

Case Report

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More Than Meets the Eye: A Rare Encounter of Fuchs' Uveitis Syndrome in Multiple Sclerosis.

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ABSTRACT

Background:

Fuchs' Uveitis Syndrome (FUS) is a chronic form of anterior uveitis characterized by low-grade intraocular inflammation, stellate keratic precipitates, and iris heterochromia. The disease often follows an indolent course and may remain asymptomatic until detected during routine ophthalmic examination. Although most cases are idiopathic, associations with systemic immune-mediated disorders have been increasingly recognized.

Case Presentation:

We report the case of a 47-year-old male with secondary progressive multiple sclerosis (SPMS), type 2 diabetes mellitus, Graves' disease, vitiligo, and dyslipidemia who was referred for routine ophthalmologic evaluation. The patient reported no ocular complaints. Slit-lamp examination showed presence of diffuse stellate keratic precipitates and iris heterochromia in the right eye with a deep anterior chamber. Intraocular pressure was found to be 10 mmHg bilaterally. Fundoscopic examination demonstrated normal retinal and optic disc morphology. Optical coherence tomography of the macula was normal in both eyes. Based on characteristic slit-lamp findings, a diagnosis of unilateral Fuchs' Uveitis Syndrome was made. Since the patient was asymptomatic conservative management with periodic follow-up was recommended.

Conclusion:

This case underscores the subtle presentation of Fuchs' Uveitis Syndrome and emphasizes the importance of routine ophthalmologic evaluation in patients with systemic autoimmune or neuroinflammatory conditions including multiple sclerosis. Early recognition of this association may facilitate timely diagnosis and monitoring that will help in preventing long-term ocular complications.

Keywords: Fuchs' Uveitis Syndrome, Anterior Uveitis, Multiple Sclerosis, Autoimmune Disease, Ophthalmic Manifestations

INTRODUCTION:-

Fuchs' Uveitis Syndrome (FUS) also known as Fuchs heterochromic iridocyclitis is a chronic, typically unilateral form of anterior uveitis. It is characterized by low-grade intraocular inflammation, diffuse stellate keratic precipitates, iris atrophy and varying degrees of heterochromia.¹ The condition accounts for approximately 1–11% of uveitis cases worldwide and is often underdiagnosed because of its subtle clinical course and minimal early symptoms¹. Patients frequently present with minimal clinical findings rather than overt inflammatory manifestations. This may delay recognition until complications such as cataract formation or secondary glaucoma sets in.

The pathogenesis of FUS remains incompletely understood. Increasing evidence suggests that infectious triggers may play an important role. Some studies have reported presence of rubella virus in the aqueous humor of individuals with FUS.² Other viral pathogens including herpes simplex virus as well as cytomegalovirus have also been implicated in FUS-like anterior uveitis in many cases. These findings suggest that persistent viral infection or post-infectious immune responses may be contributing to chronic ocular inflammation seen in cases of FUS.²

Multiple sclerosis (MS) is a chronic immune-mediated demyelinating disease of the central nervous system. It is characterized by inflammatory lesions that causes progressive neurological dysfunction in affected individuals.³ Ocular involvement is common in individuals with MS. Amongst the ocular manifestations optic neuritis is the most commonly reported manifestation. However, in addition to optic neuritis intraocular inflammatory conditions such as uveitis have also been reported in cases of MS.

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The prevalence of uveitis among patients with MS varies widely across studies and range from approximately 0.7% to 30% depending on study design and population characteristics.⁴ Although intermediate uveitis is the most commonly reported subtype, anterior uveitis and Fuchs' Uveitis Syndrome have also been reported in patients with demyelinating disease including multiple sclerosis.⁵

Recent studies have suggested that FUS may represent a notable subset of uveitis cases among patients with MS. Despite common occurrence of ocular manifestations in MS the relationship between FUS and MS remains incompletely understood. Therefore, additional case reports may help clarify potential shared immunological mechanisms. The present report describes a case of unilateral Fuchs' Uveitis Syndrome which was diagnosed during routine ophthalmologic evaluation in a patient with secondary progressive multiple sclerosis.

CASE PRESENTATION

A 47-year-old male with a history of secondary progressive multiple sclerosis (SPMS) and prior right-eye cataract surgery was referred to the ophthalmology department by his endocrinologist for routine ophthalmologic evaluation. During history and clinical examination in addition to SPSM he was found to have multiple other comorbidities including Graves' disease, vitiligo, type 2 diabetes mellitus and dyslipidemia. The patient denied presence of any visual disturbances, pain in eyes, any redness, photophobia or recent changes in vision.

Analysis of past history showed that in 2006 patient first presented with left-sided numbness and weakness. At that time, he was thoroughly investigated and diagnosed with relapsing-remitting multiple sclerosis. Pursuant to the diagnosis of relapsing-remitting multiple sclerosis he received treatment with alemtuzumab (Lemtrada) for approximately 18 months. Over time, the disease progressed with worsening gait impairment, after which he was reclassified to be having secondary progressive multiple sclerosis. He was subsequently started on siponimod (Mayzent) for management of ongoing disease.

In December 2021, while traveling the patient developed a viral illness. He was later diagnosed to be having infectious mononucleosis secondary to Epstein-Barr virus infection. This episode coincided with a relapse of multiple sclerosis following a period of remission and was associated with progressive muscle weakness, fatigue and fluctuations in body weight. On ophthalmologic examination, ocular motility was full in all directions, and ocular alignment testing demonstrated orthophoria. The cover-uncover test was normal. Pupils were equal, round and reactive to light and accommodation with no relative afferent pupillary defect. Intraocular pressure measured 10 mmHg in both eyes.

Slit-lamp biomicroscopy of the right eye showed multiple diffusely distributed stellate keratic precipitates on the posterior corneal surface. Additional findings included iris heterochromia and deep and quiet anterior chamber without significant inflammatory reaction. Examination of the left eye was unremarkable. Dilated fundoscopic examination demonstrated flat retinas with normal retinal vasculature and healthy optic discs. Intact maculae were seen in both eyes. Temporal peripheral white-without-pressure changes were noted. Additionally bilateral vitreous floaters were observed. Macular optical coherence tomography revealed normal macular architecture without any evidence of edema or structural abnormality.

Based on the characteristic slit-lamp findings of diffuse stellate keratic precipitates and iris heterochromia and absence of elevated intraocular pressure or significant anterior

chamber inflammation, a diagnosis of unilateral right Fuchs' Uveitis was made. As the patient was asymptomatic and there was no evidence of complications such as glaucoma or cataract no immediate treatment was initiated. The patient was counselled in detail regarding the nature of the condition and advised regular ophthalmologic follow-up. Reassessment was planned in six months or earlier if symptoms developed.

DISCUSSION

Fuchs' Uveitis Syndrome is a chronic form of anterior uveitis which is characterized by low-grade inflammation and distinctive clinical findings. These findings include diffuse stellate keratic precipitates, iris heterochromia and minimal anterior chamber reaction. Because in FUS inflammation is typically mild and symptoms are often absent, the condition may remain undiagnosed until discovered during routine ophthalmic examination or when complications such as glaucoma or cataract sets in.

The classic clinical spectrum of FUS was extensively described by Jones who highlighted the characteristic diffuse stellate keratic precipitates and the absence of posterior synechiae as peculiar features of FUS.⁶ These findings remain central to the clinical diagnosis of FUS in affected cases. The present case demonstrated these hallmark clinical features including stellate keratic precipitates distributed across the corneal endothelium and iris heterochromia. Absence of significant intraocular inflammation was a characteristic finding.

Large observational studies have further improved understanding of the clinical characteristics of FUS. In a 20-year retrospective analysis involving 466 patients, Kianersi et al. reported that the disease is typically unilateral and frequently detected incidentally during routine examination.⁷ The findings in our patient are consistent with these observations, as the condition was discovered during a routine evaluation despite the absence of ocular symptoms.

Differential diagnosis of FUS includes other causes of chronic anterior uveitis, particularly Posner-Schlossman syndrome. Pohlmann et al. demonstrated that although both conditions may involve keratic precipitates and mild inflammation, they differ significantly in intraocular immune mediator profiles and clinical course.⁸ Posner-Schlossman syndrome is reported to typically present with recurrent episodes of markedly elevated intraocular pressure, whereas FUS usually follows a chronic, low-grade inflammatory course and have relatively stable intraocular pressure. The coexistence of FUS and multiple sclerosis in this patient is of particular clinical importance. Uveitis has long been recognized as an important extra-neurological manifestation of MS. Epidemiological studies have found a higher prevalence of intraocular inflammation among patients with demyelinating disease as compared to the general population. Although intermediate uveitis is most commonly associated with MS, anterior uveitis and FUS have also been described in this patient population.

Several hypotheses have been put forward to explain the association between multiple sclerosis and ocular inflammatory changes. These include shared genetic susceptibility particularly involving HLA-DR15 and other immune-related genetic loci. Furthermore, viral triggers have also been proposed as potential contributors to immune activation in both diseases. Amongst the infectious Rubella virus was found to have strongest supporting evidence. In many cases of FUS intraocular antibody studies demonstrated a significant association between prior rubella infection and the development of FUS.⁹ Other viruses such as herpes simplex virus (HSV) and cytomegalovirus (CMV) have also been reported in association with FUS-like anterior uveitis.

Fuchs' Uveitis Syndrome Associated with Multiple Sclerosis

The patient in this case also had comorbid autoimmune thyroid disease and type 2 diabetes mellitus. Large population-based studies such as that undertaken by Lin et al have examined possible links between thyroid disease and uveitis, although a consistent association between thyroid disorder with FUS has not been demonstrated.¹⁰ Therefore, while these comorbidities may reflect a possibility of a broader immune dysregulation their direct contribution to the development of FUS remains uncertain.

Management of FUS primarily focuses on monitoring of the patients for possibility of intraocular complications rather than aggressive anti-inflammatory treatment. In these cases, ocular inflammation is typically chronic and mild rather than acute and severe. Therefore long-term corticosteroid therapy is generally not recommended. Instead, regular ophthalmologic follow-up is crucial to detect complications such as cataract formation or development of secondary glaucoma which represent the major causes of visual impairment in affected patients.

CONCLUSION

Fuchs' Uveitis Syndrome is a chronic and frequently asymptomatic form of anterior uveitis that may remain undetected until discovered during routine ophthalmologic examination. This case highlights the coexistence of unilateral FUS in a patient with secondary progressive multiple sclerosis and multiple autoimmune comorbidities. Although no definitive pathogenic relationship between FUS and MS has been established, both conditions are consequence of immune dysregulation and therefore may share overlapping immunological mechanisms. This case underlines the significance of regular ophthalmologic examination in patients with systemic autoimmune disorders for early identification of ocular involvement and regular monitoring for potential complications.

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