. 2009; 24(6):763-7.

Епилепсија код деце са субакутним склерозирајућим паненцефалитисом

Небојша Ј. Јовић[1,2]

[1]Клиника за неурологију и психијатрију за децу и омладину, Београд, Србија;
[2]Медицински факултет, Универзитет у Београду, Београд, Србија

КРАТАК САДРЖАЈ

Увод Субакутни склерозирајући паненцефалитис (ССПЕ) је ретка, прогресивна, фатална, неуродегенеративна болест детињства и ране адолесценције, узрокована вирусом малих богиња. Најчешће почиње нарушењем когнитивног функционисања и понашања и миоклонусом. ССПЕ ретко почиње епилептичким нападима, а епилепсија се може развити током болести.

Циљ рада Циљ рада била је анализа клиничких и ЕЕГ особености епилептичких напада код деце са ССПЕ.

Методе рада Ретроспективна студија је обухватила групу од 19 болесника (14 дечака и пет девојчица) са ССПЕ који су лечени у нашој клиници од 1995. до 2010. године. Код четири болесника ССПЕ је почео нападима, док се код шест болесника епилепсија развила касније током болести.

Резултати Деца су у време почетка ССПЕ била узраста од четири и по до шеснаест и по година (просечно 10,05 година). Вакцинисано је девет болесника. Жаришни напади код троје деце и нетипични апсанси код једног детета, узраста од шест и по до једанаест и по година (просечно 8,6 година), претходили су когнитивном нарушењу и миоклонусу у периоду од шест месеци до једне и по године. Епилепсија током болести јавила се код 10 деце (52,6%), укључујући и четири болесника код која је ССПЕ почео нападима. Код већине болесника напади су се јавили током прве године, а код три детета између једне и пет година развоја болести. Миоклонус је постојао независно од епилептичких напада. Појава епилепсије није значајно утицала на клинички ток ССПЕ. Фулминантни ССПЕ развио се код једног детета с иницијалним нападима. Повољна контрола напада забележена је код 60% болесника. Четири болесника имала су фармакорезистентне нападе.

Закључак Епилептички напади, углавном жаришни, могу се јавити у склопу нетипичне клиничке слике ССПЕ. Епилепсија током болести јавила се код 52,6% болесника. Није запажен значајан утицај епилепсије на тип прогресије ССПЕ.

Кључне речи: субакутни склерозирајући паненцефалитис; деца; епилепсија; антиепилептичка терапија

Примљен • Received: 06/02/2012 **Прихваћен • Accepted:** 22/05/2013

doi: 10.2298/SARH1308434J