EPILEPSY AND CHILDHOOD AUTISM

with special reference to neuropsychiatric aspects on surgical interventions for medically intractable epilepsy

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I. Danielsson S, Gillberg IC, Billstedt E, Gillberg C, Olsson I. Epilepsy in young adults with autism: a prospective population-based follow-up study of 120 individuals diagnosed in childhood. *Epilepsia 2005;46:918-23.*

II. Danielsson S, Rydenhag B, Uvebrant P, Nordborg C, Olsson I. Temporal lobe resections in children with epilepsy: Neuropsychiatric status in relation to neuropathology and seizure outcome. *Epilepsy Behav 2002;3:76-81.*

III. Danielsson S, Viggedal G, Steffenburg S, Rydenhag B, Gillberg C, Olsson I. Psychopathology, psychosocial functioning and IQ in children with drug-resistant epilepsy before and after epilepsy surgery. *Epilepsy Behav; in press.*

IV. Danielsson S, Viggedal G, Gillberg C, Olsson I. Lack of effects of vagus nerve stimulation on drug-resistant epilepsy in eight pediatric patients with autism spectrum disorders: A prospective 2-year follow-up study. *Epilepsy Behav 2008;12:298-304.*

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ABSTRACT

Epilepsy is much more common in individuals with autism than in the general population. The extent to which epilepsy influences the outcome of autism is poorly understood. Many children with medically intractable epilepsy have neurodevelopmental disorders, including autism. The objective of this study was to gain further insight into the co-occurrence of epilepsy and autism.

In a population-based follow-up study of 120 individuals with autism diagnosed in childhood, 108 were reassessed at ages 17-40 years. The majority had autism and mental retardation (MR). The carers of 42/43 with a history of epilepsy were interviewed, and medical charts were reviewed. Epilepsy onset was most common in the first years of life but also occurred in adults. Partial seizures dominated and seizure frequency had a great impact on the individuals' lives. Epilepsy remitted in 16%. Severe MR and autism were significantly associated with epilepsy, especially in females. The cognitive level and the adaptive behaviour level were significantly lower in the epilepsy group than in the non-epilepsy group.
The medical charts of 16 children undergoing temporal lobe resections were reviewed and the histopathological specimens were re-evaluated. Psychopathology was found in 12. Five had autism before and after surgery, one of whom became seizure free, and in three there was a positive behavioural change. Malformations of cortical development were associated with worse seizure outcome and were more common in children with psychopathology.
A neuropsychiatric examination and assessments of psychosocial functioning and IQ were performed at baseline and at 2-year follow-up to assess individual outcome in (i) 25 children undergoing epilepsy surgery, and in (ii) eight children with autism and intractable epilepsy treated with vagus nerve stimulation (VNS).
In study (i) psychopathology (mainly autism and ADHD) was present in 17 of the children at some point and contributed in a major way to the psychosocial dysfunction in affected children. Among the children with preoperative psychopathology, one was without a diagnosis after surgery. The IQ level before surgery predicted the IQ level after surgery in most cases. Seven had autism before and after surgery, and the parents reported a positive behavioural change in six. Psychosocial functioning was mainly stable in autism, except in one child who became seizure free and improved in psychosocial functioning and in one child who deteriorated.
In study (ii) no one had a reduced seizure frequency after two years of VNS, autism remained and changes concerning intellectual abilities and psychosocial functioning were minor in most subjects. The parents of three children reported a positive change in social interactive abilities, and those of one child reported a negative change.

In conclusion, the follow-up study of young adults with autism showed high rates of epilepsy, poor prognosis, and low remission rates. Neuropsychiatric disorders were common at baseline and two years after epilepsy surgery. A diagnosis of autism in children with intractable epilepsy remained after surgical intervention. Symptomatic improvement is not always the same as functional improvement. The main aim of epilepsy surgery is seizure control, regardless of whether or not there is co-existing psychopathology.

Key words: epilepsy, autism, epilepsy surgery, VNS, children, treatment outcome, psychopathology, cognition
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