

Anterior Segment Ophthalmia Nodosa: Two Cases Managed Conservatively

Oftalmia Nodosa do Segmento Anterior: Dois Casos Tratados de Forma Conservadora

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ABSTRACT

Ophthalmia nodosa is a rare inflammatory condition caused by penetration of insect setae into ocular structures, most often from *Thaumetopoea pityocampa*. Mechanical and immunologic responses contribute to a broad clinical spectrum ranging from conjunctivitis to posterior segment involvement. Diagnosis is often delayed due to the translucent nature of setae.

We report two anterior-segment cases managed conservatively.

Case 1 - A 41-year-old man presented with anterior uveitis after exposure to pine caterpillars. Several intracorneal setae were removed, while deeper ones were left *in situ*. Topical and systemic corticosteroids led to resolution, with gradual resorption of retained setae.

Case 2 - A 62-year-old woman presented with a large corneal epithelial defect and visual loss after gardening. Combined corticosteroids led to corneal recovery and BCVA 10/10.

These cases highlight distinct presentations of anterior segment ophthalmia nodosa and demonstrate that tailored conservative therapy, when extraction is unsafe, can result in complete resolution and visual recovery.

KEYWORDS: Endophthalmitis; Eye Foreign Bodies/complications; Lepidoptera.

RESUMO

A oftalmia nodosa é uma condição inflamatória rara causada pela penetração de pelos de insetos nas estruturas oculares, mais frequentemente de *Thaumetopoea pityocampa*. Respostas mecânicas e imunológicas originam um amplo espectro clínico, desde conjuntivite até envolvimento do segmento posterior. O diagnóstico é frequentemente tardio devido à natureza translúcida dos pelos.

Apresentamos dois casos com envolvimento do segmento anterior tratados de forma conservadora.

Caso 1 – Homem de 41 anos com uveíte anterior após exposição a lagartas-do-pinheiro. Vários corpos intracorneanos foram removidos e os mais profundos deixados *in situ*. Corticosteroides tópicos e sistêmicos conduziram à resolução, com desaparecimento gradual dos remanescentes.

Caso 2 – Mulher de 62 anos com extenso defeito epitelial corneano e perda visual após jardinagem. Terapêutica combinada com corticosteroides resultou em recuperação corneana e

acuidade visual final de 10/10.

Estes casos evidenciam apresentações distintas do segmento anterior e a eficácia da abordagem conservadora quando a extração não é segura.

PALAVRAS-CHAVE: Corpos Estranhos no Olho/complicações; Endoftalmite; Lepidópteros.

INTRODUCTION

Ophthalmia nodosa is a rare inflammatory condition of the eye caused by the penetration of insect hairs or spines, most commonly from caterpillars such as *Thaumetopoea pityocampa*, into ocular structures.¹ The pathophysiology involves both mechanical irritation and a toxic or immunologic reaction, which can result in a wide spectrum of clinical presentations, ranging from conjunctivitis to severe anterior uveitis, vitritis or even chorioretinal involvement.^{2,3}

Diagnosis is often delayed due to a subtle or absent history of ocular trauma and the overlapping features with other more common causes of ocular inflammation. The inciting setae are typically translucent and may go unnoticed unless a meticulous slit-lamp examination with high magnification is performed. Linear epithelial defects, focal stromal inflammation or unexplained anterior chamber reaction after outdoor exposure should raise suspicion.⁴

While most published cases focus on acute presentation and diagnostic strategies, few reports describe the evolution of anterior segment involvement under conservative management, particularly in cases where substantial intracorneal setae are retained after incomplete removal.

We present two cases of presumed ophthalmia nodosa affecting the anterior segment, with retained setae after partial extraction, both successfully managed without further surgical intervention, to illustrate diagnostic considerations and the natural history under conservative management.

CASE REPORT

We describe two clinical cases of presumed ophthalmia nodosa with anterior segment involvement. Data were collected retrospectively from clinical records, including patient history, slit-lamp findings, therapeutic approach, and follow-up. Both patients were managed according to standard clinical practice. Clinical outcomes were documented over serial follow-up visits until complete resolution. Written informed consent for publication, including clinical images, was obtained from both patients.

CASE 1

A 41-year-old healthy male presented with ocular discomfort and photophobia in the right eye following presumed exposure to caterpillars during outdoor activity. On initial evaluation, slit-lamp biomicroscopy revealed multiple intracorneal foreign bodies, suspected to be pine processionary caterpillar (*Thaumetopoea pityocampa*) setae. Most of the setae were removed, a therapeutic contact lens was applied and the patient was discharged on topical antibiotics and lubricants.

Two days later, the patient presented to the emergency department reporting worsening symptoms. At that time, best-corrected visual acuity (BCVA) in the right eye was 6/10. Slit-lamp biomicroscopy revealed diffuse conjunctival injection, punctate keratitis, fine keratic precipitates, and marked anterior chamber inflammation (4+ cells, 2+ flare). Two retained intracorneal setae were identified: one paracentral, adjacent to the endothelium and another peripheral, located within the stroma. Fundus examination showed no signs of vitritis or chorioretinal lesions, except for an incidental congenital hypertrophy of the retinal pigment epithelium in the inferior periphery.

Based on the clinical findings and recent environmental exposure, a diagnosis of ophthalmia nodosa was established. Treatment was initiated with topical dexamethasone, cycloplegics, prednisolone-chloramphenicol ointment, and a short course of oral corticosteroids (prednisolone 40 mg/day for four days). Oral corticosteroids were tapered over five days, while topical corticosteroids were continued for six weeks with gradual tapering to ensure sustained resolution and prevent rebound inflammation.

Inflammation progressively subsided. Specular microscopy confirmed stable endothelial cell density and morphology, while anterior segment optical coherence tomography (OCT) demonstrated a few retained intracorneal setae. Over time, the intracorneal setae migrated anteriorly and disappeared.

Three months after discontinuation of corticosteroids, the eye remained quiescent, intraocular pressure was within normal range, and BCVA was 10/10. Slit-lamp examination showed only a mild superficial stromal opacity at 2 o'clock without visual impact. The patient remained asymptomatic, with no recurrence of inflammation and no surgical intervention was required.

CASE 2

A 62-year-old woman, with no significant ophthalmic history, presented with acute onset of severe pain, photophobia, and foreign-body sensation in the right eye, developing approximately three hours after handling potted plants. At the presentation, BCVA was <1/10.

Slit-lamp biomicroscopy revealed marked conjunctival and ciliary injection, mucopurulent discharge and a large vertical corneal epithelial defect extending from the inferior limbus toward the central cornea, with several smaller oblique abrasions. Careful eyelid eversion and conjunctival sweeping revealed no visible foreign bodies. Empirical treatment was initiated with topical moxifloxacin and tobramycin, along with cycloplegic agents.

At 48 hours, the epithelial defect had nearly re-epithelialized, but diffuse stromal haze and descemet membrane

folds had developed. Under high magnification, multiple fine, translucent, refractile filaments were observed within the corneal stroma (Fig. 1). The anterior chamber showed mild inflammation (1+ cells and flare) without hypopyon. Fundus examination, though limited by corneal haze, revealed no posterior abnormalities.

On anterior segment OCT, fine hyperreflective structures were observed within the epithelium and anterior stroma, suggestive of retained foreign bodies.

Based on clinical findings and environmental exposure, a diagnosis of ophthalmia nodosa was made. Topical prednisolone acetate 1% (drops and ointment) and systemic corticosteroid therapy (oral prednisolone 60 mg/day) were initiated, while maintaining antibiotic coverage and cycloplegia. Systemic corticosteroids were tapered over two weeks, according to clinical improvement. Topical corticosteroids were continued for three months with gradual tapering to prevent rebound inflammation and ensure long-term disease control.

Over the course of the three-month topical corticosteroid taper, there was progressive resolution of the anterior chamber reaction, clearing of corneal haze, and a reduction in the number of visible intracorneal setae. Specular microscopy confirmed stable endothelial cell density and morphology. Four months after discontinuation of corticosteroids, the cornea was clear, the anterior segment was quiet and no setae were detectable. BCVA improved to 10/10 and the patient remained asymptomatic without recurrence. No surgical intervention was required and only ocular surface lubrication was maintained.

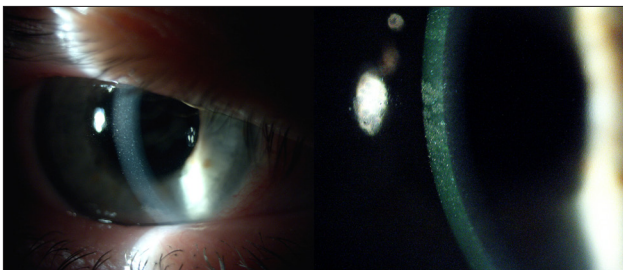


Figure 1. Slit-lamp photographs of the right eye showing multiple fine, translucent intracorneal setae arranged vertically in the anterior stroma, with adjacent focal stromal inflammation.

DISCUSSION

Ophthalmia nodosa presents a diagnostic challenge due to its variable manifestations and the often subtle or delayed visualization of the causative setae. Intracorneal setae were clearly visible at presentation in Case 1, but only became apparent during follow-up in Case 2, illustrating how detection depends on the timing of examination and corneal transparency. This highlights the need for repeated high-magnification slit-lamp examination and sustained clinical suspicion, especially when inflammation follows outdoor exposure. This aligns with previous reports emphasizing that early recognition depends as much on clinical vigilance as on the identification of foreign bodies.⁴

The inflammatory reaction can appear disproportionate to the number of visible setae, reflecting the combined effects of mechanical irritation, immunologic hypersensitivity and the toxic action of thaumetopoein - a protein contained within the setae that enhances local tissue inflammation. The clinical spectrum also depends on the site and depth of penetration, as caterpillar hairs can migrate progressively into deeper ocular layers, maintaining low-grade inflammation over time.²

Our two cases illustrate this variability well. The first patient had mild corneal involvement with few intracorneal setae and relatively preserved visual acuity, whereas the second presented with severe epithelial disruption, stromal haze and profound visual loss. Despite these differences, both achieved complete recovery under medical therapy. The setae in the two cases differed in size and morphology, suggesting that variations in the offending insect or in the structure of the hairs may contribute to the heterogeneity of disease expression.

This clinical contrast underscores the need to individualize treatment intensity according to the degree of inflammation and structural involvement. In the first case, a short course of systemic corticosteroids and a six-week taper of topical therapy were sufficient for resolution, while the more severe presentation required higher systemic doses and a prolonged taper extending over several months.

The role of conservative versus surgical management remains debated. Literature reports management strategies ranging from early extraction to simple observation.⁵ Our approach prioritized gentle but complete removal of all accessible setae, followed by combined topical and systemic corticosteroids to control inflammation. This strategy aligns with previous findings that overly aggressive attempts at removal can cause additional corneal trauma or fragmentation of the hairs, while incomplete extraction often suffices if inflammation is adequately suppressed.^{5,6} Nevertheless, complete removal of all visible hairs at the slit lamp should always be attempted, as retained setae may continue to release inflammatory toxins or migrate within the cornea.

Published cases also describe delayed complications when retained setae migrate deeper or rekindle inflammation. In a case initial conservative therapy was later complemented by surgical removal after recurrence of inflammation.⁷ Similarly, others described late migration of intracorneal setae months after the initial episode, requiring re-intervention.⁸ In a large series, intracorneal setae were identified as the only statistically significant predictor of intraocular penetration, reinforcing the need for careful long-term follow-up in all patients with retained hairs.⁶ Regular fundus examinations are advisable throughout follow-up.

In our experience, meticulous follow-up of the ocular surface and fornices at each visit proved essential for early detection of migrating or newly visible setae. With this close monitoring and gradual corticosteroid tapering, inflammation remained well controlled and retained setae either migrated anteriorly and disappeared or became clinically irrelevant.

Taken together, these findings support a pragmatic ap-

proach: when inflammation responds to corticosteroids and no intraocular extension is evident, conservative management can be both safe and effective. However, early and complete removal of all visible setae remains a key component of optimal management. Tailored therapy, patient education and structured follow-up allow clinicians to avoid unnecessary surgical manipulation while preserving visual outcomes.

CONTRIBUTORSHIP STATEMENT / DECLARAÇÃO DE CONTRIBUIÇÃO

SJ: Manuscript preparation, data collection, and data analysis.

CF, JSR, ERN, and ARV: Data collection, data analysis, and manuscript review.

All authors approved the version to be published.

SJ: Escrita do manuscrito, recolha e análise de dados.

CF, JSR, ERN e ARV: Recolha e análise de dados, e revisão do manuscrito.

Todos os autores aprovaram a versão a ser publicada.

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