Study reveals long-term effects on child IQ of epilepsy drug valproate during pregnancy

January 22 2013

Research published today in the *Lancet Neurology* shows that taking the antiepileptic drug valproate during pregnancy affects the IQ of children up to the age of six.

Research published in 2009 showed that maternal valproate use during pregnancy affected children's IQ at three years old, leading the US Food and Drug Administration (FDA) to issue a warning that foetal valproate exposure is associated with impaired cognitive outcomes. The new research reports on the same group of children – whose mothers used one of four common antiepileptic drugs, including valproate, during pregnancy – at six years old. Due to the children's advanced age, the researchers were able to examine a wider range of cognitive indicators, such as verbal ability and memory, than in the earlier study. They also investigated the effect that folic acid supplementation in the mothers had on the IQ and reasoning ability of their children.

Between October 1999 and February 2004, the researchers, led by Professor Kimford Meador at Emory University in the US, recruited 305 pregnant women in the UK and the US, who were using a single drug to treat epilepsy (valproate, carbamazepine, lamotrigine, or phenytoin). At age six, children whose mothers had used valproate during pregnancy had reduced IQ (by 7-10 points), compared with children from mothers who had used the other antiepileptic drugs included in the study. Valproate exposure was also associated with worse verbal and memory abilities.

The effects of valproate on IQ and other cognitive abilities were dependent on the dose, with the children of women who took higher doses of the drug having lower IQs, verbal, non-verbal, memory, and executive abilities. However, the findings also suggest that IQ may improve with age for infants exposed to valproate or any of the other drugs studied, and that folic acid supplementation in mothers may improve IQ scores, the first time that this has been shown in a study of pregnant women with epilepsy. For some people, valproate is the only drug that can control their epilepsy, so the findings on dose-dependency and the potential positive effects of folic acid supplementation on IQ may prove particularly important.

According to Professor Meador, "These results build on our earlier work to show that valproate usage during pregnancy has a significant negative effect on children's IQ, which lasts beyond their earliest years. IQ at age six is strongly predictive of adult IQ and school performance, so our research suggests that valproate use during pregnancy is likely to have long-term negative effects on a child's IQ and other cognitive abilities. For many antiepileptic drugs, there is simply no research available on their effects on women and their children during pregnancy, and given that many women do not have the option of stopping medication during pregnancy, more research in this area is urgently needed."

More information: www.thelancet.com/journals/lan … (12)70323-X/abstract

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