Prenatal Effects of Antiepileptic Medication Exposure

Women diagnosed with seizure disorder face a challenging decision of whether or not to continue taking antiepileptic drugs (AED) while pregnant. If seizure disorder is not controlled during pregnancy the following may occur: injury to the fetus, miscarriage during early pregnancy, or premature labor during late pregnancy. For mothers who decide to continue taking AEDs, their children are at an increased risk for birth defects and/or developmental delays.

Research has indicated that newborns of women taking AEDs during pregnancy have a 4-6 percent risk of birth defects as compared to a 2-3 percent risk in the general population. While most children born to mothers diagnosed with seizure disorder do not show evidence of birth defects, a small percentage have a cleft lip with or without cleft palate, spina bifida, skeletal abnormalities, or congenital heart defects. In previous years, obstetricians and gynecologists complied with the following guidelines when working with pregnant women with seizure disorder: physicians would: select the best course of therapy prior to conception, use monotherapy if possible, select the most effective AED for a woman’s condition, use the lowest dosage of an AED, supplement with folate, and provide the mother and newborn with vitamin K for AEDs that interfere with vitamin K absorption. Although these were the basic guidelines, further investigation was required to determine prenatal effects of specific AEDs.

Recent research has focused on the long-term cognitive and behavioral effects of four commonly prescribed AEDs during pregnancy with an attempt to provide more detailed information to physicians. Vinten and his colleagues (2005), investigated the neurospsychological effects of prenatal exposure to AED. The findings suggest that
children exposed to valproate (Depakote) exhibit memory impairment and significantly lower verbal intelligence quotient (IQ) as compared to children exposed to other AEDs or to children who had no exposure to any AED. Furthermore, exposure to valproate in combination with low maternal IQ and increased frequency of tonic-clonic seizures during pregnancy, significantly predicted memory impairment and low verbal IQ for their child. Other studies conducted in the United Kingdom and in Finland indicate similar findings in regards to the prenatal effects of valproate.

The Neurodevelopmental Effects of Antiepileptic Drugs (NEAD) study is one of very few studies originating in the United States. It was originally designed as a prospective study to investigate the effects of monotherapy with valproate (Depakote), carbamazepine (Tegretol), lamotrigine (Lamictal), and phenytoin (Dilantin) on long-term cognitive and behavioral neurodevelopmental effects. The preliminary results of this study suggest that the best outcomes are associated with lamotrigine and the greatest risks are associated with valproate. A dose-dependent effect for valproate was identified and linked to increased outcomes of major congenital malformations. Additional results regarding the cognitive and behavioral neurodevelopmental effects are yet to be published from the NEAD study.

Currently, a new investigation is being conducted by the NEAD researchers and it is entitled the Retrospective NEAD Study (RNEAD). The RNEAD study is currently recruiting participants to investigate prenatal AED effects on cognitive abilities and behavioral difficulties in children.

For more detailed information about the NEAD or RNEAD studies, please visit: https://web.emmes.com/study/nead/ or www.neadstudy.com.
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References:


