FINDING EARLY SIGNS OF AUTISM.

(The review of the article from the National Geographic “The future of medicine”. March, 2022)

The brains of infants who develop the disorder grow too fast, researchers say. The discovery could help doctors prevent impairments before they appear.

For parents who learn their child has autism, the diagnosis often comes as a shock: How could their baby have gone from appearing healthy to having an incurable disorder? The autism was first identified in the 1940s, researchers have struggled to explain it.

Studies indicate that it may be possible to detect signs of autism at as early as three months of age, long before the disorder manifests itself. Early detection would allow for interventions that might prevent or mitigate the impairments associated with autism. “What we are learning is that autism is a trait, and whether or not that trait becomes a disability depends on early experiences. That raises the possibility, that autism as a profound disability is not inevitable,” says Ami Klin, a psychologist at Emory University.

Scientists know that autism can be caused by a number of genes, both inherited and mutated, as well as other factors, such as the advanced age of a parent. One fraudulent study blamed it on the childhood vaccine for measles, mumps, and rubella – a provocative claim that has been disproved.

Since the late 1990s, the disorder has become increasingly prevalent. Researchers believe that is partly explained by improvements in diagnosis. Although they have not established the precise origins of autism, they are gaining a clearer view of how it progresses.

The researchers found striking differences between the infants who later developed autism and those who did not. The brains of infants who were subsequently diagnosed with the disorder grew faster than the others, starting at six months, expanding more in surface area until 12 months, and then became larger in volume in the second year of life.

The link between brain overgrowth and a subsequent diagnosis of autism was so strong that the researchers could use the brain scans at six and 12 months of age to predict an autism diagnosis for eight out of every 10 infants who were found to have the disorder.

Scans tracing abnormal brain changes have the potential to allow pediatricians to spot autism well before symptoms appear. The deficits that characterize it – language delays, difficulties with social interaction, and repetitive behaviors – usually do not emerge until about two years after birth, which is when most children are diagnosed. It is better to detect them at a time when they just have some risk markers.

Children with autism undergo interventions to help them socialize and communicate, lessening the severity of their impairments. With earlier detection it eventually might be possible to take preemptive action, either through behavior modifications or medication that would change the trajectory of the brain.

The researchers conducted the exams on children between the ages of three months and three years. Activity in the brains of infants who were later diagnosed with autism stood out from the rest. What these studies reveal about the atypical nature of brain development in the lead-up to autism appears to be consistent with behavioral findings. They also tracked the eye movements of babies as they watched videos. In a study with toddlers, they found that those with autism gazed half as often at faces and twice as much at objects.

The results suggest that infants who go to develop autism see the world in a fundamentally different way. This alters how they handle social interactions, which in turn has a cascading effect on their brain development, possibly leading to later impairments.

The findings imply that babies at risk for autism could be nudged to a remedial track. Researchers have been testing behavioral interventions such as the Early Start Denver Model, a program that teaches parents and therapists to use specific strategies, including play, to develop social and language skills in children with autism.

A recent trial involving 118 children found that the intervention improved language ability, which researchers say is one of the best predictors of long-term gains for individuals with autism.

It is necessary as early as possible to bring the baby back into the social world, so they are paying attention and getting that early enrichment.