



Case Report

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Corresponding Author:

Yu Cheol Kim, MD, PhD
Department of Ophthalmology, Dongsan
Medical Center, Keimyung University
School of Medicine, 1035, Dalgubeol-
daero, Dalseo-gu, Daegu 42601, Korea
E-mail: eyedr@dsmc.or.kr

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Failure of Low-Dose Systemic Corticosteroid in Preventing Acute Exacerbation of Human Leukocyte Antigen B27-Associated Anterior Uveitis: a Case Report

You Hyun Lee, Yu Cheol Kim

Department of Ophthalmology, Keimyung University School of Medicine, Daegu, Korea

This case highlights the progression of human leukocyte antigen B27-associated anterior uveitis to panuveitis despite treatment with low-dose systemic corticosteroids. The patient initially experienced slow disease progression with topical steroid therapy, but the condition deteriorated upon the initiation of 20 mg systemic corticosteroids, marked by the development of a cyclitic membrane preventing vitreous assessment. Increasing the systemic steroid dose to 60 mg led to gradual clinical improvement. This case highlights the inadequate immunosuppression with low-dose steroids in severe uveitis and underscores the importance of timely dose escalation to prevent further complications and ensure favorable outcomes.

Keywords: Adrenal cortex hormones, Case reports, Human leukocyte antigen B-27 antigen, Panuveitis, Uveitis, anterior

Introduction

Uveitis, an inflammatory eye disease that targets the uvea or middle layer of the eye, is a notable cause of visual impairment globally, accounting for 2%–10% of blindness cases [1,2]. It is classified according to the initial site of inflammation within the eye, with cases of anterior uveitis (AU) comprising 50%–90% of cases [3–6]. Although uveitis may have both infectious and non-infectious origins, non-infectious causes predominate, accounting for approximately 67%–90% of cases [7–9]. Among non-infectious etiologies, human leukocyte antigen B27 (HLA-B27) is the predominant cause, primarily manifesting as AU [4,10,11]. The prevalence of this disease is approximately 1.5%–2% in the general population [12]. HLA-B27-associated uveitis is characterized by recurrent episodes of acute inflammation, primarily confined to the anterior segment of the eye, with a generally favorable prognosis when managed with topical corticosteroids [13]. However, short-term use of systemic corticosteroids is considered in refractory cases or in those with posterior segment involvement [14]. Despite the standard dosage of systemic corticosteroids being 1 mg/kg daily, less experienced ophthalmologists may opt for low-dose systemic corticosteroids owing to uncertainty in the diagnosis. This case report aims to highlight how administering corticosteroids in an inadequate dosage can fail to prevent disease progression, leading to worsening of the condition.

Case report

The patient was a 28-year-old woman (height, 162 cm; weight, 52.8 kg) who had experienced ocular pain and hyperemia in her right eye for 8 days. She had

been diagnosed with AU at a local medical center and was prescribed topical steroids (Lotepro[®], Bausch & Lomb Incorporated) to be used four times daily and topical bromfenac (Bronuck[®], Ophthalmic Solution) to be used twice daily for 5 days. Despite the initial treatment regimen, her symptoms did not improve; therefore, she visited our clinic. Initial examination revealed that the best-corrected visual acuity (BCVA) was 20/40, and the intraocular pressure (IOP) was 8 mmHg in her right eye. The patient's left eye was normal. Slit-lamp

examination showed the presence of anterior chamber (AC) cells +++, posterior synechiae, and a dim fundus (Fig. 1A). No vitreous cells were observed at this time point. Considering that the patient experienced slightly worsening symptoms, the use of topical steroids was increased to hourly, and topical 1% atropine solution was administered three times daily. Furthermore, systemic steroids were prescribed at 20 mg daily. However, 2 days after the initial visit (10 days from the initial symptoms), the patient revisited our clinic complaining of se-

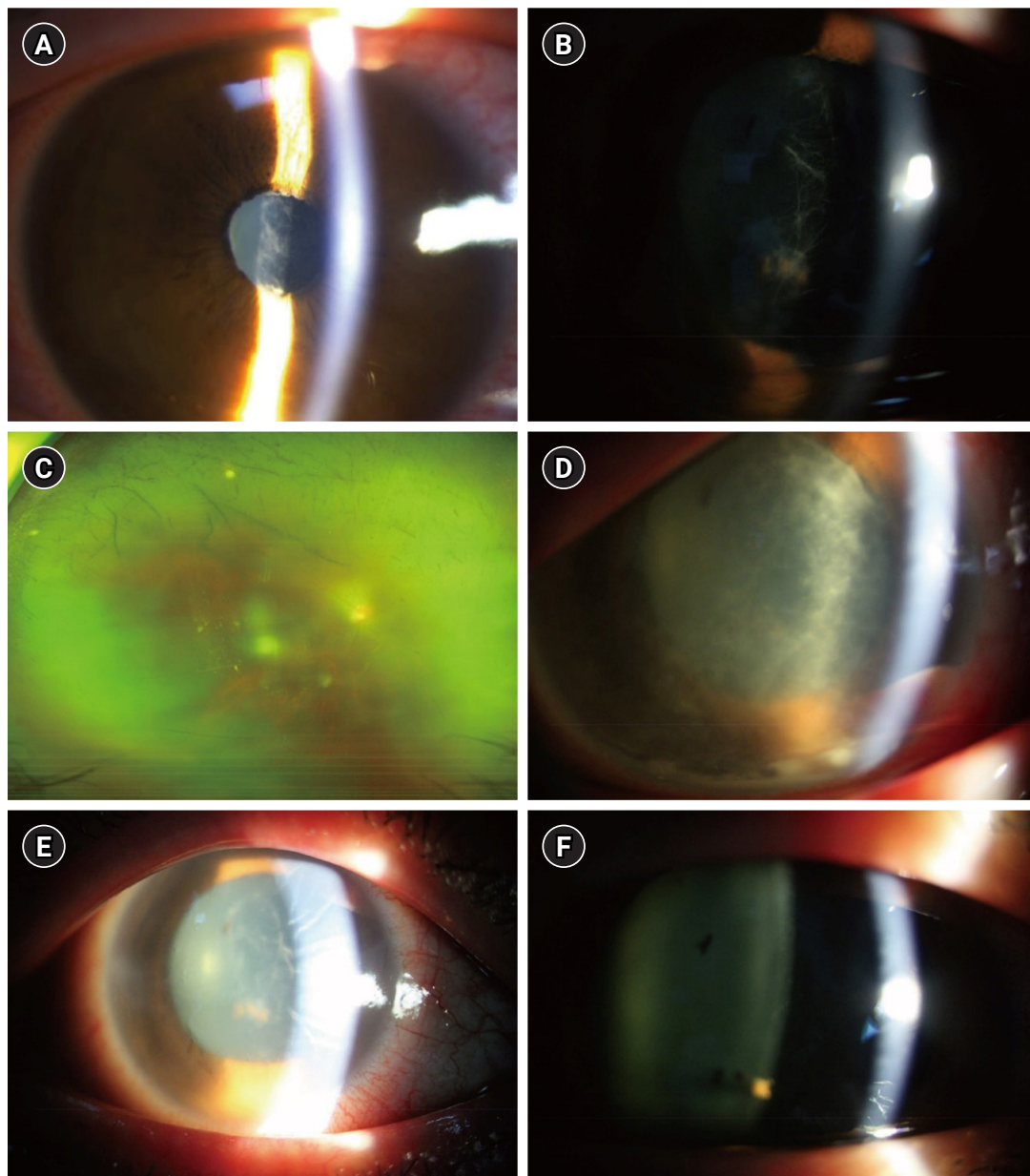


Fig. 1. Slit-lamp examination and fundus photographs of a 28-year-old woman with human leukocyte antigen-B27-associated uveitis. (A) Initiation of low-dose systemic steroids at the initial visit. (B) Slit-lamp examination at 2 days from the initial visit. (C) Fundus photograph at 2 days from the initial visit. (D) Slit-lamp examination at 3 days from the initial visit. (E) Slit-lamp examination at 5 days from the initial visit and initiation of high-dose systemic steroids. (F) Slit-lamp examination at 7 days from the initial visit.

verely decreased vision. The uncorrected visual acuity (UCVA) was 0.02, and the IOP was 13 mmHg. On slit-lamp examination, the AC cells had increased to a count of +++++, with worsening of the cyclitic membrane (Fig. 1B), and the fundus appeared hazier than that at the initial visit (Fig. 1C). The patient was admitted, and a uveitis laboratory workup was conducted, which included testing for HLA-B51 and HLA-B27. Lotepro[®] was changed to 1% Predforte[®] (AbbVie Korea, Seoul, Korea) hourly. One day after admission (11 days from the initial symptoms), the patient's vision decreased to recognizing hand motion, and the IOP was 12 mmHg. The cyclitic membrane was aggravated, and a new hypopyon was observed on the inferior side (Fig. 1D). The vitreous and fundus could not be observed. Interestingly, keratic precipitates were not observed, and ocular pain decreased after systemic steroid administration. Two days after admission (12 days from the initial symptom), the presence of HLA-B27 was confirmed during testing. Other tests, such as those of herpes simplex virus polymerase chain reaction, varicella zoster virus polymerase chain reaction, anti-Ro, anti-La, *Toxoplasma* immunoglobulin M, *Toxocara canis* immunoglobulin G, antinuclear antibody, rapid plasma regain, and tuberculosis interferon gamma returned negative results. A diagnosis of HLA-B27-associated panuveitis was established, and the dose of systemic steroids was increased from 20 to 60 mg. The patient was referred to a rheumatologist for the evaluation of possible ankylosing spondylitis; however, the diagnosis was not confirmed. Three days after admission (13 days from the initial symptom, her UCVA was still recognition of hand motion. Slit-lamp examination showed an AC cell count of +++; however, the hypopyon had resolved, and only the central coagulum was observed on the crystallin lens surface (Fig. 1E). Five days after admission (15 days from the initial symptom), her BCVA was restored to 20/63 using a pinhole, and the IOP was 15 mmHg. The AC cell count decreased to a count of ++, and the coagulum was removed (Fig. 1F). Although the vitreous cell count was +, the fundus was unremarkable. The Predforte[®] eye drop dosage was tapered to 2-hour intervals, and the dosage of systemic steroid was also planned to be tapered slowly. Seven days after admission (17 days from the initial symptom), her BCVA improved to 20/50, and the IOP was 14 mmHg. The AC cell count decreased to a count of +, and the corneal edema resolved. The patient was discharged, and treatment was continued on an outpatient basis with regular follow-up visits.

Discussion

Although uveitis typically involves only the anterior segment of the eye and responds well to topical corticosteroids, severe cases may involve the posterior segment and require systemic treatment. The use of systemic corticosteroids is generally reserved for cases that are unresponsive to topical therapy or exhibit posterior segment involvement, such as panuveitis or macular edema.

In the present case of HLA-B27-associated AU, the patient initially experienced slow clinical progression despite treatment with topical steroids. However, upon initiation of 20 mg of systemic corticosteroids, the clinical course worsened, and the vitreous could not be assessed owing to the presence of a cyclitic membrane; therefore, we presumed that the disease had progressed to panuveitis.

This deterioration of the clinical course can be hypothesized to result from an insufficient dose, leading to inadequate suppression of the immune response. Suboptimal cytokine suppression owing to low-dose corticosteroids can trigger a dysregulated immune response, ultimately exacerbating inflammation [15]. Inadequate systemic corticosteroid dosage fails to halt the progression of HLA-B27-associated uveitis. Furthermore, the gradual clinical improvement observed after increasing the systemic steroid dose to 60 mg following the confirmation of HLA-B27 on laboratory tests underscores the importance of adequate immunosuppression in managing severe cases.

Although the present report is limited by its focus on a single patient, it shows that low-dose systemic corticosteroid therapy is insufficient to halt the clinical progression of severe HLA-B27-associated acute AU. For less experienced ophthalmologists, the decision to escalate to higher doses of systemic steroids or initiate treatment with high-dose systemic corticosteroids may be challenging. This case offers important clinical insights into the management of such situations and highlights the need for the timely and appropriate adjustment of corticosteroid therapy to prevent disease progression.

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None.

Ethics approval

This study was exempted from review by the Institutional Review Board (IRB) of Keimyung University Dongsan Medi-

cal Center (IRB no. 2023-07-083). Informed consent was waived due to retrospective design.

Conflict of interest

The authors have no conflict of interest.

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ORCID

You Hyun Lee, <https://orcid.org/0000-0001-8116-7942>

Yu Cheol Kim, <https://orcid.org/0000-0003-1615-6651>

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