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CASE REPORT

Multidisciplinary management of acute glaucoma in an elderly depressive patient: A case report

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Abstract

Geriatric depression is one of the most prevalent psychiatric disorders among older adults. The first-line treatment for geriatric depression typically involves the use of antidepressant medications. However, due to age-related physiological changes and the presence of comorbid physical conditions, older patients are often at increased risk of experiencing adverse effects from these medications. Acute glaucoma is a particularly concerning side effect of antidepressants, especially in elderly patients. This article presents a case study demonstrating how exacerbation of ocular side effects can be prevented and how depressive symptoms can be effectively managed by rationalizing medication in elderly patients with depression. This report provides a real-world example of integrating therapeutic strategies, including medication adjustments, with multidisciplinary collaboration in tackling clinical complexities, such as diverse symptoms and high risk in elderly patients. It serves as a valuable reference for clinicians when making treatment decisions in similar cases.

Keywords: Late-life depressive disorder; Glaucoma; Antidepressant drugs; Multidisciplinary management

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1. Background

Depressive disorders in the elderly, defined as depressive conditions occurring in older adults (typically aged ≥60 years), are among the most common psychiatric disorders in this population.[1] The prevalence of depression among the elderly varies significantly across different regions and settings. Among community-dwelling older adults, the prevalence ranges from 4% to 10%,[2] whereas in long-term care facilities, such as nursing homes, the rate can be as high as 50%.[3] The clinical presentation of geriatric depression is often less typical compared to that in younger patients, with symptoms frequently manifesting as psychomotor agitation or retardation, hypochondriacal tendencies, generalized somatic complaints, and psychotic features, all of which are associated with an elevated suicide risk.[1,4] Compared to younger patients, older adults with depression are less responsive to treatment, require longer periods to achieve therapeutic response, and are more likely to experience a chronic course.[4,5] In addition, geriatric depression is strongly linked to a diminished quality of life and an increased risk of mortality.[6] Elderly

patients with depressive disorders often present with multiple comorbid chronic conditions, such as endocrine disorders, cardiovascular diseases, and ocular conditions (e.g., cataracts), which necessitate polypharmacy. The risk of adverse drug reactions is also heightened in the elderly due to age-related changes in drug metabolism and pharmacokinetics.[7,8] Among these, acute glaucoma is a particularly common and clinically significant side effect of antidepressant medications, especially in older adults with predisposing risk factors.[8] If left undiagnosed and unmanaged, acute glaucoma can lead to irreversible visual impairment or blindness, posing a significant challenge in the clinical management of geriatric depression. This article discusses strategies for effectively managing the adverse effects of antidepressant medications, particularly the occurrence of acute glaucoma in elderly patients. Through a case report of an elderly patient with depression who developed acute glaucoma during antidepressant treatment, we highlight valuable clinical lessons. The report underscores the importance of preventing serious ophthalmic complications and optimizing comprehensive treatment strategies for geriatric depression through rational medication adjustments and multidisciplinary collaboration.

2. Case presentation

The patient was a 69-year-old woman with a history of depressed mood, irritability, poor sleep, and multiple somatic complaints, with symptoms persisting for over 3 years. In early 2020, she initially presented with depressed mood, anxiety, reduced energy, and loss of interest without any obvious trigger, accompanied by insomnia, appetite loss, chest tightness, and dizziness. She consulted several departments, but no significant physical abnormalities were identified, and her symptoms did not improve significantly with symptomatic treatment. In 2022, she sought help at an outpatient clinic at a specialized hospital and tried various antidepressant medications, including duloxetine, venlafaxine, and mirtazapine, which proved ineffective. In March 2023, due to the persistence and worsening impact of her symptoms on daily life, she was admitted to a Traditional Chinese Medicine hospital. Following treatment with flupentixol and melitracen, paroxetine, and clonazepam, her mood, sleep, and physical discomfort improved, and she was discharged after stabilization. However, 4–5 months later, her symptoms relapsed. She returned for a follow-up consultation and was treated with mirtazapine monotherapy, but the effect was short-lived. Treatment was then switched to olanzapine, but no significant improvement in mood or energy was observed. On September 26, 2023, the patient was admitted to Chaohu Hospital of Anhui Medical University. Upon admission, it was noted that the patient had underlying conditions such as hypertension, cataracts, and presbyopia. Her Hamilton Depression Rating Scale score was 26, and her Anxiety Rating Scale score was 18. A cranial computed tomography showed age-related cerebral changes, and a psychiatric examination confirmed depressed mood and anxiety, accompanied by significant somatic complaints. After thorough evaluation, the patient was diagnosed with recurrent depressive disorder, moderate episode.

2.1. Drug selection and adjustment

Upon admission, considering the patient's long-standing depressive symptoms and sleep disturbances, the dose of olanzapine was gradually reduced. Symptomatic treatment was initiated with escitalopram oxalate and low-dose mirtazapine. Escitalopram oxalate, a selective serotonin reuptake inhibitor (SSRI), was employed as a conventional antidepressant, offering favorable efficacy and relatively milder side effects. Low doses of mirtazapine were administered to help improve sleep and appetite. However, due to gastrointestinal intolerance, the patient was instructed to stop taking escitalopram oxalate and switch to paroxetine, a commonly used antidepressant selected for better tolerability, efficacy, and lower risk of serious side effects.

2.2. Occurrence of and response to acute glaucoma

During the 4th week of hospitalization, the patient showed a 50% improvement in mood but developed blurred vision after the paroxetine dose was adjusted to 40 mg. Considering the routine ocular side effects that paroxetine may cause, no further adjustments were immediately made; observation was continued, and the patient was closely monitored. In the 5th week, after increasing the dose to 50 mg, the patient experienced a sudden onset of headache, increased eye pressure, elevated blood pressure, and vomiting. A preliminary ophthalmic examination suggested the possibility of acute glaucoma. Given the potential severity of acute glaucoma, along with the patient's medical history and clinical symptoms, an ophthalmologic consultation was promptly requested. Mannitol intravenous infusion and pilocarpine eye drops were administered for management. Acute glaucoma is a relatively common side effect of antidepressants, particularly in elderly patients, making timely treatment adjustments essential. At this point, a joint treatment plan was developed by psychiatrists and ophthalmologists, which included a gradual reduction of paroxetine to 30 mg and a reduction in the doses of mirtazapine and clonazepam. This approach aimed to control the patient's psychiatric symptoms while minimizing further ocular complications. Given the patient's cataract history and the

current mild stage of cataract progression, and based on the ophthalmology team's recommendation, the patient was referred to the ophthalmology department for bilateral cataract ultrasonic emulsification surgery with intraocular lens implantation. This intervention resolved the patient's ocular issues and alleviated drug-induced ocular side effects. The interdisciplinary collaboration between psychiatry and ophthalmology ensured seamless treatment and effectively managed the risk of acute glaucoma.

2.3. Comprehensive management and long-term follow-up

The psychiatry department worked closely with the ophthalmology department in adjusting medication regimens, successfully addressing the ocular issues facing the patient. As a result, the patient's depressive symptoms were significantly alleviated, and acute glaucoma did not recur. Upon discharge, the patient was scheduled for regular follow-up visits with both psychiatrists and ophthalmologists, who closely monitored her condition to ensure the safe use of medications and to prevent the recurrence of ocular discomfort.

3. Discussion

The depressive symptoms in our patient exhibited a complex and varied profile, including not only the typical symptoms such as pessimism, despair, loss of interest, and decreased energy, but also atypical symptoms such as anxiety, fear, and somatic complaints. These atypical symptoms are often insidious and may easily be mistaken for manifestations of other physical illnesses, making diagnosis and treatment particularly challenging. This phenomenon is especially prevalent in older patients and frequently leads to the development of treatment-resistant depression (TRD), which becomes increasingly complex and difficult to manage as the condition progresses. TRD typically requires more sophisticated treatment approaches, often involving the use of multiple antidepressants and other psychotropic medications. This combination not only increases the risk of drug-drug interactions but also raises the potential for adverse effects. Consequently, management of these patients necessitates individualized treatment plans, alongside enhanced monitoring of medication use to ensure both efficacy and safety. As highlighted in studies by Maina *et al*.[9] and Fiorillo *et al*.,[10] the management of TRD should involve a multidimensional, comprehensive strategy, with a strong emphasis on clinical vigilance and multidisciplinary collaboration.

At present, medication remains the primary treatment for depression in the elderly, typically involving antidepressants as the foundation. When necessary, benzodiazepines may be added to alleviate anxiety symptoms and improve the patient's overall condition. The primary mechanism of action of antidepressant drugs is to improve mood and alleviate depressive symptoms by modulating the concentration or activity of neurotransmitters (e.g., serotonin, norepinephrine, and dopamine) in the brain. However, the effects of these medications extend beyond mood regulation and may also impact ocular physiology. For instance, activation of serotonin, norepinephrine, and dopamine receptors can influence the ciliary muscle, increasing the production of aqueous humor and thereby elevating intraocular pressure.[11,12] In addition, adrenergic and dopaminergic receptor activation can cause pupillary dilation, which leads to peripheral iris displacement and occlusion of the trabecular meshwork, ultimately resulting in the closure of the anterior chamber angle and the onset of acute angle-closure glaucoma.[12] Furthermore, many antidepressants possess anticholinergic properties, which can contribute to peripheral iris crowding and blockage of the anterior chamber angle.[12] Therefore, in treating elderly patients with depression, it is important to prioritize medications with minimal cholinergic, noradrenergic, serotonergic, and dopaminergic effects. Since serotonin-norepinephrine reuptake inhibitors and norepinephrine-dopamine reuptake inhibitors act on multiple receptors, their ocular side effects are more pronounced, increasing the risk of inducing angle-closure glaucoma.[13,14] Therefore, these medications are generally not recommended as the first-line treatment for elderly patients with depression. In contrast, SSRIs have a more straightforward mechanism of action and fewer side effects, making them a safer option. An Australian literature review on antidepressant-induced acute glaucoma reported that, among SSRIs, escitalopram is associated with a lower incidence of acute glaucoma. This may be due to its higher selectivity for serotonin, lower inhibition of norepinephrine reuptake, and weaker anticholinergic effects.[15] During the acute exacerbation phase of glaucoma, we considered switching the patient's treatment to escitalopram oxalate. However, given the patient's intolerance to this medication and the potential for worsening ocular discomfort due to polypharmacy during the transition, we opted to reduce the paroxetine dosage. Based on this, we recommend a moderate reduction in antidepressant dosage during acute glaucoma exacerbations, provided that there are no absolute contraindications. This approach helps prevent the recurrence of psychiatric symptoms that may arise from discontinuing or switching medications, while ensuring regular monitoring of intraocular pressure to safeguard ocular health.

Regarding mirtazapine, while it enhances noradrenergic and serotonergic transmission, potentially elevating

intraocular pressure and increasing the risk of angle-closure glaucoma, its effect on the norepinephrine system requires a higher dose.[16] Considering the low dose of mirtazapine in our patient, which was primarily used to improve appetite and sleep rather than significantly activating the noradrenergic system, we decided to continue its use after adjusting the dose to minimize fluctuations. This decision was made following a thorough assessment of the patient's overall condition and the potential risks, aiming to balance treatment efficacy with safety. As for benzodiazepines (e.g., clonazepam), studies suggest that they may have anticholinergic effects, leading to pupillary dilation, which could increase the risk of acute glaucoma.[17] However, the effect of benzodiazepines on acute angle-closure glaucoma remains unclear, with some studies indicating that they may help lower intraocular pressure.[18] Therefore, the ocular side effects of benzodiazepines warrant further investigation. Notably, sleep disturbance itself is a known risk factor for glaucoma. In patients already at risk for glaucoma, abrupt discontinuation of benzodiazepines could exacerbate both sleep and mood disturbances, potentially worsening glaucoma. Consequently, we believe that the use of small benzodiazepine doses during acute glaucomatous exacerbations may be more beneficial than harmful. Finally, a review of the patient's medical history suggested multiple potential risk factors for glaucoma, including advanced age, Asian ethnicity, cardiovascular conditions such as hypertension, short ocular fissure, cataracts, and a shallow anterior chamber.[19] These factors may heighten the risk of ocular complications associated with antidepressant medications. Therefore, before initiating antidepressant treatment, we recommend conducting a brief ocular risk factor assessment and eye examination. If multiple glaucoma risk factors are identified, consideration should be given to delaying antidepressant therapy until the ophthalmological assessment has been completed and ocular health has been confirmed to be stable.

It is important to emphasize that the role of multidisciplinary collaboration in clinical management cannot be overstated, both at the initial stage of glaucoma diagnosis and later, when referral to ophthalmology for cataract surgery is required. Close collaboration between psychiatry and ophthalmology is particularly critical in managing multimorbidity in elderly patients. Depending on the patient's ocular health, adjustments to the antidepressant medication regimen may be necessary, with continuous monitoring by ophthalmologists playing a vital role in supporting clinical decision-making. This interdisciplinary collaboration not only enables a comprehensive assessment of the patient's overall health but also allows for the optimization of individualized treatment plans. In the future, multidisciplinary joint diagnosis and management will be a key direction in the development of psychiatric care.

4. Conclusion

Given that elderly patients are more susceptible to ocular adverse reactions during antidepressant treatment, clinicians should conduct routine ophthalmologic screenings for this population. The selection of antidepressant medications should consider the patient's overall health, potential side effects, and ocular health, especially in elderly patients with pre-existing ocular conditions, to minimize unnecessary risks. During treatment, ocular symptoms should be carefully monitored, and if symptoms such as headache, nausea, blurred vision, or eye pain arise, prompt ophthalmologic consultation and management should be sought.[20] For patients at high risk or experiencing acute glaucomatous exacerbation, a multidisciplinary collaborative treatment approach is recommended. Psychiatrists should work closely with ophthalmologists, cardiologists, and other specialists to develop an individualized treatment plan, ensuring both the safety and efficacy of the therapy.

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Conflict of interest

Huanzhong Liu is an Editorial Board Member of this journal, but was not in any way involved in the editorial and peer-review process conducted for this paper, directly or indirectly. Separately, other authors declared that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

Author contributions

Conceptualization: All authors
Data curation: Ruochen Zhou
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Writing–original draft: Mengting Ye
Writing–review & editing: Mengting Ye, Kai Zhang, Huanzhong Liu

Ethics approval and consent to participate

Informed consent from the patient and her close relatives was obtained before her participation in this study.

Consent for publication

The patient consented to the publication of their data.

Availability of data

Data supporting the findings of this study are available from the corresponding author upon reasonable request.

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