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INTRODUCTION

Encephalitis is defined as inflammation of the brain parenchyma associated with neurological dysfunction.(1) It has a wide etiological spectrum of various infectious and non-infectious causes. It is an important neurological emergency due to high mortality and long-term neurological sequelae.(2,3) Inflammation in encephalitis may result directly from infection of the brain parenchyma or from an autoimmune response to various neuronal receptors. The clinical picture can range from mild non-specific symptoms such as fever, headache, vomiting, behavioural changes to more severe symptoms such as seizures, confusion and coma with altered consciousness. Timely and accurate diagnosis of encephalitis is very important in terms of enabling early and effective treatment.

OBJECTIVES

In our study, we aimed to reveal the etiological causes of encephalitis in pediatric patients and investigate its long-term neurological outcomes.

MATERIAL & METHOD

Our research was retrospective and conducted in a single center. The patient population consisted of 93 patients older than 1 month and younger than 18 years old, who were treated as inpatients with the diagnosis of meningoencephalitis/encephalitis at the Department of Pediatrics of Kocaeli University School of Medicine, between January 2011 and January 2021. These patients fulfill the 2013 International Encephalitis Consortium diagnostic criteria.

RESULTS

Boys were 58.1% (n=54) of the patients, girls were 41.9% (n=39), and the median age at diagnosis was 65 months (36-117 months). In two main groups, 54.8% (n=51) were diagnosed with infectious and 45.2% (n=42) with immune-based encephalitis. The etiological cause could be determined in 33% (n=31) with laboratory examinations. The most common infectious agent identified was Herpes simplex virus type 1 (10.8%, n=10). Autoimmune encephalitis was diagnosed in 30.1% (n=28) of the patients and anti-NMDAR antibodies were detected in 4.3% (n=4). ADEM was observed in 15.1%(n=14) of the cases. While four patients (4.3%) experienced a fatal outcome, it was observed that 54.8% (n=51) had developed one or more neurological sequelae during a tracking period of median 59 months (33.5-100 months). The most common sequelae were behavioral/psychiatric disorders (30.6%), epilepsy (24.4%) and motor deficits (20%). In our research, we characterized the presence of intractable seizures required of ≥ 2 antiepileptic drugs (OR=19.953, 95%CI [2.252-176.759], p=0.007), and an infectious etiology (OR=10.096, 95%CI [1.18-86.358], p= 0.035) as negative prognosis factors.

Table 1: Logistic regression model analysis of factors associated with neurological prognosis in patients with encephalitis

		OR	95% CI	p
Age	1 year difference	0,994	0,997-1,011	0,467
Glasgow coma score	1 point difference	0,641	0,34-1,207	0,168
Fever on appeal	No	1,0 (reference)	0,195-7,59	0,834
	Yes	1,216		
Difficulty in control of seizure	<2 antiepileptic drug	1,0 (reference)	2,552-176,759	0,007
	≥ 2 antiepileptic drug	19,953		
Status epilepticus	No	1,0 (reference)	0,100-11,437	0,956
	Yes	1,068		
Stay in intensive care unit	No	1,0 (reference)	0,165-9,0339	0,845
	Yes	1,221		
Etiologic origin	Immune origin	1,0 (reference)	1,18-86,358	0,035
	Infectious origin	10,096		

OR (odds ratio) CI(confidential index)

CONCLUSION

We conclude that viral agents are the main cause, but increased awareness of autoimmunity and understanding the complex nature of encephalitis with serious consequences is an important step in developing effective diagnostic and treatment strategies.

REFERENCES

1. Venkatesan A, Tunkel AR, Bloch KC ve ark. Case Definitions, Diagnostic Algorithms, and Priorities in Encephalitis: Consensus Statement of the International Encephalitis Consortium. *Clinical Infectious Diseases*. 2013;57(8):1114-1128.
2. Davison KL, Crowcroft NS, Ramsey ME. Viral Encephalitis in England, 1989-1998: What did we miss? *Emerging Infectious Diseases*. 2003;9:234-240.
3. George BP, Schneider EB, Venkatesan A. Encephalitis Hospitalization Rates and Inpatient Mortality in the United States, 2000-2010. *Public Library of Science Open Network of Excellence*. 2014;9(9):104-169.