# The mental health dangers of birth hypoxia

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Complications during pregnancy and birth, such as birth hypoxia - the shortage of oxygen in the body - are associated with an increased risk for schizophrenia. However, it is not clear why hypoxia increases the risk for schizophrenia. The November 1st issue of *Biological Psychiatry* includes an article by researchers who show that the presence of a specific indicator of fetal distress following hypoxia was more likely to be present among people who later develop schizophrenia. Their findings suggest that the inability of a high-risk fetus to respond adequately to metabolic stresses that it faces in the womb may contribute to its later risk for developing schizophrenia.

Specifically, the authors analyzed levels of an important neuroprotective protein – brain-derived neurotrophic factor (BDNF) - in umbilical cord and maternal blood serum samples obtained at the time of birth and stored in a repository for 45-50 years. They then compared the levels of BDNF found among those individuals who had developed schizophrenia during their lifetime to control subjects, i.e., those individuals who did not develop the disorder.

Dr. Tyrone Cannon, the corresponding author, explains the findings: "We found that while BDNF was increased (by 10%) among controls exposed to birth hypoxia, it was significantly decreased (by 20%) among [people later diagnosed with schizophrenia who were] exposed to birth hypoxia." John H. Krystal, M.D., Editor of *Biological Psychiatry* and affiliated with both Yale University School of Medicine and the VA Connecticut Healthcare System, comments that this data "suggests that schizophrenia is not simply associated with deficits in BDNF, but rather

it is associated with BDNF reductions at a critical moment in the development of the brain when it needs BDNF to cope with a serious metabolic challenge."

Although this is a preliminary study, and the results need replication, the authors note that this may lead to the study of "novel molecular targets for preventive intervention." The idea of prevention is an important target, as these findings promote "the public health message that maintaining maternal health during pregnancy and reducing the factors that might contribute to the metabolic compromise of the fetus might have real payoff in reducing the later risk for schizophrenia of that fetus," posits Dr. Krystal. That science may one day have the ability to identify these high-risk individuals from birth would be a tremendous advantage in the struggle against this disabling condition.

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