

Findings in Brain Imaging in Infants at High Risk for Autism

Dr. Hanna Alonim

Published in Haaretz news, Israel, February 2017

Researchers at the University of North Carolina in the United States have been able to identify changes in the brain structure associated with autism in infants as early as a few months old, long before the age at which autism is usually diagnosed. The researchers studied 106 infants whose siblings were diagnosed with autism, and a control group of 42 infants without any family history of autism. The babies, screened at four different medical centers in the United States, underwent MRI brain scans at the age of 6 months, 12 months, and again at the age of 2. The scans showed a significant increase in brain volume during the first year of life in infants who were subsequently diagnosed with autism. The early detection of autism through the MRI device was estimated at 80%, according to the researchers, who said that the findings published in the journal NATURE will allow for early treatment and significantly improve the communication skills and social abilities of children at an early age.

However, lead researcher Dr. Piven says that this is a preliminary study, and further studies are needed until an MRI can become a tool for a standard early diagnosis of autism, and the relatively small sample will require several further studies to substantiate these findings. These findings corroborate earlier findings on the rapid growth of head circumference in infants who developed autism, which was published in 2003 by Professor Courshesne of San Diego.

Our working assumption, as we understand it, is that the volume of the brain increases as a result of accelerated growth of neurons in the frontal cortex in the first few months of life, which creates overflow, affecting regulation at all levels of functioning.

It is important to state that this is not just a risk for siblings of children diagnosed with autism. Autism is found in one out of 100 children in the Israeli population! The prevalence in the US is one in 68 children!

It is also important to know that warning signs can be detected even without an MRI test, since it will not be possible to perform this scan in the next few years for every infant with developmental disorders, both because of the complexity of the test and its cost, and the time it will take to anchor these findings in a testing routine. Therefore, there is great importance for parents to be aware and alert to signs that may appear in infancy.

Accelerated growth of head circumference is only one of the eight early signs of autism developed by the Mifne Center - already in 2007 using early intervention treatment in infant autism. In a longitudinal study done by the Mifne Center involving 110 children diagnosed with autism over the age of two, eight signs of autism were found. In 89% of the children it was possible to see, with retrospective analysis of first-year video filming, the prodrome symptoms predicting autism in infants as early as 5-6 months old. The signs shared by babies in different ways were: Lack of eye contact; Excessive passivity; Excessive activity; Lack of interest in the environment and lack of response to parents' call; Difficulties in eating; Delayed motor development; Reluctance, avoidance to touch; Accelerated head growth in relation to its size at birth.

In a follow-up study conducted at the Mifne Center in 2012-2015 and presented recently at the International Conference on Early Intervention in Stockholm, 39 infants aged 24 to 36 who were diagnosed with autism spectrum disorder and 45 infants aged 10 to 24 months were examined with high suspicion of autism. The participants were examined before treatment and 6 months after treatment began in four areas: bonding, communication, play and functioning. The results of the study showed that in the group of toddlers, 36% of the subjects achieved a level of development close to their age group, compared with the group of infants in which 88.3% achieved developmental milestones according to their age group.

The conclusion is that the elasticity that characterizes brain development in the first year of life enables positive manipulation through controlled stimulation of parent-infant relations, and that this has an effect on neuronal growth and, consequently, on the infant's sensory, emotional and cognitive regulation. Therefore, there is a short and critical window of opportunity here in supporting and guiding parents. In many cases, when the baby does not respond to them, parents naturally develop anxiety and this may affect the baby and escalate his

condition. Some parents feel that something is wrong with their infants at the age of 5 or 6 months, but the extended family members, and sometimes the doctors they contact, are quick to reassure them and suggest waiting for a later age in order to examine their children further. The symptoms are usually more pronounced later on, but after the age of one year babies usually begin to walk and discover more independence and therefore there is also a worsening of existing symptoms. Early intervention and working with parents usually results in significant changes in the reciprocity of attachment and in the parameters for attachment in infant development.

Early diagnosis of autism-related symptoms, and early advanced treatment in the first year can minimize these characteristics and change the fate of many children and families coping with autism syndrome, which is a 21st century epidemic!

Written by: **Dr. Hanna Alonim**, an expert on developmental disorders in the autism spectrum in infancy; Founder and Head of the Mifne Center for Treatment, Research and Training; Developed the ESPASI Screening tool for the detection of ASD in infants; Director of the training School for therapists based on the Mifne Approach at the School of Social science, Bar-Ilan University; Member of the ICF Committee for Classification of Functional Criteria in ASD, the World Health Organization (WHO).

*Translated from Hebrew