K. A. Fakikh, Y. V. Pleaskatsevich

EARLY DETECTION AND MANAGEMENT OF AUTISM

Tutor: sr. tr. T. G. Novitskaya
Department of Foreign Languages,
Belarusian State Medical University, Minsk

Resume. *The article covers the causes underlying autism, new methods of early diagnosis of this disorder and modalities of its treatment.*

Keywords: *autism, early diagnosis, eye-tracking technique.*

Topicality. The term “autism” comes from the Greek word “autos” meaning self and is used to describe conditions of social isolation. It is one of the three diagnoses that the DSM includes in autism spectrum disorder (ASD). Individuals with autism have such symptoms as difficulty interacting and communicating with others, rigid adherence to rituals and routines and repetitive behavior.

About 22 million people suffer from autism worldwide. With the extension of diagnosis criteria the number of people affected has been increasing drastically since the 1980s. Nowadays some fundraising organizations (e.g. Autism Speaks) refer to autism as an epidemic, while decades ago only few pediatricians heard about this disorder. The understanding of autism has grown tremendously, but there are still many questions with no answers.

And the question which is looming largest is: could a child with autism ever be like other children? Recent studies suggest that the answer is yes. And the key to a normal social life for such people lies in early diagnosis [1].

Objective: The objective of our study was to review the autism causative agents and the new methods of early diagnosis.

Material and Methods. We collected and analyzed the data on autism disorder using native and foreign scientific literature as a source of information. We also reviewed the latest studies on the early diagnostic methods.

Results and its discussion. Despite the fact that autism disorder is a common phenomenon, there is no agreement among scientists on the causative agents. For a long time the common misconception was that autism is caused by vaccines. Nowadays this theory is considered to be completely incorrect and most scientists believe autism to be due to genetic factors.

Here are some examples of the most common causes of autism based on recent studies:

- Most scientists agree that differences in certain genes are one of the factors that can make it more likely for a person to develop ASD.
- Women who develop gestational diabetes early in their pregnancy have a higher chance of having a child with autism than women who don't develop the condition. The exact reason for the link is unclear. However, one underlying factor could be that the early months of pregnancy are a critical time period for brain development.

- Environmental mercury and other heavy metal exposure, contaminated water, pesticides, a greater reliance on antibiotics and even extensive television viewing by very young children may be factors in mounting autism rates.
- Advanced paternal age, that is, increasing age of the father at the time of conception is believed to be a serious causative agent.

Currently the best prognosis for autism lays in the early diagnosis and intervention. The median age of diagnosis is about 3 years. Parents are usually first to notice the early signs of autism. Those signs may exist from birth or become noticeable later. Postponing the diagnosis and the intervention beyond infancy is considered loss of precious time. That is why new methods of early diagnosis of Autism Spectrum Disorder have become the focus of intense interest for clinicians and researchers.

Here are some of the latest studies on the early diagnosis of ASD which allow to diagnose autism in the first six months of life

✓ Determination of Activity-Regulated Cytoskeleton-Associated Protein level in the plasma. The results of the study showed that the mean plasma level of this protein was higher in children with autism than in controls, suggesting that it could be a potential early blood biomarker for diagnosis of autism [2].

✓ Biological diagnostic test for autism. It consists of reconstructing an MRI scan of a person's brain into a 3D image so that a computer can examine the architecture of the brain and determine whether it is afflicted with signs pointing to the presence of autism.

✓ Diffusion tensor imaging is a new MRI technique used to visualize and measure white-matter nerve fibers in two regions of the brain critical to language, emotion and social cognition – the superior temporal lobe gyrus and the temporal lobe stem [3].

✓ The technique based on an eye-tracking. Eye tracking is the process of measuring the point of gaze, or where a person is looking. The advantage of eye tracking is that it allows scientists to monitor person’s attentional focus or preference without the need for them to express what they are doing or even to understand it. People with autism actually pay less attention to socially relevant parts of scenes. For example, a person with autism who is viewing a movie of people in the room will spend a relatively large amount of time looking at non-social objects such as chairs and is more likely to look at the mouths or bodies of the characters rather than their eyes [4].

The basic eye-tracking technique was developed by Ami Klin and his colleague Dr Warren Jones of Emory’s Marcus Autism Center. They showed the children videos of “mom” or caregiver-like figures, and tracked eye-movement patterns across the screens. There is also a new similar technique in which videos are recorded from a wireless camera placed on the head of children playing in an unconstrained environment to gather information on the amount of time they spend looking at the faces around them.

Early diagnosis is followed by individualized early intervention which creates the

most favorable outcomes for children with ASD. While in the past, doctors often took a “wait and see” attitude, today most experts suggest taking action as early as possible. The overall objectives of early intervention in autism are to improve social function, communication, and other cognitive abilities and to reduce repetitive and obsessional behaviors, while also minimizing any adverse effects of the intervention.

Nowadays the most common intervention is the so called Autism 1-2-3 Project. The program focuses upon basic elements of communication including eye contact, gesture, and vocalization. The trainer not only trains the children but also teaches parents to use the corresponding techniques at home.

Conclusions:

We believe that having a better understanding of the causes of autism may be useful in the attempt to prevent the disorder and minimize the risk factors. It is a proven fact that the earlier autism is detected, the more likely children are to be free of devastating disabilities.

References

1. Richler, J. Is It Possible to Recover from Autism? / J. Richler // Scientific American Mind. – 2013. – July/August. – P. 26-27.

2. Activity-Regulated Cytoskeleton-Associated Protein Dysfunction May Contribute to Memory Disorder and Earlier Detection of Autism Spectrum Disorders [Electronic resource] / Karger.com: Medical and Scientific Publishers. – Access regime: https://www.karger.com/Article/Abstract/445351 (Date of access: 30.03.2016).

3. Atypical diffusion tensor hemispheric asymmetry in autism / Nicholas Lange, Molly B. DuBray, Jee Eun Lee and others // Autism Research. – 2010. – Volume 3, Issue 6. – P. 350-358.

4. Measuring social attention and motivation in autism spectrum disorder using eye-tracking: Stimulus type matters / Coralie Chevallier, Julia Parish-Morris, Alana McVey and others // Autism Research. – 2015. – Volume 8, Issue 5. – P. 620-628.