Original Article

Spectrum of Manifestations and Therapeutic Outcomes in Vogt–Koyanagi–Harada Syndrome

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ABSTRACT

Purpose: To evaluate the clinical manifestations, management strategies, and treatment outcomes of Vogt–Koyanagi–Harada (VKH) disease in a tertiary care facility of Punjab.

Study Design: Retrospective chart review.

Place and Duration of Study: Al-Ehsan welfare eye Hospital from January 2023 to December 2023.

Methods: There were 26 patients who qualified the inclusion criteria. VKH was diagnosed based on internationally updated diagnostic criteria. They underwent high dose steroids and immunomodulatory therapy. Demographic information, clinical presentations, treatment approaches, and results, such as CMT (central macular thickness) and BCVA (best-corrected visual acuity), were collected. SPSS version 22 was used for the statistical analysis, and a p-value of < 0.05 was considered significant.

Results: The mean age of patients was 35.09 ± 8.8 years, with a predominance of females (61.5%). Treatment involved high-dose corticosteroids and immunomodulatory therapy. BCVA improved from 1.1 ± 0.86 LogMAR at baseline to 0.61 ± 0.138 LogMAR after 6 months ($p < 0.01$). Macular thickness decreased from 596 ± 247 µm to 236.9 ± 27.1 µm after 6 months ($p < 0.01$). There was a positive correlation between premature treatment termination and relapse ($r = 0.490$, $p = 0.013$).

Conclusion: Early diagnosis and treatment with corticosteroids and immunomodulatory therapy significantly improve visual and anatomical outcomes in VKH disease. The findings highlight the necessity of timely diagnosis, adherence to treatment, and a multidisciplinary approach to optimize patient management and minimize complications.

Keywords: Vogt-Koyanagi-Harada, Uveitis, Immunomodulatory therapy, Corticosteroids.

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INTRODUCTION

Vogt-Koyanagi-Harada (VKH) is an idiopathic, immune-mediated condition that targets melanin-associated antigens across multiple tissues.[1] It usually presents as diffuse, bilateral, chronic granulomatous panuveitis, frequently with systemic symptoms that impact the dermatological, neurological, and auditory systems.[2] Despite being rare, VKH is more common in some groups, such as Asians, Hispanics, and Americans, suggesting a possible hereditary susceptibility.[3]

Prodromal, acute uveitic, chronic convalescent, and chronic recurrent are the four main stages of VKH's clinical development.[4,5]During the acute phase, fundoscopy shows exudative retinal detachment.[6] The distinctive "sunset glow fundus," which includes choroidal depigmentation and retinal pigment epithelium atrophy, is indicative of the convalescent phase.[7,8] Recurrences are frequently linked to comorbidities that might negatively impact visual outcomes, including cataract, glaucoma, choroidal neovascularization, and subretinal fibrosis.[9,10]

To slow the progression of disease and improve the visual prognosis, prompt diagnosis and treatment during the "therapeutic window" (the first two to three weeks after onset) are essential. Immunomodulatory therapy (IMT) is advised for long-term disease control, although high-dose corticosteroids are the mainstay of treatment for acute VKH.[11,12] Nevertheless, opinions on the best length of time and mix of these treatments are divided.[13]According to a systematic analysis, recurrence was more common in 44% of individuals receiving corticosteroid monotherapy than in 2.3% of patients getting immunosuppressive and corticosteroid therapy together.[14]

The lack of established treatment guidelines and restricted availability of immunomodulatory treatments in Pakistan make managing VKH even more difficult. To highlight the vital need for early diagnosis and the development of standardized care procedures, this study intends to assess the clinical symptoms, management techniques, and treatment outcomes of VKH patients in a tertiary care hospital.

METHODS

This retrospective study was carried out at Al-Ehsan welfare eye Hospital from, over a one-year period from January 1 to December 31, 2023, following approval from the institutional Ethical Review Committee of Al-Ehsan Welfare Eye Hospital (**AEWS/CERT-84/202)**.The study reviewed the clinical charts of patients diagnosed with VKH within the defined timeframe. Patients over 20 years of age who fulfilled the revised international diagnostic guidelines for VKH[15] and had undergone complete ocular imaging and received immunomodulatory treatment were included. Individuals with systemic illnesses affecting eye, a history of intraocular surgery, secondary glaucoma, choroidal neovascularization at presentation, incomplete medical records, or poor-quality imaging were excluded.

Clinical data was from EMRs (electronic medical records). This involved systematic evaluation of patient demographics, ocular and systemic symptoms, diagnostic imaging, and laboratory results. No face-to-face patient contact occurred, and all data were extracted by trained researchers following standardized protocols to ensure consistency and completeness. Visual acuity measured using Snellen charts was converted to LogMAR values for analysis, while macular thickness was recorded from OCT data.

Data was analyzed using SPSS version 22. Descriptive statistics summarized demographic and clinical data. Quantitative variables were presented as means with standard deviations, while categorical variables were expressed as frequencies and percentages. Paired sample t-tests were used to compare pre- and post-treatment visual acuity and central macular thickness. Pearson's correlation test was applied to examine associations between early treatment discontinuation and disease relapse or complications. A p-value of less than 0.05 was considered statistically significant.

RESULTS

A total of 26 patients with VKH were included (mean age: 35.09 ± 8.8 years). Females constituted 61.5% of the sample (10 males and 16 females). Most patients were from Punjab (n=14, 53.8%), followed by KPK (n=8, 30.8%) and federal capital (n=4, 15.4%).

The most frequent ocular sign was bilateral vitritis with exudative retinal detachment (30.8%). Other presentations are shown in Table 1.

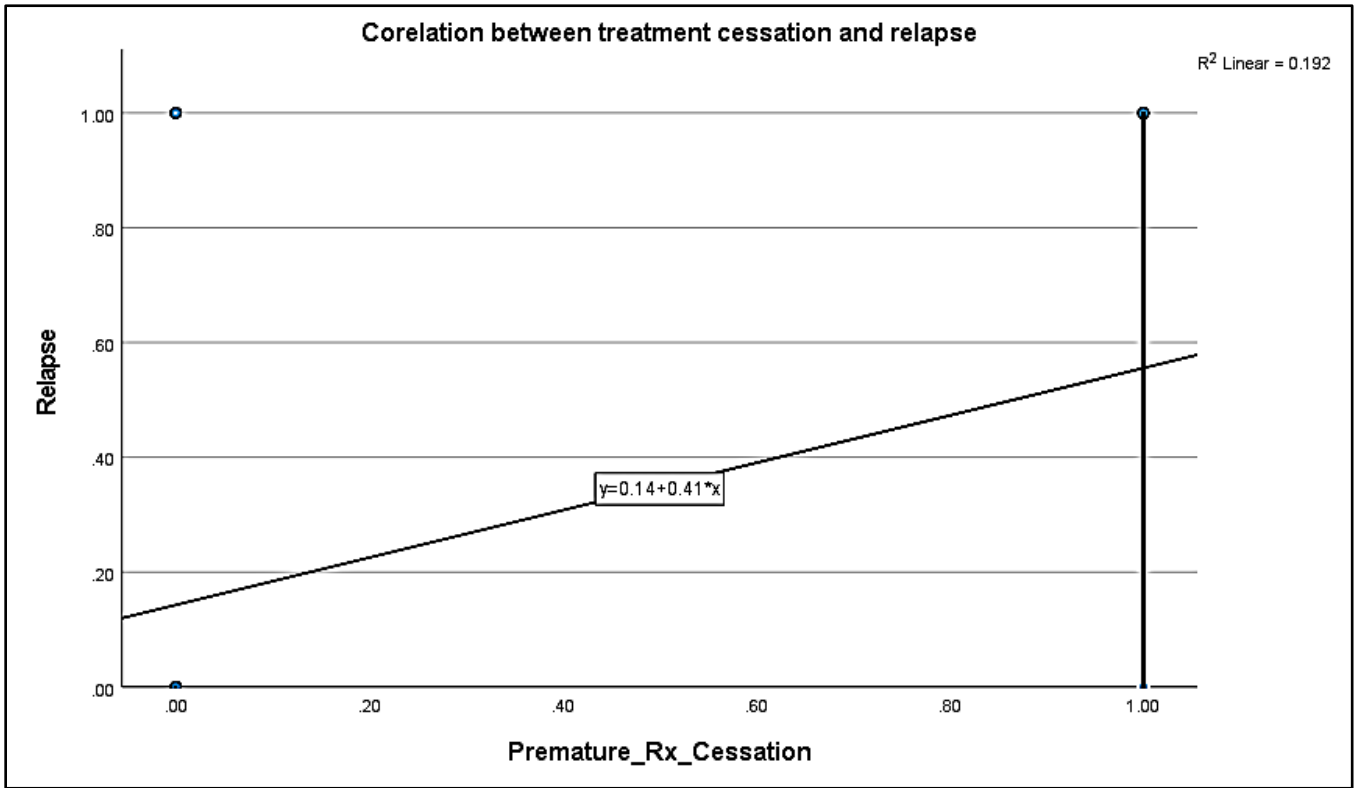
Table 1: *Clinical presentation of the patients.*

Clinical Sign	Number of Patients	Percentage
Bilateral ERD	6	23.1
BL Vitritis + ERD	8	30.8
BL Vitritis+ UL ERD	6	23.1
BL Vitritis + disc edema	2	7.7
BL Vitritis + UL Disc edema	2	7.7
BL ERD + Disc Edema	2	7.7
Total	26	100.0

BL: Bilateral, ERD: Exudative retinal detachment, UL: Unilateral

Systemic corticosteroids were administered to all the patients; 31.9% received intravenous methylprednisolone, and 68.1% received oral steroids. Immunomodulatory therapy was initiated in 69.2% of cases, primarily with Azathioprine (n=14).

BCVA improved from 1.10 ± 0.86 LogMAR to 0.61 ± 0.14 ($p < 0.01$) and CMT reduced from 596.6±247µm to 236.9±27.1µm($p < 0.01$).A statistically significant positive correlation ($r = 0.438$, $p = 0.002$) was found between early treatment cessation and relapse. Linear regression showed that premature treatment cessation increased relapse risk by over 55% (Graph 1).



Graph 1: Correlation between treatment cessation and relapses.

According to the linear regression analysis, patients who discontinued treatment early had an estimated relapse likelihood of approximately 55%, compared to 14% in those who completed the treatment. The regression model accounted for 19.2% of the variability in relapse outcomes. The complications encountered were cataracts (7.7%), macular thinning (7.7%), and glaucoma (7.7%) at six months follow up.

DISCUSSION

According to this study, individuals with VKH show favorable outcomes with early and vigorous treatment with high dose corticosteroids and immunomodulatory therapy in terms of both visual and anatomical results. The effectiveness of prompt intervention is demonstrated by the improvement in visual acuity from a mean of 1.1 ± 0.86 at baseline to 0.61 ± 0.138 LogMAR after 6 months ($p < 0.01$) highlighting the effectiveness of timely intervention. Improvement in macular thickness from 596 ± 247 µm to 236.9 ± 27.1 µm after 6 months ($p < 0.01$) reflects a significant resolution of subretinal fluid and inflammation, supporting the critical role of early corticosteroid administration in controlling disease activity.

The observed moderate positive correlation between premature treatment cessation and relapse ($r = 0.490$, $p = 0.013$) highlights the necessity of sustained immunosuppression to prevent recurrence and related complications. Patients who discontinue treatment prematurely are at a higher risk of experiencing relapse, emphasizing the importance of long-term immunosuppressive therapy and diligent patient follow-up. The low complication rates, including cataracts (7.7%), macular thinning (7.7%), and glaucoma (7.7%), suggest that the benefits of treatment outweigh the associated risks if patients are closely monitored.

The predominance of female patients (61.6%) and the mean age of onset (34.3 ± 9.1 years) align with global epidemiological patterns of VKH, reinforcing the need for a multidisciplinary approach that includes collaboration between ophthalmology and rheumatology to optimize long-term outcomes.[16,17] There is a need to bring awareness among healthcare professionals regarding the clinical signs and symptoms of VKH syndrome, as well as its pathogenesis. This awareness is crucial for timely

diagnosis and management of this complex condition.

A study conducted at the Kyorin Eye Center in Tokyo found that aggressive pulse intravenous corticosteroid treatment resulted in better improvement in visual acuity (93% achieving ≥1.0) at one-year post-treatment, further supporting the efficacy of early intervention.[18] Transitioning to cyclosporine for some patients to manage recurrent inflammation or to spare steroids highlights the need for tailored treatment strategies in VKH management.[18]

Moreover, Yang et al, developed and evaluated comprehensive guidelines for VKH by utilizing data extracted from Chinese population.[19] They developed a new diagnostic criterion for VKH and showed that it outperformed the Revised Diagnostic Criteria for VKH Disease in terms of high sensitivity, NPV, and area under the receiver operating characteristic. However, this criterion was developed using a retrospective analysis and should be evaluated in prospective studies in other racial/ethnic populations.

Our results are also parallel with previous literature emphasizing the importance of sustained immunomodulatory therapy in managing VKH disease and preventing long-term complications.[10,20] The significant relationship between treatment cessation and relapse underscores the necessity for clear patient education regarding the importance of adhering to the entire course of therapy. The moderate strength of the correlation suggests that other factors, such as genetic predisposition, immune response variability, and environmental triggers, may also become a factor in disease recurrence.

The study emphasizes the value of immunomodulatory therapy and early, vigorous treatment with high-dose corticosteroids in enhancing the visual and anatomical outcomes of individuals with VKH syndrome. The importance of prompt intervention is highlighted by the notable change in macular thickness and visual acuity. The correlation analysis emphasized the critical role of early diagnosis, adherence to treatment, and timely referral to rheumatology in improving outcomes and minimizing relapse and complications. These findings advocate for a multidisciplinary approach to optimize patient management and outcomes.

Although this study offers insightful information, however, small sample size, retrospective study design and the single-center design limit its applicability. To confirm these results and improve treatment options, larger cohorts and longer follow-up are necessary for future prospective research. For VKH patients, reducing the risk of relapses and maximizing visual and structural results need early referral to a rheumatologist for immunomodulatory therapy and adherence to a systematic treatment regimen.

CONCLUSION

Early diagnosis and treatment with corticosteroids and immunomodulatory therapy significantly improve visual and anatomical outcomes in VKH disease. The findings highlight the necessity of timely diagnosis, adherence to treatment, and a multidisciplinary approach to optimize patient management and minimize complications.

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Patient's Consent: Researchers followed the guide lines set forth in the Declaration of Helsinki.

Conflict of Interest: Authors declared no conflict of interest.

Ethical Approval: The study was approved by the Institutional review board/Ethical review board **(AEWS/CERT-84/202)**.

REFERENCES

1. **Yang P, Liao W, Pu Y, Zhong Z, Wang H, Yu Q, et al.** Vogt-Koyanagi-Harada disease in pediatric, adult and elderly: clinical characteristics and visual outcomes. Graefes Arch Clin Exp Ophthalmol. 2023;**261(9):**2641-2650. Doi: 10.1007/s00417-023-06058-5.
2. **Tugal-Tutkun I, Smit DP, Abu El-Asrar AM.** Vogt-Koyanagi-Harada disease. Ocul Immunol Inflamm. 2024;**32(3):**363–366. Doi: 10.1080/09273948.2024.2331401.
3. **Kaza H, Tyagi M, Agarwal K, Behera S, Pappuru RR, Mohan S, et al.** Vogt Koyanagi Harada Disease In Paediatric Age Group: Clinical Characteristics, Remission, Recurrences and Complications in Asian Indian Population. Semin Ophthalmol. 2022;**37(2):**187-192. Doi: 10.1080/08820538.2021.1948067.
4. **Rahman N, Artiaga JCM, Bouras K, Luis J, Rees A, Westcott M.** Immunosuppressive therapy for Vogt-Koyanagi-Harada disease: a retrospective study and review of literature. J Ophthalmic Inflamm Infect. 2023;**13(1):**27. Doi: 10.1186/s12348-023-00333-6.

5. **Al-Baroudi N, Tijani M, Boutimzine N, Cherkaoui O.** Clinical and therapeutic features of pediatric Vogt-Koyanagi-Harada disease. J Fr Ophthalmol. 2020;**43(5):**427-432. Doi: 10.1016/j.jfo.2019.10.005.
6. **Okunuki Y, Tsubota K, Kezuka T, Goto H.** Differences in the clinical features of two types of Vogt-Koyanagi-Harada disease: serous retinal detachment and optic disc swelling. Jpn J Ophthalmol. 2015;**59(2):**103-108. Doi: 10.1007/s10384-014-0367-8.
7. **Urzua CA, Herbort CP Jr, Takeuchi M, Schlaen A, Concha-Del-Rio LE, Usui Y, et al.** Vogt-Koyanagi-Harada disease: the step-by-step approach to a better understanding of clinicopathology, immunopathology, diagnosis, and management: a brief review. J Ophthalmic Inflamm Infect. 2022;**12(1):**17. Doi: 10.1186/s12348-022-00293-3.
8. **Shi T, Lv W, Zhang L, Chen J, Chen H.** Association of HLA-DR4/HLA-DRB1*04 with Vogt-Koyanagi-Harada disease: a systematic review and meta-analysis. Sci Rep. 2014;**4:**6887. Doi: 10.1038/srep06887.
9. **Sakata VM, Da Silva FT, Hirata CE, Carvalho JF, Yamamoto JH.** Diagnosis and classification of Vogt–Koyanagi–Harada disease. Autoimmun Rev. 2014;**13(6):**550–555. Doi: 10.1016/j.autrev.2014.01.023.
10. **Jeroudi A, Angeles-Han ST, Yeh S.** Efficacy of adalimumab for pediatric Vogt-Koyanagi-Harada syndrome. Ophthalmic Surg Lasers Imaging Retina. 2014;**45(4):**332–334. Doi: 10.3928/23258160-20140709-09.
11. **Al-Qahtani DS, Al-Shamrani M.** Case Report of a 4-Year-Old Child with Complicated Vogt-Koyanagi-Harada at a Tertiary Eye Hospital. Middle East Afr J Ophthalmol. 2019;**26(2):**117-119. Doi: 10.4103/meajo.MEAJO_244_18.
12. **Lai TY, Chan RP, Chan CK, Lam DS.** Effects of the duration of initial oral corticosteroid treatment on the recurrence of inflammation in Vogt-Koyanagi-Harada disease. Eye (Lond). 2009;**23(3):**543-548. Doi: 10.1038/eye.2008.89.
13. **Yang P, Ren Y, Li B, Fang W, Meng Q, Kijlstra A.** Clinical characteristics of Vogt-Koyanagi-Harada syndrome in Chinese patients. Ophthalmology. 2007;**114(3):**606-614. Doi: 10.1016/j.ophtha.2006.07.040.
14. **Hayasaka S, Okabe H, Takahashi J.** Systemic corticosteroid treatment in Vogt-Koyanagi-Harada disease. Graefes Arch Clin Exp Ophthalmol. 1982;**218(1):**9-13. Doi: 10.1007/BF02134092.
15. Standardization of Uveitis Nomenclature (SUN) Working Group. Classification Criteria for Vogt-Koyanagi-Harada Disease. Am J Ophthalmol. 2021;**228:**205-211. Doi: 10.1016/j.ajo.2021.03.036.
16. **Ozdal P, Ozdamar Y, Yazici A, Teke MY, Ozturk F.** Vogt-Koyanagi-Harada disease: clinical and demographic characteristics of patients in a specialized eye hospital in Turkey. Ocul Immunol Inflamm. 2014;**22(4):**277-286. Doi: 10.3109/09273948.2013.856448.
17. **Patil YB, Garg R, Rajguru JP, Sirsalmath M, Bevinakatti VA, Kumar M, et al.** Vogt-Koyanagi-Harada (VKH) syndrome: A new perspective for healthcare professionals. J Family Med Prim Care. 2020;**9(1):**31-35. Doi: 10.4103/jfmpc.jfmpc_787_19.
18. **Nakayama M, Keino H, Watanabe T, Okada AA.** Clinical features and visual outcomes of 111 patients with new-onset acute Vogt-Koyanagi-Harada disease treated with pulse intravenous corticosteroids. Br J Ophthalmol. 2019;**103(2):**274-278. Doi: 10.1136/bjophthalmol-2017-311691.
19. **Yang P, Zhong Y, Du L, Chi W, Chen L, Zhang R, et al.** Development and Evaluation of Diagnostic Criteria for Vogt-Koyanagi-Harada Disease. JAMA Ophthalmol. 2018;**136(9):**1025-1031. Doi: 10.1001/jamaophthalmol.2018.2664.
20. **Parchand SM, Saraogi T, Chatterjee S, Gangwe A, Agrawal D, Agrawal D.** Efficacy of azathioprine as a first-line therapy in new onset of acute Vogt-Koyanagi-Harada disease in the Indian population. Saudi J Ophthalmol. 2025;**39(1):**65-70. Doi: 10.4103/sjopt.sjopt_200_23.

Authors Designation and Contribution

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Muhammad Amjad; Consultant Ophthalmologist; *Literature Search, Manuscript Editing, Manuscript Review.*