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Unconventional Interventions Leading to Anterior Uveitis: A Case Report on Removal of Corneal Foreign Body by a Non-Medical Person

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ABSTRACT

INTRODUCTION - The misdirection of diagnosis due to the initial critical condition and unknown interventions complicated the identification of anterior uveitis, which was masked by corneal abrasion. Delayed treatment poses a threat to the eye. This case report highlights the clinical significance, common causes, and importance of timely treatment for anterior uveitis.

CASE REPORT - A 45-year-old female (reg. no PUKA 4303341) visited Dr Sushila Tewari Hospital on 17/02/2024, with redness and pain in her left eye. Before her visit, a non-medical person in her village had scraped her cornea with a safety pin head for the removal of a vegetative foreign body, instead of the treatment of anterior uveitis. So, initially treated for corneal abrasions, signs of iridocyclitis became evident as the cornea began to heal on the second day.

CONCLUSION - Timely medical consultation is essential for addressing ocular issues and preserving vision. Lack of education and awareness contribute to such critical incidents. Understanding the aetiology, pathophysiology, and management of anterior uveitis is crucial for preventing complications.

KEYWORDS: corneal aberration**,** keratitis, visual acuity, immunity, anterior uveitis, antibiotic, mydriatic and steroid.

INTRODUCTION

An inflammation of the iris and ciliary body is the most common form of anterior uveitis. It can cause significant morbidity, leading to pain, photophobia, blurred vision, and potentially permanent vision loss. This condition may occur alone or in association with systemic diseases like autoimmune disorders and infections.

Anterior uveitis may be infectious, noninfectious, and masquerade diseased. The diagnosis and treatment of underlying

diseases are crucial for preserving vision. However, if systemic diseases remain undetected, potentially develop into a chronic condition. [1]

The immune system has two main components. The innate system uses macrophages, mast cells, and neutrophils to quickly eliminate microbes by recognizing antigens without prior exposure. The adaptive system builds the memory of antigens through antigen presentation, cell activation, differentiation, and memory development. Repeated exposure to an antigen heightens the response, offering long-term protection. Key cells in the adaptive system include antigen-presenting cells, B-lymphocytes, T-lymphocytes, and macrophages.[2]

CLASSIFICATION:

TYPE	SUBTYPES		DESCRIPTION
Anatomical	Anterior uveitis		Inflammation - iris to pars plicata of ciliary body
	Intermediate uveitis		Inflammation of pars plana and peripheral area of retina underneath to choroid
	Posterior uveitis		Inflammation of choroid and retina
	Pan uveitis		Inflammation of the whole uvea
Clinical	Acute Uveitis		Sudden symptomatic onset
	Chronic Uveitis		Insidious and asymptomatic onset
	Recurrent Uveitis		Repeated onset ≥ 3 months
Pathological	Suppurative/purulent uveitis		characterized by pus formation
	Non Suppurative uveitis	Granulomatous	Granulomatous uveitis is characterized by larger KPs (mutton-fat KPs) than the dusty KPs of non-granulomatous
		Non-granulomatous	

ETIOLOGY:

The causes of various clinical conditions are disputed while many others are unknown. Anterior uveitis may be caused by infectious, noninfectious, and masquerade diseases.

1. INFECTIVE UVEITIS:

It is caused by invading pathogens (exogenous infections), leading to acute suppurative iridocyclitis and potentially progressing to endophthalmitis or panophthalmitis. Secondary infections spread from nearby tissues affected with acute purulent conjunctivitis, keratitis, scleritis, retinitis, orbital cellulitis, and orbital thrombophlebitis. Endogenous infections come through the bloodstream.

a. Bacterial – [3-7]

- **Cat-scratch disease,** caused by the intracellular gram-negative bacteria Bartonella *henselae*, affects immunocompetent individuals of all ages globally and is marked by swollen lymph nodes at the bite or scratch site.
- **Tuberculosis (TB),** caused by Mycobacterium, can lead to active and inactive uveitis states. The most common ocular manifestation is disseminated chorioretinitis, acute anterior uveitis, chronic granulomatous anterior uveitis, intermediate uveitis, vitritis, or endophthalmitis.

b. Spirochete – [8-12]

- **Lyme disease** is caused by the spirochete, Borrelia *burgdorferi* and is transmitted through tick bites, with early, disseminated, and persistent stages. The second and third stages are crucial for developing uveitis, neuro-retinitis, retinal vasculitis, choroiditis, and panuveitis.
- **Syphilis**, caused by the spirochete bacterium Treponema *pallidum*, is an STD affecting any major organ and is known as the "Great Masquerader." Tertiary syphilis most commonly presents either with unilateral or

bilateral uveitis and may be granulomatous or non-granulomatous, with iris nodules, dilated iris vessels, and atrophy. Uveitis can appear at any stage of syphilis, with posterior uveitis manifesting as diffuse or focal chorioretinitis, neuro-retinitis, necrotizing retinitis, retinal vasculitis, intermediate uveitis, or panuveitis.

c. Viral – [7,11-16]

- **Herpes simplex - virus types 1 and 2** are the most frequent causes of unilateral anterior uveitis and can be granulomatous or non-granulomatous, often with elevated intraocular pressure due to concurrent trabeculitis. It can also present as intermediate, posterior, or panuveitis.
- **Cytomegalovirus (CMV)** – (human herpesvirus 5), causes significant morbidity and mortality in immunocompromised individuals. Uveitis associated with CMV closely resembles that caused by HSV and VZV. Anterior uveitis due to CMV can be unilateral and hypertensive, granulomatous or non-granulomatous, and may be chronic or recurrent.
- **HIV**- a retrovirus that infects CD4+ T-lymphocytes, presents uveitis (Sometimes panuveitis and posterior segment complications) with increased anterior chamber reaction and vitreous haze, with reduced visual acuity.

d. Fungal – [17]

Primarily caused by Candida albicans, Aspergillus, and Fusarium, can lead to anterior uveitis. These fungi are also associated with fungal keratitis and endophthalmitis.

e. Parasitic – [18]

- **Toxoplasmosis,** caused by Toxoplasma gondii, is the major cause of posterior and anterior uveitis, characterized by granulomatous inflammation, mutton-fat keratic precipitates, posterior synechiae, iris nodules, and fibrin deposition. It presents a yellow-white or grey chorioretinal lesion with ill-defined borders, known as "headlight-in-the-fog."
- **Toxocariasis,** caused by Toxocara canis or Toxocara cati from dogs and cats, induces a posterior granulomatous response, manifesting as a hazy, white elevated lesion with vitritis. Chronic endophthalmitis, retinal detachment, low-grade anterior uveitis, posterior synechiae, and hypopyon may also occur, along with papillitis, macular oedema, and vitreous exudates.

f. Masquerade and Drug-Induced Uveitis – [19]

Causes non-granulomatous anterior uveitis. Factors include lymphoma (type of blood cancer), rifabutin (anti-mycobacterial medication), cidofovir (antiviral drug), bisphosphonates (for osteoporosis, multiple myeloma, osteogenesis imperfecta, Paget's disease), and tumour necrosis factor-alpha inhibitors (like etanercept and adalimumab) used for autoimmune disorders such as rheumatoid arthritis, ankylosing spondylitis, inflammatory bowel disease (IBD), and psoriasis.

2. IMMUNITY RELATED UVEITIS: [20]

This is the most common occurrence in clinical practice, although still not defined clearly.

a. Microbial allergic uveitis –

The primary source originates elsewhere in the body and is transmitted via the bloodstream. Examples include infections through TB, dental, paranasal sinus, tonsillitis, prostate, genital and urinary tract infections.

b. Anaphylactic Uveitis –

This type of uveitis is accompanied by systemic anaphylactic reactions such as serum sickness and angioneurotic oedema.

c. Atopic Uveitis –

Triggered by airborne allergens like pollen grains, house dust, and animal dander from dogs, cats, and birds, resulting in conditions such as iritis.

d. Autoimmune Uveitis –
Arising from autoimmune disorders such as Still's disease (systemic juvenile idiopathic arthritis), rheumatoid arthritis (chronic autoimmune joint disease), Wegener's granulomatosis (rare vasculitis disorder), systemic lupus erythematosus (autoimmune disease targeting tissues and organs), and Reiter's syndrome (inflammatory arthritis following infections like salmonella, shigella, yersinia, campylobacter, or certain STIs).

e. HLA (human leucocytic antigens) associated uveitis –
With about 70 antigens, individuals can be categorized into various HLA phenotypes. HLA-B27 is linked to ankylosing spondylitis and Reiter's syndrome, HLA-B5 to Behcet's syndrome, an inflammatory disorder affecting multiple body parts, and HLA-DR4 and HLA-DR15 to Vogt-Koyanagi-Harada disease, a rare, treatable CNS condition.

3. TOXIC UVEITIS: [20]
endotoxin or exotoxin liberated from any type of invading pathogen can also cause uveitis.

4. TRAUMATIC UVEITIS: [20]
The operative and different types of accidental injuries may also cause uveitis.

CASE REPORT

A 45-year-old female presented to Dr Sushila Tewari Hospital and Govt. Medical College on 17/02/2024 (registration number PUKA 4303341) with complaints of redness and pain in her left eye. Her history revealed that she had been treated by a non-medical person in her village, who scraped her cornea with the head of a safety pin to remove a piece of grass.

Physical examination showed diminished visual acuity (VA) to the extent of finger counting close to the face (FCCF), redness, pain, photophobia, lacrimation, and mild lid oedema with corneal opacity. A slit lamp examination revealed superficial corneal abrasions and chemosis.

Within 48 hours, the typical corneal abrasions partially healed, and VA improved to 6/18P for the left eye. Slit lamp examination at this stage revealed crucial signs of iridocyclitis, including partial lid oedema, circumcorneal congestion, corneal oedema, posterior corneal opacities, keratic precipitates, fibrous exudates, aqueous flare, mild hypopyon, changes in iris colour and pattern, persistent pupillary membrane, and multiple posterior synechiae.

Three weeks later, follow-up showed a satisfactory response with a nearly normal VA of 6/9 with -1.50 D sph and an almost normal appearance of the eye adnexa.

INVESTIGATIONS:

Investigations are necessarily included due to the change in diagnosis of corneal abrasions to the anterior uveitis. CBC for inflammatory response, Blood sugar, Serological tests for syphilis, toxoplasmosis, Rh factor and C-reactive proteins, B Scan for the left eye, and Radiological investigation for chest and sinuses X-ray.

TREATMENT:

Extensive corneal abrasions obscured anterior chamber details on day one. The left eye was patched with Polymyxin B, Chloramphenicol (Ocupol), and Moxifloxacin 0.5% w/v eye drops hourly for 24 hours, then every 2 hours for the next 24 hours. Cycloplegic eye drops (homatropine hydrobromide 2% w/v) were given BD, and polyethylene glycol eye drops were used as needed (SOS).

After 48 hours, the ocular examination indicated anterior uveitis, prompting a change in the treatment plan. A B-scan revealed an optically clear vitreous, confirming the diagnosis of anterior uveitis. The prescribed medications for the three-week follow-up included Topical moxifloxacin with prednisolone every 2 hours, atropine sulfate 1% TDS, and brimonidine BD. Oral prednisolone 1 mg/kg (Wysolone 40 mg), tapered weekly. One-

time subconjunctival mydricain (0.4 ml) injection. Polyethylene glycol eye drops SOS and dark glasses.

DISCUSSION

This case highlights the potential complications of anterior uveitis, including the risk of vision loss and possible enucleation. Initially misdiagnosed, the corneal abrasion was caused by a non-medical person using a safety pin to remove a vegetative foreign body. The difficulty in determining the true cause of the silent presence of anterior uveitis is due to the corneal abrasion. The patient's timely hospital visit and positive response to treatment were key to effective management.

The discussion emphasizes the importance of thorough patient history, clinical examination, and ancillary tests in diagnosing anterior uveitis. These tools are essential for tailored treatment and preventive strategies. The investigations confirmed a non-infectious cause of anterior uveitis. A three-week regimen of topical and systemic steroids with supportive measures was sufficient for recovery.

CONCLUSION

At the grassroots level, remote areas in India still lack adequate healthcare services, forcing people to rely on individuals without medical expertise. Additionally, superstition often leads to misguided attempts to address health issues, exacerbating the situation. Therefore, government policy should focus on establishing speciality clinics and facilities in these remote areas, along with implementing awareness programs.

DECLARATION:

Ethical Approval - Not Required

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