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Subject Page

List of abbreviations

AED : Antiepileptic drugs

AGA : Anti-ganglioside antibodies

AMAN : Acute motor axonal neuropathy

aPLs : Anti-phospholipid antibodies

ATP : Adenosine triphosphate

ATPase : Adenosine triphosphatase

BBB : Blood brain barrier

BOLD : Blood oxygenation level-dependent

CAE : Childhood absence epilepsy

CBZ : Carbamazepine

CD : Celiac disease

CPS : Complex partial seizures

CNS : Central nervous system

CSF : Cerebrospinal fluid

CT : Computerized tomography

EEG : Electroencephalogram

FDA : Food and Drug Administration

FDI : Functional diagnostic imaging

GABA : Gamma Amino Butyric Acid

GAD : Glutamic Acid Decarboxylase

GBS : Guillain-Barre syndrome

GD1a : Disialotetrahexosylganglioside a

GD1b : Disialotetrahexosylganglioside b

GluR3 : Glutamate receptor 3

GLUT1 : Glucose transport protein

GM1 : Monosialotetrahexosylganglioside

GSW : Generalized spike wave

Hz : Hertz

Ig : Immunoglobulin

IgA : Immunoglobulin A

IGE : Idiopathic generalized epilepsies

IgG : Immunoglobulin G

IgM : Immunoglobulin M

IL-1 : Interleukin-1

ILAE : International League Against Epilepsy

IVIg : Intravenous immunoglobulins

JAE : Juvenile absence epilepsy

JME : Juvenile myoclonic epilepsy

KD : Ketogenic diet

LKS : Landau – Kleffner syndrome

MFS : Miller Fisher syndrome

MRI : Magnetic resonance imaging

MS : Multiple sclerosis

Mv : Millivolt

NK : Natural killer

PLP : Pyridoxal-5-phosphate

PNS : Peripheral nervous system

PPMS : Primary progressive multiple sclerosis

RE : Rasmussen's encephalitis

RRMS : Relapsing-remitting multiple sclerosis

SLE : Systemic lupus erythematosus

SPMS : Secondary progressive multiple sclerosis

SPS : Simple partial seizures

TG : Total ganglioside

TLE : Temporal lobe epilepsy

VNS : Vagus nerve stimulator

VPA : Valproate

WS : West’s syndrome

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Anti-ganglioside Antibodies In Pediatric Patient With Intractable Epilepsy

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INTRODUCTION

Epilepsy is a clinical sign and symptoms of excessive or hypersynchronous, usually self limited, abnormal activity of neurons, in the cerebral cortex **(Rudolph and kamel, 1994).**

Intractable epilepsy is epilepsy which failed to be treated with two antiepileptic drugs (AED), at least one seizure per month for 18 months, and no seizure-free periods longer than three months during that time **(Berg and Kelly, 2006).**

Prevalence of Epilepsy has been suggested to be increased in autoimmune disorders especially in systemic lupus erythematosus (SLE) **(Herrenz et al., 1994).**

Immunological mechanisms have been implicated in pathogenesis of epilepsy. Catastrophic childhood epilepsies have respond to immunological therapy. Also, there is evidence that antibodies against glutamate receptors (GLUR3) participate in pathogenesis of Rasmussen's encephalitis (RE) and intractable seizure **(Mantagazza et al., 2002).** As well as reports of response of (RE) to immunological treatment **(Villani et al., 2002).**

Anti-ganglioside antibodies react to self-gangliosides are found in autoimmune neuropathies. These antibodies were first found to react with cerebellar cells **(O'Hanlon et al., 2001).**

Although the elevated titers of anti-ganglioside antibodies have been amply documented in multifocal motor neuropathy and a motor axonal variant of GBS, or acute motor axonal neuropath

(AMAN), their exact role in the pathogenesis remains elusive **(Kaji and Kimura, 1999).**

AIM OF THE WORK

The aim of this study was to clarify the seizure immunity inter-relation by assessing serum Antiganglioside antibodies in pediatric patients with idiopathic intractable epilepsy.

Epilepsy

Epilepsy is one of the most common neurological diseases, affecting 50 million people worldwide. It is defined as a susceptibility to recurrent seizures without precipitating factors. Epileptic seizures result from abnormal excessive or synchronous discharge in the brain **(Fisher et al., 2005).**

A seizure or convulsion is a paroxysmal, time-limited change in motor activity ,behavior disturbance, sensory disturbance with or without loss of consciousness that results from abnormal electrical activity in the brain **(Johnston, 2004).**

Epilepsy is the name of a brain disorder characterized by recurrent and unpredictable interruption of normal brain function, called epileptic seizures, and it is not a singular disease entity but a variety of disorders reflecting underlying brain dysfunction that may result from many different causes **(Blume et al., 2001).**

Historical aspects:

Seizures have been known throughout recorded history, and many greatest men in history suffered from seizures, eg. Julius Caesar, Napoleon, and Van Gogh **(Keith,1963).** It is one of the oldest disorders known to mankind, the word epilepsy being derived from the Greek word ‘‘epilembanein’’ which means ‘‘to seize or attack’’ **(Shafiq et al., 2007).**

Al-razi was the first to use the term El Sarr'E in his famous book El-Hawi and the term epilepsy could be considered as the Latin version of the former term **(Keith,1963).**

Epidemiology:

Seizures are the most common cause of referral to pediatric neurology and represent an important cause of pediatric morbidity. Epilepsy is a common neurological disorder in children with a frequency of 4-8 cases per 1000 children **(Annegers, 1994).**

The over all incidence of childhood epilepsy from birth to 16 years is approximately 40 in 100.000 children per year **(Banu et al.,2003)**.

The incidence of epilepsy ranges from 40 to 70 per 100,000 in most developed countries and from 100 to 190 per 100,000 in developing countries **(Hauser et al., 1993).**

The incidence of first single unprovoked seizures is likely to lie somewhere in the range of 50 and 70 per 100,000 in industrialized countries but may be much higher in developing countries **(Hauser et al., 2008).**

Age specific incidence:

Epilepsy incidence is consistently high in the youngest age groups, with highest incidence occurring during the first few months of life. Incidence falls dramatically after the first year of life, seems relatively stable through the first decade of life, and falls again during adolescence **(Olafsson et al., 2005).**