

# Autism: a new approach to etiopathogenesis and treatment

## Summary

Autism is considered a multifactorial disease, the trigger of which is unknown. Hypothesis of the occurrence of autism: in genetically predisposed individuals, long-term negative factors cause - through cortico-nuclear pathways - excessive constriction of the pupils, which is manifested by the activation of the parasympathetic nervous system. Constricted pupils (reduction in light flux) through the optic-vegetative system trigger pathological biochemical processes in the body, which leads to a deterioration in the mental and physical state of patients.

It has been suggested that treatment for autism should begin with medical or surgical dilation of the pupils. This approach may be useful in the treatment of migraine, epilepsy, bipolar disorder, schizophrenia, post-traumatic stress disorder, and other conditions that begin with pupil constriction and overactivation of the parasympathetic nervous system.

**Keywords:** autism, pupil, optic-vegetative system, mydriatics, laser mydriasis

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**O. D. Rudkovska**

Ophthalmologist, Bukovina State Medical University, Ukraine

**Correspondence:** O. D. Rudkovska, Ophthalmologist, Bukovina State Medical University, Chernivtsi, Ukraine,  
 Email rudkovskaya.oksana@gmail.com

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## Introduction

Autism is a mental disorder characterized by impaired social and communicative habits; stereotyped behavior, limited interests; and hypersensitivity in the perception of sensory stimuli.<sup>1-8</sup>

Autism affects approximately 2% of children and its prevalence is increasing.<sup>8,9</sup> It is considered a multifactorial disorder with an unknown trigger.<sup>2,3,6,10-12</sup> There are no specific medications.<sup>13,14</sup>

The purpose of the work: to develop a hypothesis for the development of autism, to propose a new method of its treatment.

Autism is a genetic disease.<sup>2-8,11-20</sup> The main cause is spontaneous gene mutation due to negative external factors. These include: advanced age of the parents, health and nutrition of the mother, marital stress, the effect on the fetus of alcohol, nicotine, infections, toxins; perinatal stress.<sup>6,8</sup>

## What can be a trigger for the autistic process?

We believe that the pupils are excessively narrowed.

It is known that "all diseases are from nerves." The above-listed negative factors cause chronic stress in a child, which in genetically predisposed individuals causes - through cortico-nuclear pathways - excessive constriction of the pupils.

Narrowed pupils (reduction in light flux) trigger pathological biochemical processes in the body through the optic-vegetative system, which leads to a deterioration in the mental and physical state of patients.

Where the "weak link" in the body is (which is genetically programmed) - there it "breaks" (a pathological process takes place).

Indeed, everything in the human body is interconnected. The eye is an important component of the optic-vegetative system: eye-hypothalamus-pituitary gland. Due to the stimulating effect of light in the body, hormones are produced by the endocrine glands: pituitary, adrenal, thyroid, sex and others. That is, the eyes provide not only vision, but also the harmonious development of all organs and systems of the body.

If the organism - through the cerebral cortex, hypothalamus, reticular formation - affects the size of the pupil, then, according to the principle of «direct connection - feedback», the size of the pupil also affects the entire organism.

When the pupil is dilated, the mood is upbeat, the person is physically and intellectually active; when the pupil is constricted, the mood, physical and intellectual activity are reduced.<sup>21,22</sup>

So, in autism, there is excessive constriction of the pupils, while the parasympathetic nervous system is significantly activated. This is realized in symptoms such as irritability, anxiety, depression, difficulties with language, social interaction, stereotypical behavior, suicidality, intellectual disability. Patients are apathetic.

When the parasympathetic nervous system is overexcited, there is compensatory activation of the sympathetic nervous system, which is realized in attention deficit hyperactivity disorder.

Summarizing the above, we can say that excessively narrowed pupils trigger the autistic process.

This hypothesis is supported by the fact of sensory hypersensitivity in children with autism: they, along with intolerance to other stimuli, react painfully to bright light.<sup>7</sup> It is known that fear of light (photophobia) accompanies mental disorders (anxiety, depression, etc.); taking sedative medications. In these cases, an excessively narrow pupil is observed.<sup>21,23</sup> The fact that autistic people have a large number of concomitant diseases (hypertension, diabetes, obesity, etc.),<sup>7</sup> the trigger of which may be an excessively narrowed pupil.<sup>24</sup>

## What do we offer?

Moderately dilate the pupils in children with autism.

- 1. Eye drops:** mydriatics. Pharmacologists should develop a new class of these drugs that moderately dilate the pupil, act for a long time and, preferably, have minimal effect on accommodation. It is advisable to conduct such therapy under the control of biomarkers of the activity of the parasympathetic and sympathetic nervous systems.

**2. Dosed surgical pupil dilation:** laser mydriasis (in case of difficulties with instillation of mydriatics). The parameters of the operation should be established experimentally.<sup>25</sup>

Well-known methods of treating autism also contribute to pupil dilation: hydrotherapy, music, theater and film, dolphin, hippo, and canine therapy.

We recommend that patients with autism limit the use of gadgets, engage in sports, take walks in the fresh air, communicate with family and friends, get enough sleep, and experience positive emotions (anything that activates the sympathetic nervous system and dilates the pupil).

The proposed approach may be useful for migraine, epilepsy, bipolar affective disorder, schizophrenia, post-traumatic stress disorder, and other illnesses that begin with depressive disorders (i.e., excessive activation of the parasympathetic nervous system).

So, in our opinion, mental illnesses (including autism), like most somatic illnesses, are encoded in the size of the pupil.

The pupil is the most important structural element of the body, and the Bible spoke about it thousands of years ago: “Keep me as the apple of your eye...” (Psalm 17:8).

Thus, an excessively narrowed pupil may be a trigger for autism, and treatment should begin with its dilation, either medically or surgically.

## Conclusions

Excessively constricted pupils may be a trigger for autism, which is manifested by significant activation of the parasympathetic nervous system with worsening of the mental and physical state of patients.

It has been suggested that treatment for autism should begin with medical or surgical dilation of the pupils. This approach may be useful in the treatment of migraine, epilepsy, bipolar disorder, schizophrenia, post-traumatic stress disorder, and other conditions that begin with excessive pupil constriction and significant activation of the parasympathetic nervous system.

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## Conflicts of interest

Author declares that there are no conflicts of interest.

## References

1. Arthur T, Vine S, Brosnan M, et al. Predictive sensorimotor control in autism. *Brain*. 2020;143(10):3151–3163.
2. Bhandari R, Paliwal JK, Kuhad A. Neuropsychopathology of autism spectrum disorder: complex interplay of genetic, epigenetic, and environmental factors. *Adv Neurobiol*. 2020;24:97–141.
3. Chan WK, Griffiths R, Price DJ, et al. Cerebral organoids as tools to identify the developmental roots of autism. *Mol Autism*. 2020;11(1):58.
4. Clarke L, Fung LK. The impact of autism-related training programs on physician knowledge, self-efficacy, and practice behavior: A systematic review. *Autism*. 2022;26(7):1626–1640.
5. Constantino JN. Early behavioral indices of inherited liability to autism. *Pediatr Res*. 2019;85(2):127–133.
6. Crittenden PM. Formulating autism systemically: Part 1- A review of the published literature and case assessments. *Clin Child Psychol Psychiatry*. 2017;22(3):378–389.
7. Doherty M, Haydon C, Davidson IA. Recognising autism in healthcare. *Br J Hosp Med (Lond)*. 2021;82(12):1–7.
8. Genovese A, Butler MG. The autism spectrum: behavioral, psychiatric and genetic associations. *Genes (Basel)*. 2023;14(3):677.
9. Alcocer Alkureishi L, Hageman JR. Caring for children with autism. *Pediatr Ann*. 2024;53(1):e1–e2.
10. Besag FM. Current controversies in the relationships between autism and epilepsy. *Epilepsy Behav*. 2015;47:143–146.
11. Dias CM, Walsh CA. Recent advances in understanding the genetic architecture of autism. *Annu Rev Genomics Hum Genet*. 2020;21:289–304.
12. Elsabagh M. Linking risk factors and outcomes in autism spectrum disorder: is there evidence for resilience? *BMJ*. 2020;368:16880.
13. Autism: fitting the pieces together. *EBioMedicine*. 2015;2(4):273.
14. Bahmani M, Sarrafchi A, Shirzad H, et al. Autism: pathophysiology and promising herbal remedies. *Curr Pharm Des*. 2016;22(3):277–285.
15. Arberas C, Ruggieri V. Autism. Genetic and biological aspects. *Medicina (B Aires)*. 2019;79(Suppl 1):16–21.
16. Barnett R. Autism. *Lancet*. 2016;387(10033):2082.
17. De Giambattista C, Ventura P, Trerotoli P, et al. Subtyping the autism spectrum disorder: comparison of children with high functioning autism and Asperger syndrome. *J Autism Dev Disord*. 2019;49(1):138–150.
18. Dell’Osso L, Dalle Luche R, Maj M. Adult autism spectrum as a transnosographic dimension. *CNS Spectr*. 2016;21(2):131–133.
19. Famitafreshi H, Karimian M. Overview of the recent advances in pathophysiology and treatment for autism. *CNS Neurol Disord Drug Targets*. 2018;17(8):590–594.
20. Fein D, Helt M. Facilitating autism research. *J Int Neuropsychol Soc*. 2017;23(9–10):903–915.
21. Rudkovska OD. Depression: a new look at etiopathogenesis and treatment. *J Psychol Clin Psychiatry*. 2022;13(3):71–72.
22. Rudkovska OD. Alzheimer’s disease: is there a way out of the deaf corner? *J Psychol Clin Psychiatry*. 2023;14(5):136–137.
23. Burchynsky S. Modern hypnotics. *Bull Pharmacol Pharm*. 2001;1(2).
24. Rudkovska OD. Global epidemics: a new look at etiopathogenesis and treatment. *Adv Ophthalmol Vis Syst*. 2023;13(3):90–91.
25. Basenko LI, Tymruk-Skoropad KA. Methods and indicators for evaluating the effectiveness of physical therapy for preschool children with autism. *Art Med*. 2023;2(26):193–204.