NEUROPSYCHIATRIC COMORBIDITY IN PEDIATRIC EPILEPSY: DIAGNOSIS AND MANAGEMENT

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Neuropsychiatry

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Abstract

Epilepsy is the most common and challenging neurological disease in children. With a prevalence of 1%, a cumulative incidence of 2-4 % and more than 40 million affected persons worldwide. Epilepsy is a disease at the edge between neurology and psychiatry .Neuropsychiatric and behavioral comorbidities are believed to affect approximately 40%-50% of children and adolescents with epilepsy. When neurological damage or submentality is excluded the most common disorders in these children are ADHD, anxiety, depression and psychosis, migraine and myopathy. Association between epilepsy and autism or epilepsy and mental retardation is a stressful condition for the child and his family that needs our intervention. Neuropsychological evaluation of epileptic children needs a neurologically informed psychiatrist or psychiatrically informed neurologist or both, as psychological evaluation of all these children is mandatory. Sometimes psychiatric disturbances in epilepsy are nothing but a side effect of antiepileptic drugs so its should reevaluate and optimize our antiepileptic treatment. Treatment of these children should include psychoeducation, psychotherapy, behavioral therapy and psychopharmacology. In the choice of antiepileptic drugs we should be aware of drug interactions, side effect and the effect of the drug on the seizure threshold. The primary therapeutic goals of seizure control and optimal functioning and quality of life can best be accomplished by controlling seizures with one drug at a time, when possible.

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Abbreviations

(ACTH)	Adreno Cortical Tropic Hormones.
(ADHD)	Attention Deficit Hyperactivity Disorder.
(AB)	Antipsychotic
(AMT)	Alpha-Methyl-L-tryptophan.
(APA)	American Psychiatric Association .
(AREE)	Autistic Regression with an Epileptiform EEG.
(ASD)	Autistic Spectrum Disorders.
(BOEP)	Benign Occipital Epilepsy of childhood with Occipital Paroxysms.
(CBCL)	Child Behavior Check List
(CBT)	Cognitive-Behavioral Therapy.
(CD)	Conduct Disorder.
(CDD)	Childhood Disintegrative Disorder.
(CoQ10)	Coenzyme Q10.
(CP)	Cerebral Palsy.
(CPS)	Continuous Performance Task scores.
(CSF)	Cerebrospinal Fluid.
(CSWS).	Continuous Spike and Wave during Slow Wave Sleep.
(CVST)	Children with cerebral venous sinus thrombosis.
(DD)	Depressive Disorders.
(DSM-IV-TR)	4th Edition of Diagnostic and Statistical manual of mental Disorders Text Revised .

(DTI)	Diffusion Tensor Imaging.
(EA)	Epileptic activity.
(EEG)	Electroencephalographic.
(EPS)	Extrapyramidal symptoms.
(FDA)	Food and Drug Administration
(FLAIR)	Fluid Attenuation Inversion technique.
(GABA)	Gama -Aminobutyric acid.
(GAD)	Generalized Anxiety Disorder.
(HIS)	International Headache Society.
(HMPAO-SPECT)	Hexamethylpropyleneamine oxime single Photon emission computed tomography.
(ICD-10)	International Classification systems of Psychiatric disorders 10.
(IEDs)	Interictal Epileptiform Discharges.
(IIP)	Inter Ictal Psychosis.
(IPES),	Impact of Pediatric Epilepsy Scale
(IQ)	Intelligence Quotient.
(KSS)	Kearns-Sayre syndrome.
(LS)	Leigh syndrome.
(LKS)	Landau–Kleffner syndrome.
(MAOIs)	Amine Oxidase Inhibitors
(MDD)	Major Depressive Disorders
(MEG)	Magneto Encephalography
(MELAS)	Mitochondrial Encephalomyopathy, Lactic Acidosis, and Stroke-like episodes.
(MERRF)	Myoclonus Epilepsy with Ragged-Red Fibers.

(MPH)	Methylphenidate.
(MR)	Mental retardation.
(MRS)	Magnetic resonance spectroscopy.
(MWA)	Migraine with Aura.
(OCD)	Obsessive Compulsive Disorder
(ODD)	Oppositional Defiant Disorder
(PET)	Positron Emission Tomography
(PIP)	Postictal Psychosis
(POE)	Psychosis of Epilepsy
(PSG)	video-Polysomnography
(PWE)	Patient with Epilepsy.
(QOLCE),	Quality of Life in Childhood Epilepsy
(SLPE)	Schizophrenia-like psychosis of epilepsy.
(SPECT)	Single photon emission computed tomography.
(SSRIs)	Serotonin Reuptake Inhibitors.
(STIR)	fat-Suppression short T1 Inversion Recovery.
(TIA)	Transient Ischemic Attack.
(TLE)	Temporal lobe Epilepsy.
(TPA)	Tissue plasminogen activator.
(TS)	Tuberous sclerosis.
(TSC)	Tuberous sclerosis complex.
(WHO)	World Health Organization.

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Introduction

Epilepsy is defined as the repetitive and unprovoked occurrence of seizures (i.e. by the occurrence of internal or external behavioral changes, which go along with pathological paroxysmal hypersynchronous rhythmic electric discharges in larger neuronal networks). In most patients, these electrophysiological changes can be assessed during seizures (ictally) via electroencephalographic (EEG) recordings from the surface of the head. However, epileptic activity can also be observed interictally in the time between seizures ***(Hauser et al., 1998).***

Epilepsy is the most common and challenging neurological disease in children ***(Engel, 2004).*** With a prevalence of 1%, a cumulative incidence of 2-4 % and more than 40 million affected persons worldwide. Epilepsy is a disease at the edge between neurology and psychiatry. Because of this and because multiple disciplines (neuro-physiology, pathology, radiology, surgery and psychology) are concerned with this disease, research in epileptology was interdisciplinary from the very beginning of the understanding that the source of epilepsy must be the brain. Since the early beginnings of epilepsy surgery back in the 1930s in Montreal, Canada, neuropsychology, cognitive neuroscience and clinical epileptology have all been found to be strongly interwoven and they still stimulate each other ***(Ojemann, 1998).***

Now there is an interest in the special group of children with epilepsy and neuropsychiatric comorbidity like attention Deficit Hyperactivity Disorder (ADHD), Autistic children, children with mental subnormality,

anxiety, phobia, psychosis, depression, migraine, stroke, and myopathy ***(Adamdekun and Wahba, 2007).***

Attention Deficit Hyperactivity Disorder which is the most common behavioral syndrome of the childhood ***(Berman et al., 1999).***

Many studies have reported that the prevalence of ADHD in children with epilepsy range from 8-77 % ***(Dunn et al., 2003).***

All children on the autistic spectrum demonstrate the same core deficits, in (a) reciprocal social interactions and (b) verbal and nonverbal communication, with (c) restricted and repetitive behaviors or interests. There is, nonetheless, marked variability in the severity of symptomatology across patients, and level of intellectual function can range from profound mental retardation through the superior range on conventional IQ tests ***(Dunn et al., 2003).***

The lifetime risk of epilepsy is increased in autistic patients. Early studies suggested that up to a third of children with autism will develop epilepsy either in early childhood or in adolescence and many had learning difficulties. Other example of epilepsy co-morbidity is children with intellectual and developmental disability which represent as unique patient population that offers significant challenges. They are more likely to suffer lifelong intractable epilepsy with multiple seizure types than other patients ***(Michael, 2006).***

Global intellectual retardation is often the consequence. This is reflected by the fact that mental retardation is more likely to occur in early childhood epilepsies than in those epilepsies with an onset in adolescence or later. Childhood with temporal lobe epilepsy displays more diffuse impairment than about temporal lobe epilepsy in particular; language functions more often impaired in children, but material-specific memory deficits are similar in both groups ***(Nolan et al., 2004).***

The occurrence of behavioral disorder and epilepsy in either group provides opportunities for the selection of antiepileptic drugs that not only show efficacy for the common seizure types in specific population but are also effective in the management of some of the behavioral disorders seen in this population. The effects of antiepileptic drugs on behavioral disorders in patients with seizure and other co-ocurrent disorder represent the final out come of management of those groups of patients. So, choice of anti-epileptic drug influenced by various factors such as the natural history of epilepsy, cognitive state of child, and co-morbid conditions make simple algorism impossible ***(Michael , 2006).***