

Original Article

Association between Central Retinal Vein Occlusion and Mental Health Disorders

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Abstract

Purpose: To investigate the association between central retinal vein occlusion (CRVO) and the presence of mental health disorders.

Patients and Methods: This observational study included 120 patients with CRVO, aged 48–82 years. Psychiatric assessment was performed using standardized tools, including the Beck Anxiety Inventory (BAI) and the Beck Depression Inventory (BDI), to evaluate the prevalence of depression, anxiety, and related mental health disorders.

Results: Of the 120 patients, 71 (59.16 %) were diagnosed with mental health disorders, most commonly depression and anxiety. The findings indicate that more than half of patients with CRVO experience significant psychiatric comorbidities.

Conclusion: Mental health disorders, particularly depression and anxiety, are highly prevalent in patients with CRVO. These results underscore the need for routine psychiatric evaluation and integrated care strategies to improve overall outcomes in affected individuals.

Keywords: Retinal Vein Occlusion; Central; Depression; Anxiety; Mental Health; Comorbidity; Mental Disorders.

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Introduction

Stress is an unavoidable condition experienced by people worldwide and has wide-ranging effects on both physical and mental health. Continuous or repeated exposure to stress can lead to psychological disorders such as anxiety and depression, as well as to systemic medical conditions ^{1,2}. Stress has also been shown to play a central role in cardiovascular health. Epidemiological evidence indicates that chronic stress is a significant predictor of coronary heart disease (CHD), while short-term emotional stress may act as a trigger for acute coronary events in individuals with advanced atherosclerosis ³. Employees exposed to occupational stress have likewise been shown to have a higher incidence of CHD events ³. These findings highlight the systemic burden of stress and its close relationship with vascular pathology.

The visual system is not exempt from the effects of stress. Experimental and clinical studies suggest that continuous psychological stress and elevated cortisol levels negatively affect ocular structures and the brain by altering autonomic balance and inducing vascular dysregulation. Sabel et al., ⁴ emphasized that chronic stress may contribute to ocular diseases such as glaucoma and optic neuropathy by impairing ocular blood flow and promoting neurodegeneration. This evidence suggests that stress-related mechanisms may also underlie other vascular eye diseases, raising the possibility of an association between stress, mental health, and retinal vascular occlusion. Central retinal vein occlusion (CRVO) is one of the most common retinal vascular disorders after diabetic retinopathy and represents a major cause of vision loss in adults ⁵. It is characterized by obstruction of the central retinal vein, leading to retinal hemorrhage, edema, and ischemia ⁶. CRVO shares several

risk factors with systemic vascular disease, including hypertension, diabetes mellitus, and hyperlipidemia. Since these systemic conditions are frequently comorbid with psychiatric disorders, patients with CRVO may be particularly vulnerable to psychological distress ⁷. The sudden and often severe visual impairment associated with CRVO may further exacerbate the risk of depression, anxiety, and other mental health disorders, compounding the burden of disease ⁸.

Despite these important clinical implications, relatively few studies have directly investigated the prevalence and spectrum of psychiatric disorders in patients with CRVO. Most prior research has focused on systemic risk factors and ocular outcomes, while the psychological dimensions of CRVO have received less attention. Given the bidirectional links between vascular disease and mental health, and the profound impact of vision loss on quality of life, understanding psychiatric comorbidity in CRVO is critical. Therefore, the present study aimed to evaluate the prevalence and types of mental health disorders in patients with CRVO in order to provide evidence for the importance of integrated ophthalmic and psychiatric care.

Patients and Methods

This observational study included 120 patients diagnosed with central retinal vein occlusion (CRVO) who were referred to the ophthalmology clinic at Basir Eye Clinic, Tehran, Iran, during the year 2024. Patients were eligible if they had a confirmed diagnosis of CRVO based on clinical examination and fundus evaluation. Individuals with a prior history of psychiatric illness or other major ocular diseases were excluded.

Demographic data, including age and sex,

were recorded. Psychiatric evaluation was performed using standardized tools: the Beck Anxiety Inventory (BAI) and the Beck Depression Inventory (BDI). These instruments were used to assess the prevalence and severity of anxiety and depressive disorders among the study participants. The presence of additional psychiatric comorbidities was documented based on structured clinical interviews conducted by trained specialists.

Statistical analyses were performed using SPSS version 25 (IBM Corp., Armonk, N.Y., USA). Descriptive statistics were used to summarize demographic and clinical data. Chi-square tests and t-tests were applied to compare the prevalence of mental disorders across subgroups, with a p -value < 0.05 considered statistically significant.

The study protocol was approved by the institutional ethics committee, and written informed consent was obtained from all participants in accordance with the Declaration of Helsinki.

Results

A total of 120 patients with central retinal vein occlusion (CRVO) were included, with an age range of 48–82 years (mean 63.5 years). Of these, 71 patients (59.2 %) were diagnosed with at least one mental health disorder.

Women were more frequently affected (46 patients, 64.8 %) compared with men (25 patients, 35.2 %) (Table 1).

Among the psychiatric diagnoses, depression was the most common, affecting 24 patients (33.8 %), including 17 women (23.9 %) and 7 men (9.9 %). Anxiety disorders were diagnosed in 21 patients (29.6 %), with 12 women (16.9 %) and 9 men (12.7 %). Post-traumatic stress disorder (PTSD) was observed in 15 patients (21.1 %), including 9 women (12.7 %) and 6 men (8.5 %). Bipolar disorder was identified in 7 patients (9.9 %), 5 women (7.0 %) and 2 men (2.8 %). Finally, 4 patients (5.6 %) were diagnosed with other psychiatric disorders, comprising 3 women (4.2 %) and 1 man (1.4 %) (Table 2).

Discussion

In this study, we investigated the prevalence of psychiatric disorders in patients with central retinal vein occlusion (CRVO). Our findings revealed that 59.2 % of patients with CRVO suffered from at least one mental disorder, with depression and anxiety being the most common. These results suggest that psychiatric comorbidity in CRVO is substantial and deserves more clinical attention.

The observed high prevalence of depression (33.8 %) and anxiety (29.6 %) in our cohort

Table 1: Distribution of psychiatric disorders among patients with CRVO by gender

Psychiatric Disorder	Total n (%)	Women n (%)	Men n (%)
Depression	24 (33.8)	17 (23.9)	7 (9.9)
Anxiety disorder	21 (29.6)	12 (16.9)	9 (12.7)
PTSD	15 (21.1)	9 (12.7)	6 (8.5)
Bipolar disorder	7 (9.9)	5 (7.0)	2 (2.8)
Other psychiatric disorders	4 (5.6)	3 (4.2)	1 (1.4)
Total	71 (100)	46 (64.8)	25 (35.2)

Table 2: Gender distribution of psychiatric comorbidities in CRVO patients

Gender	Patients with psychiatric disorder n (%)	Patients without psychiatric disorder n (%)	Total n (%)
Women	46 (64.8)	6 (12.2)	52 (43.3)
Men	25 (35.2)	43 (87.8)	68 (56.7)
Total	71 (59.2)	49 (40.8)	120 (100)

is in line with previous studies reporting a close relationship between psychological distress and vascular eye diseases. Lee et al.,⁸ found that individuals with mental disorders are at increased risk of developing retinal vascular occlusions, including CRVO, supporting the hypothesis of a bidirectional association between psychiatric illness and retinal vascular disease. Also Ha et al.,⁹ in a nationwide, population-based cohort observed that individuals with depression had a significantly increased risk of developing retinal vein occlusion, further highlighting the bidirectional relationship between psychiatric disorders and retinal vascular disease. In our study, the high frequency of psychiatric disorders among CRVO patients highlights the potential role of stress-related mechanisms, such as autonomic dysregulation and impaired retinal blood flow, in disease progression. This observation is consistent with the suggestion by Sabel et al.,⁴ who emphasized the negative impact of chronic stress and elevated cortisol on ocular perfusion and neural integrity.

Interestingly, we found that women were more frequently affected by psychiatric disorders than men (64.8 % vs. 35.2 %). This gender difference has also been described in the general population, where women tend to have higher rates of depression and anxiety¹⁰. In the context of CRVO, sudden visual loss and its impact on daily functioning may exacerbate psychological vulnerability, particularly in

women.

The clinical implications of these findings are important. CRVO patients often present with significant visual impairment, which can limit independence and reduce quality of life¹¹. The co-existence of depression or anxiety may worsen treatment adherence, impair recovery, and increase the overall disease burden. Early identification of psychiatric symptoms in CRVO patients could therefore improve not only psychological well-being but also ophthalmic outcomes. Integrated care models involving both ophthalmologists and mental health professionals may provide a more comprehensive approach to managing these patients.

Our study has some limitations. First, it was conducted in a single center with a relatively small sample size, which may limit generalizability. Second, psychiatric diagnoses were based on standardized questionnaires (BDI and BAI) rather than full psychiatric interviews, which may have influenced diagnostic accuracy. Third, as the study design was cross-sectional, causal relationships between CRVO and psychiatric disorders cannot be established. Longitudinal studies are needed to clarify whether psychiatric illness is a risk factor for CRVO, a consequence of vision loss, or both.

Despite these limitations, our findings provide valuable insight into the psychological burden of CRVO. The high prevalence of psychiatric

disorders observed underscores the need for regular mental health screening in ophthalmic clinics. Future studies should further explore the mechanisms linking vascular occlusions and mental health, evaluate the long-term impact of psychiatric comorbidities on visual outcomes, and assess the effectiveness of interventions such as counseling, stress management, and psychiatric treatment in improving patient care.

Conclusion

This study found a high prevalence of depression and anxiety among patients with central retinal vein occlusion. These results emphasize the importance of mental health screening and support as part of comprehensive care for affected patients.

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Footnotes and Financial Disclosures

Conflict of interest:

The authors have no conflict of interest with the subject matter of the present manuscript.