

Breastfeeding as a possible deterrent to autism—a clinical perspective

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In an article appearing in *Medical Hypotheses* on September 20, a New York-based physician-researcher from the Touro College of Osteopathic Medicine has called for the testing of umbilical cord blood for levels of a growth protein that could help predict an infant's propensity to later develop autism.

Based on an analysis of findings in prior published studies, Touro researcher Gary Steinman, MD, PhD, proposes that depressed levels of a protein called insulin-like growth factor (IGF) could potentially serve as a biomarker that could anticipate autism occurrence.

His research points to numerous prior studies that powerfully link IGF with a number of growth and neural functions. Dr. Steinman—who has also conducted extensive research into fertility and twinning—further points to breastfeeding as a relatively abundant source of the protein. He says that IGF delivered via breastfeeding would compensate for any inborn deficiency of the growth factor in newborns.

If the IGF-autism hypothesis is validated by further study, Dr. Steinman says, an increase in the duration of breastfeeding could come to be associated with a decreased incidence of autism.

"By assessing our own research, along with dozens of other relevant studies, there is a strong case to be made that IGF – known to be deeply involved in the normal growth and development of babies' brain cells – also serves a biomarker for autism," said Dr. Steinman.

"This leads to two conclusions. First, we need to more deeply assess this hypothesis by conducting umbilical cord blood tests that measure neonatal levels of this growth factor, and then match those results against future autism occurrence in the maturing child.

"Second, those who embrace the hypothesis that IGF is indeed an autism biomarker should advocate and encourage breastfeeding as a highly accessible means of supplementing an infant's natural levels of the protein."

If a newborn's innate supply of IGF were found to be low, Dr. Steinman says, the infant could receive supplemental amounts of the protein – via breastfeeding or through other relatively simple means – that could then contribute to more-effective brain function as the baby develops into an active child.

Dr. Steinman says that if IGF were ultimately determined to be a biomarker for the later appearance of autistic characteristics, then researchers would be obligated to act swiftly to develop a simple biomarker blood test to assess protein levels.

If corroborated, Dr. Steinman's theory could also point to potential risks to pregnant women and women of child-bearing age associated with the intake of drugs that lower IGF levels, such as Somavert®, Sandostatin®, Parlodel®, and several experimental IGF receptor antagonists.

IGF stimulates special brain cells that provide an essential insulating material, called myelin, around developing nerves. The material helps to efficiently transmit important messages about everything the brain controls—from physical functions such as movement to mental functions such as sensory perception, thinking and emotions.

In the developing fetal and pediatric brain, myelin also helps nerve fibers

in one area of the brain form proper pathways to other regions, allowing the body to hone functions over time. Insufficient IGF results in insufficient insulating material, a phenomenon witnessed in brain biopsies of autistic individuals, and may impede proper pathway development.

Under Dr. Steinman's suggested blood-testing protocol, a sample of [umbilical cord blood](#) would be collected immediately after birth to measure IGF. Clinicians may also use routine, heel-stick blood samples, which are already collected from newborns within a day or two after birth to test for inborn errors of metabolism, in most American hospitals. Data collected at birth would be compared with a neurologic evaluation of the baby at 18 to 36 months of age.

If future research were to confirm a connection between IGF and autism, Dr. Steinman recommends a new phase of research focused upon the detection of possibly depressed IGF levels in amniotic fluid during the second trimester of pregnancy. This might be followed by supplementation of the [growth factor](#) before symptoms of autism develop.

While breast milk serves as an abundant, natural source of IGF, it can also be delivered through bovine milk or added as a supplement to various potable liquids.

"Autism takes a huge human toll, not to mention its substantial economic impact on families," said Dr. Steinman. "These findings send a powerful message to the research community. Our research is consistently indicating a connection between IGF and autism. The medical community needs to vigorously investigate this ostensible connection and validate it once and for all. As we all know full well, the world would reap untold benefits by finding ways to detect, treat and ultimately prevent this disease."

Provided by Touro College Of Osteopathic Medicine

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