Evaluation of Childhood Epilepsies with Frontal Paroxysm

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INTRODUCTION AND OBJECTİVES

Since the semiological features of frontal lobe seizures are limited, we aimed to compare the clinical and laboratory findings of pediatric patients with epilepsy whose interictal electroencephalogram had frontal epileptiform activity and to determine their semiological classification.

MATERIALS AND METHODS

The study was conducted on patients with frontal epileptiform activity on EEG, recruited at our department of paediatric neurology. Clinical and laboratory data based on the medical records, as the first stage, ictal symptoms were obtained again by interviewing the children and parents in order to ascertain the seizure semiology as much as possible. Demographic, clinical and laboratory data, psychomotor/mental status, and brain MRI findings were noted. The seizures were classified according to the 'Luders Semiological Seizure Classification'. The predominant seizure type was recorded in patients with multiple seizures. Seizure semiology was first divided into two groups as 'seizure types typical for frontal lobe epilepsy' and 'seizure types atypical for frontal lobe epilepsy'. The first group consisted of focal clonic, tonic, versive, hypermotor, dialeptic, aphasic and akinetic seizures whereas the second group consisted of generalized tonic clonic, myoclonic, atonic, gelastic, automotor, negative myoclonic, astatic and hypomotor seizures. Then group 1 (seizure types typical for frontal lobe epilepsy) was subdivided as common typical seizures for FLE (focal clonic, focal tonic, verssive and hypermotor) and uncommon typical seizures for FLE (dialeptic, aphasic and akinetic) seizures. Also, patients were categorized according to etiology; genetic or probable genetic cases as 'primary FLE' and cases with structural, metabolic or unknown etiology as 'secondary FLE'. Patients were compared with regards to seizure semiology, aetiology, cranial imaging, EEG, treatment and outcome.

RESULTS

The study consisted of 91 patients between 1.5-17.7 years of age (mean age: 10.7 ± 4.2 years; male/female: 47/44). The age of seizure onset was 49.5 ± 45.9 months (1 day-156 months). The age of seizure onset was < 24 months in 45% of the patients. Forty-two patients (46.2%) constituted primary group and 49 patients (53.8%) constituted secondary group. Typical semiological features for FLE were found in 49 patients (53.8%). The most frequent seizure type was clonic seizure observed in 19 patients (20.9%). Atypical semiological features for FLE were detected in 42 (46.2%) patients. The most frequent seizure type in this group was tonic-clonic seizures observed in 23 patients (25.3%). Abnormal MRI findings were detected in 35 (38.5%) patients. The most common pathologic finding was sequelae lesions in 71 % of the patients, cortical dysplasia in 23%, brain tumors in 3% and phacomatos in 3% of the patients. Epilepsy control could not be achieved in 40.7% of patients with antiepileptic drug therapy. The age of seizure onset in the primary group was found to be lower than the secondary group (6.3± 3.73 years vs 2.4 ±3 years). Among the patients with typical semiological seizures, the most common seizure type was focal clonic seizure in both primary and secondary groups. Versive seizures were found more frequently in the primary group than in the secondary group. Tonic seizures were detected as frequently as focal clonic in the secondary group. In patients with atypical semiological seizures, the most common seizure type was tonic-clonic in both primary and secondary groups, while myoclonic seizures were as frequent as tonic-clonic in the secondary group.

	N (%)
Age (mean± SD) (years)	10.7±4.2
Age at seizure onset (months)	49.5±45.9 (1 days-156 months)
Gender (M/F)	47/44
Mental status	
• Normal	43 (47.3%)
• Mild disability	8 (8.8%)
• Moderate disability	7 (7.7%)
• Severe disability	33 (36.3 %)
Neurological examination	
• Normal	53 (58.2%)
• Abnormal	38 (41.8%)
Etiology	
• Primary	42 (46.2%)
• Secondary	49 (53.8%)
Semiological seizure classification	
Typical semiological features for FLE	49 (53.8%)
a)Common	44 (48.3%)
• Focal clonic	19 (20.9%)
• Tonic (focal/asymmetric/generalized)	13 (14.3%)
• Versive	6 (6.6%)
• Hypermotor	6 (6.6%)
b) Uncommon	5 (5.5%)
• Dialeptic	5 (5.5%)
• Afazik	0
• Akinetik	0
Atypical semiological features for FLE	42 (47.2%)
• Tonic-clonic	23 (25.3%)
• Myoclonic	10 (11%)
• Atonic	5 (5.5%)
• Gelastic	3 (3.3%)
• Automotor	1 (1.1%)
cMRI findings	
Normal	56 (61.5%)
Abnormal	35 (39.5%)
• Frontal lobe findings only	10 (11%)
• Extrafrontal lobe finding only	7 (7.7%)
• Multilobar including frontal lobe	18 (19.8%)
Epileptiform activity on EEG	
• Frontal area only	47 (51.6%)
• Frontal and extrafrontal discharges	31 (34.1%)
• Frontal dominant generalized discharges	13 (14.3%)
Response to antiepileptic drug treatment	
• Response to treatment (seizure control with 1 or 2 AED)	54 (59.3%)
• No response to treatment	37 (40.7%)

	Typical semiological features for FLE				Atypical semiological features for FLE	
	Common (Primary)	Common (Secondary)	Uncommon (Primary)	Uncommon (Secondary)	(Primary)	(Secondary)
n	21	23	3	2	18	24
Age at seizure onset (months)	80	29.7	64	39	72.5	35.7
Gender (F/M)	11/10	8/15	2/1	1/1	11/7	11/13
Typical semiological features for FLE						
a)Common						
• Focal clonic	9	10				
• Tonic	4	9				
• Versive	5	1				
• Hypermotor	3	3				
b) Uncommon						
• Dialeptic			3	2		
• Afazik			0	0		
• Akinetik			0	0		
Atypical semiological features for FLE						
• Tonic-clonic					13	10
• Myoclonic					1	9
• Atonic					3	2
• Gelastic					1	2
• Automotor					0	1

CONCLUSION

Patients under 24 months composed nearly the half of the patients. For patients in primary group, later age at onset of seizures and better response to treatment can be expected. In childhood FLE, seizure types that are not typical for frontal lobe epilepsy are seen as frequent as seizures typical to FLE. The most frequent seizure semiologies were focal clonic and tonic-clonic seizures. It is difficult to control epilepsy with antiepileptic drug therapy in patients with FLE especially in secondary group.

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