

# Common treatment to delay labor decreases preterm infants' risk for cerebral palsy

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Intravenous magnesium sulfate supplementation before preterm delivery cuts the risk for handicapping cerebral palsy in half, according to research led by University of Alabama at Birmingham (UAB) obstetrician Dwight Rouse, M.D., and published in the Aug. 28 issue of *The New England Journal of Medicine*.

Cerebral palsy refers to a group of neurological disorders affecting control of movement and posture and limiting activity. The causes of cerebral palsy are not well understood, though cerebral palsy is attributed to brain injury or developmental abnormality during pregnancy, birth or in early childhood. It is estimated that cerebral palsy afflicts more than 200,000 Americans between the ages of 3 and 13, making it a leading cause of chronic childhood disability.

Magnesium sulfate is given routinely to prevent seizures in women with preeclampsia and to stop preterm labor. Previous research suggested that fetal exposure to magnesium sulfate before preterm birth might reduce the risk of cerebral palsy.

"The association between magnesium sulfate and a lower incidence of cerebral palsy has biologic plausibility, because magnesium stabilizes blood vessels, protects against damage from oxygen depletion, and protects against injury from swelling and inflammation, all of which threaten the vulnerable preterm brain," Rouse said. "Our study is the largest, most comprehensive effort to evaluate the effect of magnesium sulfate on the incidence of cerebral palsy in preterm infants."

Early preterm birth is a risk factor for cerebral palsy, and the magnitude of the risk rises the earlier a baby is born. During the past 20 to 30 years, the survival of infants born severely preterm has improved dramatically, and while some research suggests that the rate of cerebral palsy among the survivors of early preterm birth has decreased, other research suggests that it has not. Currently, approximately one of every three cases of cerebral palsy is associated with early preterm birth.

This multicenter study, co-funded by the National Institute of Neurological Disorders and Stroke and conducted by the 20 participating research centers of the Eunice Kennedy Shriver National Institute of Child Health and Human Development Maternal Fetal Medicine Units Network, enrolled 2,241 women between Dec.1997 and March 2004. The women were randomly assigned to receive either placebo or magnesium sulfate. They all had similar characteristics, including gestational age (24 to 31 weeks) at randomization and risk factors for preterm birth. Eighty-seven percent of the women had experienced preterm membrane rupture.

Those in the treatment group were given six grams of magnesium sulfate intravenously over 20 to 30 minutes, followed by two grams of magnesium sulfate every hour after that — until either 12 hours had passed, labor subsided or they had given birth. If the women in either group did not deliver within 12 hours, they were treated again if they went into labor by the 34th week of pregnancy.

On follow up at two years of age, researchers found that babies born to women in the treatment group had a significantly lower rate of all forms of cerebral palsy, 4.2 percent vs. 7.3 percent, and of moderate or severe cerebral palsy, 1.9 percent vs. 3.5 percent. Children with moderate cerebral palsy cannot walk unaided, and those with severe cerebral palsy are profoundly disabled.

"Our finding that magnesium sulfate protects against cerebral palsy is consistent with two previous randomized trials, both of which were well done and which in total enrolled over 1,600 women. Our trial and the two others show that magnesium sulfate can reduce the risk of this devastating condition in preterm infants. Until we can prevent early preterm birth, the best that we obstetricians can do is to improve the prospects for infants who are born very early. I think that our study says that magnesium sulfate can help us do that," Rouse said.

Source: University of Alabama at Birmingham

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