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Persistent Back Pain With Recurrent Eye Infection: A Case Report on Spinal Inflammatory Disease With Eye Involvement

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Abstract

As a chronic inflammatory disorder that mostly affects the axial skeleton, ankylosing spondylitis (AS) can affect other areas outside of the joint spaces. These can include the eyes, heart, intestines, lungs, skin, and kidneys. These extra-articular findings may be crucial hints that will prompt further evaluation for a timely diagnosis of AS. Clinicians should consider this progressive inflammatory diagnosis when an individual presents with repeated eye infections associated with chronic back pain. Anterior uveitis is a condition that is closely linked to AS and can result in several eye problems if left untreated. This case describes a 20-year-old male patient with a history of recurrent “eye infections” and chronic lumbosacral back pain who presented with progressive unilateral vision loss initially treated as infectious conjunctivitis. His history of waxing and waning inflammatory-type back pain, managed intermittently with nonsteroidal anti-inflammatory drugs (NSAIDs) and physical therapy without relief, along with the recurrent ocular inflammation, raised suspicion for an underlying inflammatory spondyloarthropathy. Clinical evaluation and extensive serology testing revealed a suspected diagnosis of AS. Commencement of biologics led to a gradual resolution of the symptoms. The progression of visual impairment despite antimicrobial and antiviral therapy highlighted the importance of distinguishing inflammatory uveitis from infectious or other etiologies. This case underscores the diagnostic challenges in young patients with nonspecific axial pain and recurrent ocular symptoms, where delayed recognition may lead to preventable vision-threatening complications.

Categories: Family/General Practice, Rheumatology, Internal Medicine
Keywords: ankylosing spondylitis, anterior uveitis, biologics, chronic low back pain, hla-b27, nsaids

Introduction

Ankylosing spondylitis (AS), also known as Marie-Strumpell disease, is a chronic, progressive inflammatory spondyloarthropathy affecting about 1% of the American population, largely under the age of 45 years, and commonly presents with chronic back pain [1,2]. The exact cause of the disease is unknown, but it is thought to involve a combination of genetic and environmental factors. The inflammatory cascade emerging from AS can attack the eyes, heart, blood vessels, lungs, gut, skin, and tendons [1].

One of the most predominant extra-articular findings is anterior uveitis. Anterior uveitis is the inflammation of the uveal tract involving the iris and ciliary body [3]. This inflammatory condition poses a diagnostic challenge due to its diverse etiologies and clinical features. Uveitis can occur in about 20-30% of patients diagnosed with AS [4]. This percentage can increase, and the eye involvement can worsen as the disease progresses. Individuals with uveitis, when left untreated, are prone to complications such as cataracts, vision loss, glaucoma, macular edema, retinal detachment, and optic nerve damage [3]. The presence of the HLA-B27 gene, which is strongly associated with AS, can influence the development of anterior uveitis, although not everyone with the gene will develop AS [2,3]. A high level of suspicion is crucial in recognizing the warning signs and preventing delay in the prompt diagnosis of this condition, particularly when symptoms persist despite standard treatment [5].

The Assessment of Spondyloarthritis International Society recommended criteria for axial spondyloarthritis included inflammatory back pain for ⩾ 3 months, age of onset < 45 years, sacroiliitis on imaging, magnetic resonance imaging (MRI) or X-ray, or other spondyloarthritis features such as peripheral arthritis, enthesitis, dactylitis, uveitis, psoriasis, or inflammatory bowel disease [5].

This paper presents a case of chronic low back pain in a patient with recurrent eye infections, who was found to have positive HLA-B27 serology, negative radiographic findings, and was diagnosed with AS. The symptoms resolved completely following treatment with biologics. This emphasizes the importance of differentiating inflammatory uveitis from infectious or radicular causes to guide patient management.

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Case Presentation

The patient is a 20-year-old male patient with a history of "childhood eye infections" and multiple emergency room visits for extensive back pain and ‘eye infections.’ The most recent presentation to the emergency department was due to worsening right eye pain and unilateral vision loss. The patient reported that symptoms began one week earlier with right eye itching and blurry vision. He was initially treated for conjunctivitis with antibiotics and asked to follow up with the ophthalmologist. He was also prescribed antivirals and steroids. The patient reported that his symptoms are now worse, with visible eye discharge and light sensitivity, and that he can see with his left eye but only sees outlines with his right eye. He denies any fevers, head or facial trauma, numbness, difficulty speaking or swallowing, headaches, chest pain, shortness of breath, abdominal pain, nausea, vomiting, urinary symptoms, or recent illness.

Of note, the patient had presented three years earlier to the emergency room for a two-year history of lumbosacral axial back pain and radicular pain to the left buttocks. The patient noted that the pain waxes and wanes and denied any trauma, strenuous activities, bowel or bladder incontinence, tingling, or numbness in all four extremities. The patient was treated with nonsteroidal anti-inflammatory drugs (NSAIDS) and sent for physical therapy at that time. The patient followed up in the outpatient clinic for the same back pain and was given the same treatment on a few other occasions. Three months earlier, the patient returned to the clinic with back pain described as severe, sharp, and rated as 9/10 in severity. Physical examination was unremarkable except for the lumbar pain. The imaging performed showed minor intervertebral disc changes but no findings suggestive of axial arthropathy (Figure *1*). The patient was prescribed NSAIDS and sent for physical therapy.



FIGURE 1: Lateral lumbar spine X-ray

Image shows early degenerative changes in the lumbar spine (X). Disc spaces are maintained (arrows)

On the repeat emergency visit, the vital signs were stable. Complete blood count and chemistry were within

normal limits, except for a mildly elevated total white cell count and mild neutrophilic predominance (Table 1). Vital signs are as follows: blood pressure, 126/70 mmHg; pulse, 69/minute; RR, 16/minute; and temperature, 97.1°F.

Parameter	Patient value	Reference range
Complete blood count		
Hemoglobin (g/dL)	14.2	13.2-17.1
Hematocrit (%)	41	39.4-51.1
Leukocytes (×10³/μL)	12.5 H	3.8-10.8
Absolute neutrophils (×10³/μL)	10.05 H	1.5-7.8
Absolute lymphocytes (×10³/μL)	1.838	0.85-3.9
Platelets (×10³/μL)	365	140-400
Chemistry		
Sodium (mmol/L)	136	135-146
Potassium (mmol/L)	4.2	3.5-5.3
Chloride (mmol/L)	103	98-110
Carbon dioxide (mmol/L)	23	20-32
Blood urea nitrogen (mg/dL)	12	7-25
Creatinine (mg/dL)	0.68	0.60-1.24
EGFR (ml/min/1.73m^2)	136	>60
Alkaline phosphatase (U/L)	77	36-130
ALT (U/L)	10	9-46
AST (U/L)	12	10-40
Creatine kinase (U/L)	137	26-366
Calcium (mg/dL)	10.0	8.6-10.3
Glucose (mg/dL)	67	40-70
Total protein (mg/dL)	8.1	6.1-8.2
Albumin (mg/dL)	5.1	3.6-5.2
Globulin (mg/dL)	3.0	1.9-3.7

TABLE 1: Laboratory findings

ALT: alanine aminotransferase; AST: aspartate aminotransferase; EGFR: estimated glomerular filtration rate

Leukocytes and neutrophils are elevated

Follow-up laboratory results shown in Table 2 revealed that the C-reactive protein was elevated, HLA-B27 was positive, CMV IgM was negative, but CMV IgG was positive. The patient was not immune to hepatitis B. Other investigations revealed that the antineutrophil cytoplasmic antibody (ANCA) screen was negative, the ANCA vasculitides test was negative (Proteinase 3 antibody was negative, myeloperoxidase was negative), HLA B*5701 was negative, rheumatoid factor was negative, Behcet disease test was negative, cyclic citrullinated peptide was negative, Beta 2 microglobulin was negative, Lyme disease was negative, ANA was negative, toxoplasma IgM was not elevated, and the sexually transmitted infection panel, including hepatitis, human immunodeficiency virus (HIV), and syphilis were all negative. TSH was normal, glycosylated hemoglobin was normal, and QuantiFERON Gold was negative.

Parameter	Patient value	Reference range
C-reactive protein (mg/L)	11.0 H	<8.0
Sedimentation rate (mm/h)	11	<15
HLA- B27	Positive	Negative
CMV IgG	Positive	Negative
CMV IgM	Negative	Negative
ANCA screen	Negative	Negative
Proteinase-3 antibody (AI)	<1	<1
Myeloperoxidase antibody	<1	<1
HLA B*5701	Negative	Negative
Rheumatoid factor (IU/ml)	<10	<14
HLA B51 Behcet disease	Negative	negative
Cyclic citrullinated peptide (U)	<16	<16
Beta 2 microglobulin	1.25	<2.51
Lyme (index)	<0.9	<0.9
ANA	negative	negative
Toxoplasma IgM (IU/ml)	<8	<8
Chlamydia/gonorrhea RNA	Not detected	Not detected
Hepatitis B surface antibody (mIU/ml)	<5	>10
Hepatitis C antibody	Nonreactive	Nonreactive
HIV	Nonreactive	Nonreactive
RPR	Nonreactive	Nonreactive
TSH (mIU/L)	1.87	0.4-4.5
Glycosylated hemoglobin (%)	4.9	<5.7
Angiotensin-converting enzyme (U/L)	22	9-67
QuantiFERON gold	Negative	Negative

TABLE 2: Laboratory Findings

ANCA: antineutrophil cytoplasmic antibody; ANA: antinuclear antibody; HIV: human immunodeficiency virus; ANA: antinuclear antibody; TSH: thyroid-stimulating hormone

C-reactive protein is elevated, HLA-B27 is positive, CMV IgG is positive, and hepatitis B surface antibody is low

The ophthalmologic exam revealed greater inflammation in the right eye than in the left. Visual acuity in the right eye was 20/400, and right intraocular pressure was 25; visual acuity in the left eye was 20/25+, and left intraocular pressure was 18.

In the left eye, the anterior chamber had conjunctival injection with chemosis (Figure *2*). The optic cup-to-disc ratio is within normal limits (solid circle). Macula and fovea are normal (broken circle). There are no echographic findings consistent with a retinal detachment in the quadrants.

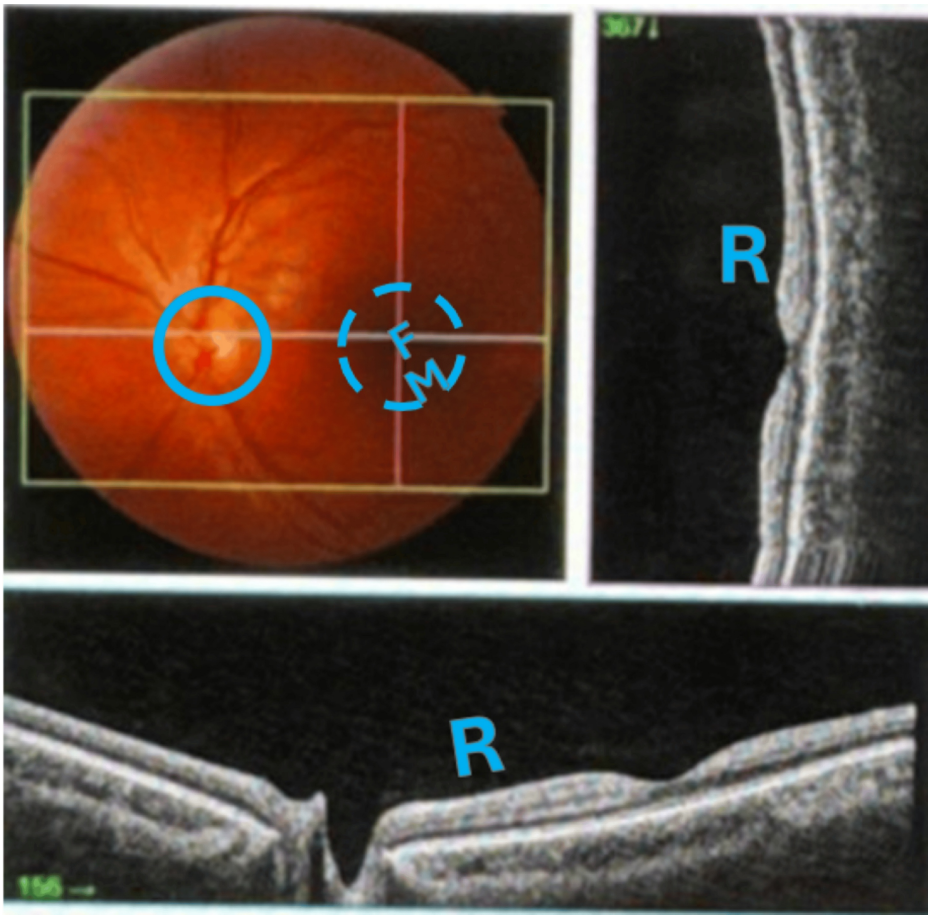


FIGURE 2: Left eye

The optic cup-to-disc ratio is within normal limits (solid circle). Macula and fovea are normal (broken circle). There are no echographic findings consistent with a retinal detachment in the quadrants as shown by the R

In the right eye, the anterior chamber also had conjunctival injection with chemosis and peripheral microscopic edema of the cornea. The posterior chamber could not be examined due to photophobia and hazy vitreous (V) from the inflammation (Figure *3*). The patient was diagnosed with unspecified iridocyclitis, posterior synechia, and chronic uveitis of the right eye. An extensive serologic workup was ordered to rule out systemic disease, and the patient was started empirically on steroids and antiviral medication. The MRI of the pelvis shows no findings suggestive of AS (Figure *4*).

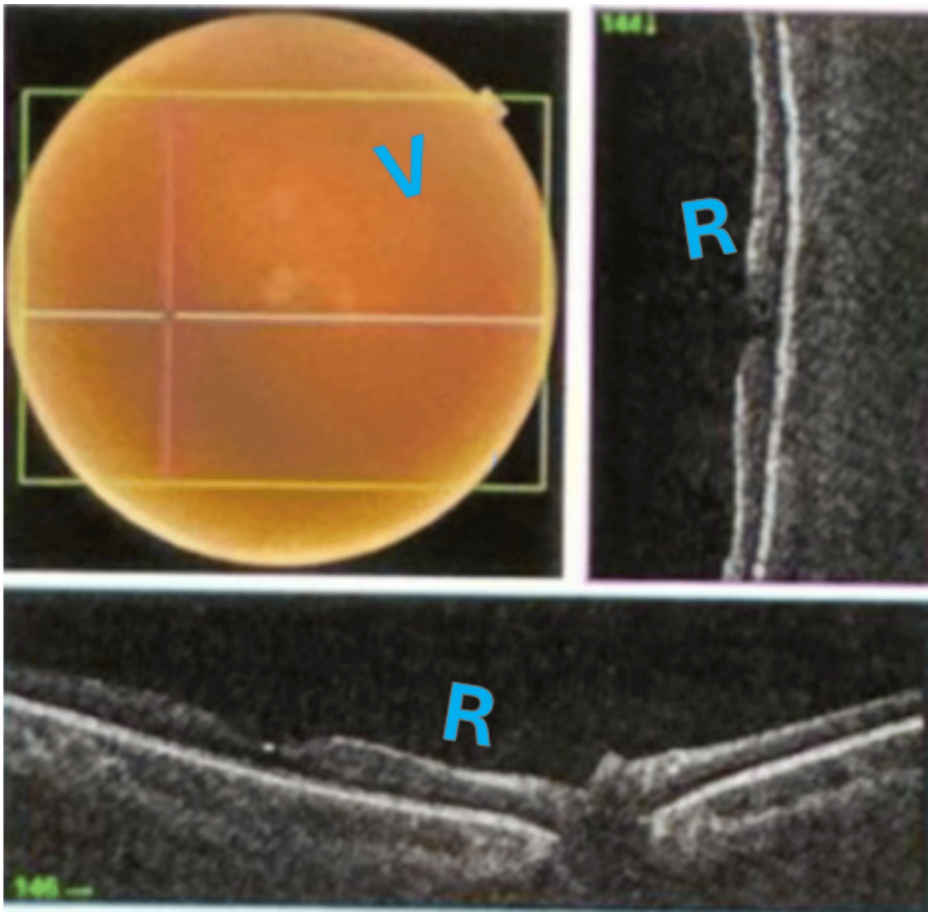


FIGURE 3: Right eye

There is hazy vitreous (V). There are no echographic findings consistent with a retinal detachment in the quadrants as shown by the R

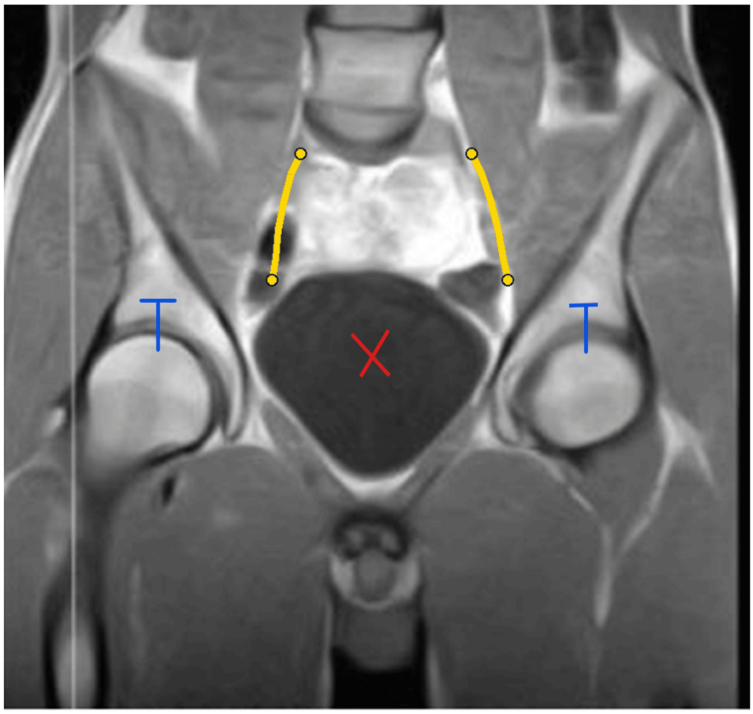


FIGURE 4: MRI of the pelvis

MRI: magnetic resonance imaging

The image shows no symmetric fusion of the sacroiliac joints (yellow lines), no syndesmophytes of the vertebral body, and no calcification of the intervertebral disc. The X is the urinary bladder, and the T are the hip joints

The patient was started on biologics (tumor necrosis factor (TNF)-alpha) along with ocular steroids. During subsequent clinic visits, the patient reported that the symptoms had begun to subside. Vision was reported to have normalized, and the chronic back pain was greatly alleviated.

Discussion

Chronic low back pain is one of the reasons that patients present to clinicians. Its recurrence with extra-articular findings requires a multidisciplinary approach due to its complex nature and multiple contributing factors. This case of a 20-year-old male patient with progressive chronic back pain and recurrent eye infections emphasizes the complex interplay of genetic and environmental factors in axial spondyloarthropathies.

The mechanism for the development of uveitis in AS is not fully understood, but it is believed to be immune-mediated. The coordinated interaction of cytokines, such as TNF, along with T cells, genetic factors, environmental factors, and potential bacterial antigens, triggers immune responses and regulates these inflammatory pathways [6]. These inflammations affect the eye, especially the anterior chamber, resulting in anterior uveitis.

Our patient complained of recurrent eye redness, pain, photophobia, and worsening visual blurring in keeping with the anterior uveitis. The delayed treatment resulted in the development of edema around the iris, causing posterior synechiae. Most recurring uveitis associated with AS is nongranulomatous, as seen on the retinal examination of the case, with no Frank cells. About 50% of patients with anterior uveitis have a positive HLA-B27 histocompatibility allele [6].

Although NSAIDs are the first pharmacological treatment of AS, there is limited evidence that they treat an acute flare of anterior uveitis [7]. Evidence, however, shows that NSAIDs may be beneficial in reducing the recurrence of anterior uveitis in patients with AS [7]. The treatment of recurrent uveitis in ankylosing spondyloarthropathy includes TNF inhibitors, and these are more effective in the prevention and reduction of uveitis, including anterior uveitis recurrence, when compared to NSAIDs [8]. The patient in our case report had a favorable response after treatment with biologics.

This case reinforces the need for a high level of suspicion of spinal inflammatory disease in a patient with

chronic back pain and recurrent eye infection despite negative imaging. About three in five cases of AS can be missed by X-rays, especially in the early stages of the disease [9]. One study found that about 50% of those diagnosed with AS have negative radiography for axial spondyloarthropathy [5]. The disease has a good prognosis and responds well to treatment when diagnosed early.

Conclusions

This case of AS with anterior uveitis supports the fact that AS can initially present as nonspecific chronic back pain or an extra-articular complication. A high index of suspicion is vital in the management of AS, especially in the presence of extra-articular complications that keep recurring after standard treatments. Early interdisciplinary evaluation, including involvement of ophthalmologists and rheumatologists, and targeted screening, including assessment for HLA-B27 serology and associated disease, are essential in patients presenting with recurrent anterior uveitis or other related extra-articular manifestations of axial spondyloarthropathies and chronic back pain to facilitate timely diagnosis and appropriate medication management. This report supports the fact that early use of biologics in the management of patients diagnosed with AS with anterior uveitis who are unresponsive to initial treatment modalities may be effective. It contributes to the growing body of evidence supporting vigilant assessment and comprehensive management of extra-articular manifestations of AS.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

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Disclosures

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