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Ann. Acad. Med. Siles. (online) 2025; 79: 355–360
eISSN 1734-025X
DOI: 10.18794/aams/209704
www.annales.sum.edu.pl

OPIS PRZYPADKU
CASE REPORT

Visual field defects in the course of bipolar affective disorder in a teenager

Ubytki pola widzenia w przebiegu choroby afektywnej dwubiegunowej u nastolatki

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ABSTRACT

Visual field defects are associated with diseases of visual and central nervous systems or pituitary gland, such as retinopathies, optic nerve disorders and visual pathway pathologies or proliferative conditions. A 17-year-old girl with multiple endocrine illnesses – hyperprolactinemia, hypothyroidism, hyperinsulinemia, obesity and bipolar affective disorder – reported visual field disturbances, which were confirmed in kinetic and static visual field examination. Magnetic resonance imaging of the head did not reveal any significant pathologies. Fundus examination showed no abnormalities. The severity of visual field defects changed over time. There were periods of deterioration, when the field of vision narrowed into a tunnel vision, and periods of improvement. A thorough history taking and analysis of psychiatric documentation indicated that episodes of visual field disturbances depended on the phase of bipolar disorder. During mania, the field of vision improved, and during depression, it worsened. This case report shows that not only somatic diseases can lead to visual field defects. After excluding proliferative conditions, central nervous systems or retinal degeneration, it is necessary to expand the differential diagnosis to include a thorough medical history including psychiatric diseases in the family, as well as a psychiatric examination of the patient. The exclusion of optic neuropathy and structural brain changes in the presented patient suggest that the symptoms are caused by bipolar affective disorder.

KEYWORDS

visual field defects, bipolar affective disorder, mania, depression, ophthalmology

Received: 17.06.2024 **Revised:** 19.08.2025 **Accepted:** 19.08.2025 **Published online:** 08.10.2025

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Publisher: Medical University of Silesia, Katowice, Poland

STRESZCZENIE

Zaburzenia pola widzenia są związane z chorobami narządu wzroku, ośrodkowego układu nerwowego lub przysadki mózgowej, takimi jak retinopatie, zaburzenia nerwu wzrokowego, patologie dróg wzrokowych czy stany rozrostowe. Dziewczynka, lat 17, z wieloma chorobami endokrynologicznymi – hiperprolaktynemia, niedoczynność tarczycy, hiperinsulinemia, otyłość i choroba afektywna dwubiegunowa – zgłaszała zaburzenia pola widzenia, które zostały potwierdzone w kinetycznym i statycznym badaniu pola widzenia. Rezonans magnetyczny głowy nie wykazał istotnych patologii. Badanie dna oka również nie wykazało nieprawidłowości. Nasilenie zaburzeń w obrębie pola widzenia zmieniało się z biegiem czasu. Występowały okresy pogorszenia, kiedy pole widzenia zawężało się do widzenia tunelowego, a także okresy poprawy. Dokładny wywiad oraz analiza dokumentacji psychiatrycznej wykazały, że epizody zaburzeń pola widzenia zależą od fazy choroby afektywnej dwubiegunowej. W manii pole widzenia poprawiało się, w depresji ulegało zawężeniu. Opisany przypadek pokazuje, że nie tylko choroby somatyczne mogą prowadzić do wad pola widzenia. Po wykluczeniu organicznych chorób rozrostowych, chorób ośrodkowego układu nerwowego czy zwyrodnienia siatkówki konieczne jest poszerzenie diagnostyki różnicowej o dokładny wywiad lekarski, obejmujący choroby psychiatryczne w rodzinie, a także badanie psychiatryczne samego pacjenta. Wykluczenie neuropatii wzrokowej i zmian strukturalnych mózgu u prezentowanej pacjentki sugeruje, że przyczyną objawów jest choroba afektywna dwubiegunowa.

SŁOWA KLUCZOWE

defekty pola widzenia, zaburzenie afektywne dwubiegunowe, mania, depresja, okulistyka

INTRODUCTION

Bipolar affective disorder (BPAD) is a mental disorder manifested by pathological mood changes such as manic, hypomanic and depressive episodes [1,2,3,4]. A depressive episode in BPAD resembles unipolar depression, but is distinguished with coexistence of psychotic symptoms, excessive sleepiness, frequent recurrence, early onset [2,4]. With the development of the disease, there is a growing memory deterioration, impairment of attentional processes and executive functions [4]. Somatic disorders like cardiovascular disease, endocrine disorders, metabolic syndrome are also observed in patients with BPAD [4,5]. Somatic problems may be side effects of the therapy used, noncompliance with medical recommendations [4]. Yet no case of visual field abnormalities in the course of BPAD has been described in the literature. However, a tubular visual field contraction is not a pathognomonic symptom in BPAD, it can have psychogenic and somatic origin. Visual field defects occur in ophthalmic, neurological, genetic and mental diseases. Differentiating dissociative visual field loss from somatic causes requires multispecialist cooperation and a thorough diagnostics [6]. The aim of this study is to present the case of a teenage female patient with lunette-type visual field loss in the course of BPAD.

CASE REPORT

A 15-year-old girl was admitted to the Department of Paediatric Endocrinology to extend the diagnosis of increasing serum prolactin values, which had been observed since early childhood, and newly emerging subjective visual field disturbance. Previous treatment of hyperprolactinemia included oral cabergoline (Dostinex 0.5 mg twice a week). The patient was treated for hypothyroidism due to autoimmune thyroiditis (Euthyrox 75 ug once daily). Additionally, the girl suffered from menstrual disorder (oral hormonotherapy), hyperinsulinemia, obesity, acne (isotretinoin 20 mg once daily) and BPAD (lithium 0.5 g once daily, olanzapine 20 mg once daily). She underwent magnetic resonance imaging (MRI) of the head and pituitary gland with intravenous administration of contrast agent, which did not reveal any abnormalities in these structures. The patient was referred to the Outpatient Ophthalmology Clinic for the further diagnosis of visual field disturbance. During the examination, the best corrected distance visual acuity (BCDVA) and the best corrected near visual acuity (BCNVA) were determined, which were 0.9 and 0.5 for the right eye (RE), respectively and for the left eye (LE) 1.0 and 0.5. Standard Snellen and near vision-Jaeger charts were used to assess visual acuity. The intraocular pressure in both eyes was within normal limits. Slit lamp examination of the anterior and posterior segments of the eye revealed no abnormalities. She suffered from periodic peripheral visual field disturbance. Kinetic perimetry examination (Figure 1) showed a 10° narrowing of the visual field in both eyes in all quadrants; static perimetry examination showed visual field defects of a similar extent (Figure 2).

Based on imaging and neurological tests as well as on the exclusion of ophthalmological grounds for the reported symptoms, follow-up perimetry tests were planned within 3 months, but the patient did not attend the examination. Another diagnostic stay at the Department of Paediatric Endocrinology took place 1.5 years later. During this time, the patient reported significant deterioration of distance vision, periodic

disturbances of the peripheral visual field and headaches in the parietal area. The repeated MRI scans showed enlargement of the pituitary gland, with the dominant lobe compressing and modeling the neural part. Additionally, the anterior part of the glandular lobe was convex above the sellar diaphragm into the suprasellar cistern and cavernous sinuses. Nevertheless, the enlarged pituitary gland did not cause pressure on the visual pathway, neither individual optic nerves nor optic chiasm were impaired. BCDVA for both eyes was 0.4 whereas BCNVA for both eyes was 0.75. Re-examination of kinetic perimetry narrowed the field of view to 10° from the fixation point in all quadrants of both eyes – a tunnel visual field contraction. Visual evoked potential (VEP) examination (Figure 3) and examination of the anterior and posterior segments of both eyes revealed no abnormalities.

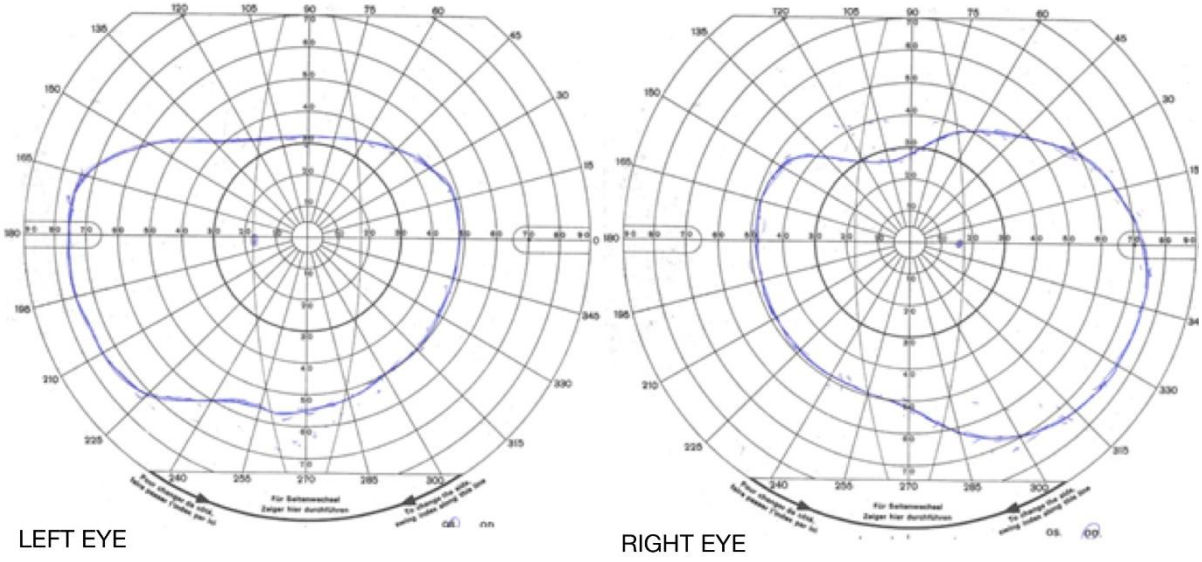

Fig. 1. Kinetic perimetry examination.

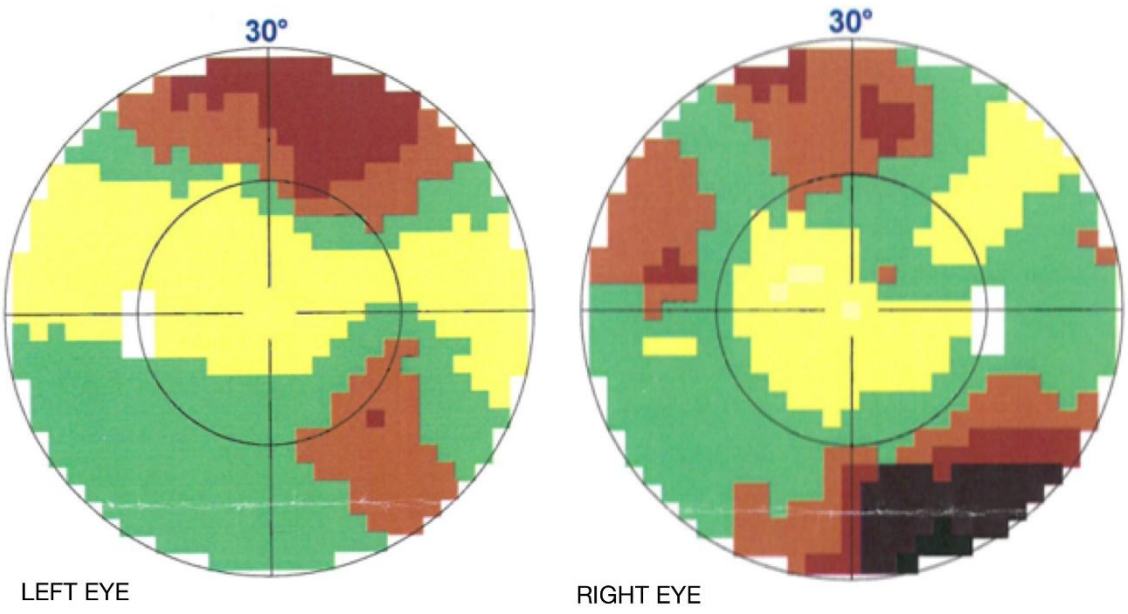

Fig. 2. Static perimetry examination.

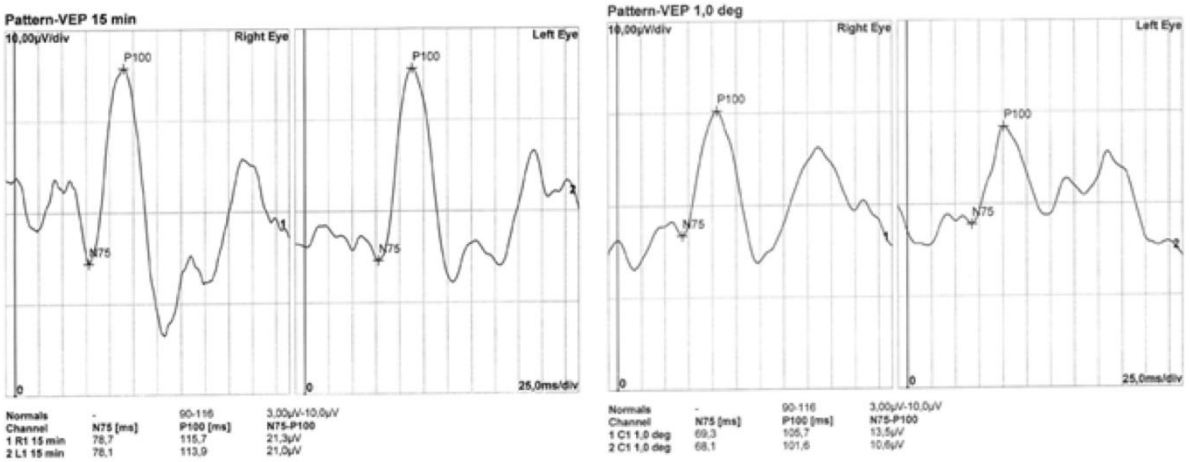

Fig. 3. Visual evoked potential (VEP) examination.

The diagnostics were extended to include RETeval® examination, optical coherence tomography (OCT) of the optic nerve and the thickness of the ganglion cell complex, the results of which were in normal range in every follow-up-examination and allowed the exclusion of glaucomatous neuropathy. A thorough history-taking and in-depth analysis of psychiatric documentation showed that the occurrence of narrowing in the visual field was related to the phase of BPAD. During the last ophthalmological examination, when a decrease in visual acuity and a tubular vision were observed (Figure 4), she was apathetic, uncooperative, showed no interest in tests, and was reluctant to cooperate – which reflected the phase of depression.

Disturbances in the visual field occurred both during an episode of increased and depressed mood, but during an episode of depressed mood they were more severe, resulting in a significant peripheral narrowing of the visual field and, additionally, in a significant deterioration of visual acuity. During periods of remission of BPAD, the patient did not report any visual field disturbances. The presented visual field tests of the patient are documented examples of visual field disturbance in particular phases of the disease. We know from the history that between visits to the clinic she experienced similar episodes, but did not report for follow-up-examinations. Due to the demonstrated correlation, the patient was required to re-evaluate her mental health and modify treatment.

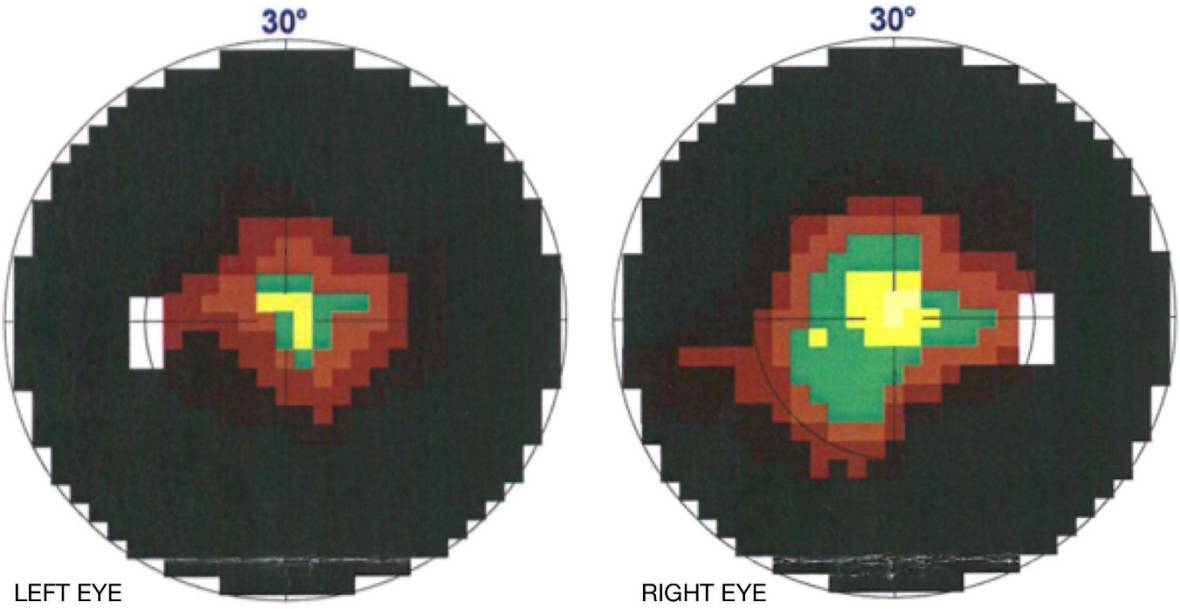

Fig. 4. Repeated static perimetry examination.

DISCUSSION

In many patients, including children, subjective visual disturbances have no identifiable organic cause. These symptoms may result from psychosomatic problems or be simulated [6,7,8,9]. Patients usually report loss of visual acuity, blurred vision, visual field disturbances [6,7]. In most cases of psychosomatic disorders, they are described by patients as tunnel vision [6]. Somers at al. [7] reported that in 50% of cases out of a group of 170 children with vision disorders the vision was of a non-organic visual loss (NOVL). Most cases of NOVL occurred in girls, which was significant in comparison to the population of patients suffering from visual impairment due to organic causes, where no gender differences were proven. Psychiatric examination showed a higher frequency of co-occurring disorders such as depression, anxiety and somatization in patients with NOVL [7]. Early diagnosis of NOVL is important in patients with psychiatric symptoms, as it allows quick consultation with a psychiatrist which improves the further prognosis [6,7,9].

BPAD affects over 1% of global population. The first symptoms usually appear at a young age [2,4,10]. Among children and adolescents with the onset of the disease in childhood, greater irritability, mood lability and a more frequent co-occurrence of attention deficit hyperactivity disorder (ADHD) were observed [11,12].

BPAD may be accompanied by various types of visual disturbances [13,14,15]. Fernandes et al. [13] assessed the color vision in patients with BPAD. The study showed that these patients had higher color discrimination thresholds. This visual function was also linearly correlated with the degree of mania [13]. Distance vision disorders and quality of life in schizophrenia, BPAD and severe depression were the subject of research in one of the psychiatric hospitals in Beijing. One-eighth of patients showed impaired distance vision and the associated reduced quality of life [14].

The coexistence of vision disorders, including color vision disorders and contrast sensitivity coexist with changes in the retinal layers examined using OCT in patients with BPAD [16,17,18]. In those with BPAD, whose color vision was poorer than in the general population, the Lanthony test showed significant thinning in the temporal areas of the retinal nerve fiber layer in two separate clinical studies [16,18]. In one of them, the full macular thickness, ganglion cell layer and internal plexiform layer were also reduced. A significant correlation has been demonstrated between reduced contrast sensitivity and thickness of the internal plexiform layer [16]. Vilades Palomar et al. [18] also tested contrast sensitivity and measured macular thickness, but did not show any significant changes.

It has been proven that people with severe depression have focal loss of the visual field. Patients also had retinal layer thickness measurements performed using OCT, which showed significant thinning of the ganglion cell inner plexiform layer. The severity of depression correlated with the severity of visual field loss and retinal ganglion cell thinning [19].

Medications can affect vision. Drug-induced toxic optic neuropathy manifests as disturbances in the visual field and may be caused by various types of drugs [20]. A case of optic disc edema has been reported during long-term use of lithium carbonate [21]. In a study on the side effects of lithium, there were non-significant trends towards visual field narrowing [22]. A normal VEP examination in the described patient, which showed no damage to the nerve fibers along their entire length, allows us to conclude that the drugs were not the cause of visual field disturbances.

CONCLUSIONS

Visual field defects, including tunnel vision, may be the result of organic diseases or have a psychosomatic cause. Vision disorders are also the subject of research in other psychiatric disorders. Both objective diagnostic tests and the patient's subjective feelings are important in the diagnosis of visual disorders. Extensive diagnosis, detailed history and cooperation of many specialists, including psychiatrists, are necessary.

Authors' contribution

Study design – A. Ziemba, E. Filipek

Manuscript preparation – A. Ziemba, A. Hitnarowicz, A. Jerzak, A. Tronina, E. Filipek

Literature research – A. Ziemba, A. Hitnarowicz, A. Jerzak

Final approval of the version to be published – E. Filipek

REFERENCES

1. Grande I., Berk M., Birmaher B., Vieta E. Bipolar disorder. Lancet 2016; 387(10027): 1561–1572, doi: 10.1016/S0140-6736(15)00241-X.

2. Broniarczyk-Czarniak M.J., Sowińska K., Białas J., Talarowska M. Ciężka depresja z nasilonymi zaburzeniami funkcji poznawczych czy otępienie? Psychiatria 2019; 16(4): 218–226.

3. Carvalho A.F., Firth J., Vieta E. Bipolar disorder. N. Engl. J. Med. 2020; 383(1): 58–66, doi: 10.1056/NEJMra1906193 .

4. Gałecki P., Szulc A. Zaburzenia nastroju (afektywne) (F30-F39). In: Psychiatria. Edra Urban & Partner. Wrocław 2020, s. 189–235.

5. Liou Y.J., Chen M.H., Hsu J.W., Huang K.L., Huang P.H., Bai Y.M. Levels of circulating endothelial progenitor cells inversely correlate with manic and positive symptom severity in patients with bipolar disorder. Brain Behav. 2022; 12(6): e2570, doi: 10.1002/brb3.2570.

6. Brunner R., Jägle H., Kandsperger S. Dissociative visual loss in children and adolescents. Klin. Monbl. Augenheilkd. 2021; 238(10): 1084–1091, doi: 10.1055/a-1617-3193.

7. Somers A., Casteels K., Van Roie E., Spileers W., Casteels I. Non--organic visual loss in children: prospective and retrospective analysis of associated psychosocial problems and stress factors. Acta Ophthalmol. 2016; 94(5): e312–e326, doi: 10.1111/aos.12848.

8. Moore Q., Al-Zubidi N., Yalamanchili S., Lee A.G. Nonorganic visual loss in children. Int. Ophthalmol. Clin. 2012; 52(3): 107–123, xii, doi: 10.1097/IIO.0b013e31825a1201.

9. Mojon D.S., Schläpfer T.E. Nonorganic disorders in ophthalmology: overview of diagnosis and therapy. [Article in German]. Klin. Monbl. Augenheilkd. 2001; 218(5): 298–304, doi: 10.1055/s-2001-15885.

10. Vieta E., Salagre E., Grande I., Carvalho A.F., Fernandes B.S., Berk M. et al. Early intervention in bipolar disorder. Am. J. Psychiatry 2018; 175(5): 411–426, doi: 10.1176/appi.ajp.2017.17090972.

11. Cichoń L., Janas-Kozik M., Siwiec A., Rybakowski J.K. Clinical picture and treatment of bipolar affective disorder in children and adolescents. Psychiatr. Pol. 2020; 54(1): 35–50, doi: 10.12740/PP/OnlineFirst/92740.

12. Birmaher B., Axelson D., Strober M., Gill M.K., Yang M., Ryan N. et al. Comparison of manic and depressive symptoms between children and adolescents with bipolar spectrum disorders. Bipolar Disord. 2009; 11(1): 52––62, doi: 10.1111/j.1399-5618.2008.00659.x.

13. Fernandes T.M.P., Andrade S.M., de Andrade M.J.O., Nogueira R.M.T.B.L., Santos N.A. Colour discrimination thresholds in type 1 Bipolar Disorder: a pilot study. Sci. Rep. 2017; 7(1): 16405, doi: 10.1038/s41598-017-16752-0.

14. Zheng W., Tang L.R., Correll C.U., Ungvari G.S., Chiu H.F., Xiang Y.Q. et.al. Frequency and correlates of distant visual impairment in patients with schizophrenia, bipolar disorder, and major depressive disorder. East Asian Arch. Psychiatry 2015; 25(3): 115–121.

15. Fernandes T.P., Shoshina I.I., Oliveira M.E.C., Andreevna V.E., Silva G.M., Santos N.A. Correlates of clinical variables on early-stage visual processing in schizophrenia and bipolar disorder. J. Psychiatr. Res. 2022; 149: 323–330, doi: 10.1016/j.jpsychires.2022.03.014.

16. Garcia-Martin E., Gavin A., Garcia-Campayo J., Vilades E., Orduna E., Polo V. et al. Visual function and retinal changes in patients with bipolar disorder. Retina 2019; 39(10): 2012–2021, doi: 10.1097/IAE.0000000000002252.

17. Satue M., Fuentes J.L., Vilades E., Orduna E., Vicente M.J., Cordon B. et al. Evaluation of progressive retinal degeneration in bipolar disorder patients over a period of 5 years. Curr. Eye Res. 2022; 47(7): 1061–1067, doi: 10.1080/02713683.2022.2064513.

18. Vilades Palomar E., Cipres M., Obis J., Rodrigo M.J., Satue M., Garcia--Martin E. Changes in visual function and retinal structure in patients with manic-depressive illness or bipolar disorder. Acta Ophthalmol. 2017; 95(S259), doi: 10.1111/j.1755-3768.2017.0T024.

19. Jung K.I., Hong S.Y., Shin D.Y., Lee N.Y., Kim T.S., Park C.K. Attenuated visual function in patients with major depressive disorder. J. Clin. Med. 2020; 9(6): 1951, doi: 10.3390/jcm9061951.

20. Li J., Tripathi R.C., Tripathi B.J. Drug-induced ocular disorders. Drug Saf. 2008; 31(2): 127–141, doi: 10.2165/00002018-200831020-00003.

21. Pesando P., Nuzzi G., Maraini G. Bilateral papilloedema in long term therapy with lithium carbonate. Pharmakopsychiatr. Neuropsychopharmakol. 1980; 13(4): 235–239, doi: 10.1055/s-2007-1019636.

22. Kaufman P.L., Jefferson J.W., Ackerman D., Baumgartner S. Ocular effects of oral lithium in humans. Acta Ophthalmol. 1985; 63(3): 327–332, doi: 10.1111/j.1755-3768.1985.tb06815.x.