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Clinical Characteristics of Uveitis Patients at Dr. Zainoel Abidin General Hospital Aceh

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ABSTRACT
Introduction: Uveitis is a sight-threatening condition characterized by inflammation in the uveal tract. In Aceh, data on the incidence of uveitis remains unavailable despite numerous reported cases. This study aims to analyze uveitis characteristics in Aceh, Indonesia, and provide information regarding the causes and patterns of inflammation to guide diagnostic and therapeutic approaches.
Methods: A retrospective descriptive study was conducted using medical records from Dr. Zainoel Abidin Hospital from uveitis patients between January 2023 and August 2024. Data were analyzed for demographics, clinical presentation, etiology, management, and complications.
Results: There were 60 patients with 92 eyes affected with the mean age between 20-44 years. Bilateral involvement occurred in 53.3% of cases with the common chief complaint being blurry vision (53.3%). Tuberculosis was the leading infectious cause (41.3%), while 30.4% of cases were idiopathic. Complications, including cataracts (52%) and glaucoma (12.6%) were prevalent.
Conclusion: This study highlights the pattern of uveitis in Aceh, with tuberculosis as the leading cause of infection. Further research into strategies is required to expedite diagnosis and treatment by following local infection trends.
Keywords: Characteristics, etiology, uveitis

ABSTRAK
Pendahuluan: Uveitis adalah kondisi yang mengancam penglihatan yang ditandai dengan peradangan di traktus uveal. Di Aceh, data mengenai kejadian uveitis masih belum tersedia meskipun banyak kasus yang dilaporkan. Penelitian ini bertujuan untuk menganalisis karakteristik uveitis di Aceh, Indonesia, dan memberikan informasi mengenai penyebab dan pola peradangan untuk membimbing pendekatan diagnostik dan terapeutik.
Metode: Studi deskriptif retrospektif dilakukan dengan menggunakan rekam medis dari pasien uveitis di Rumah Sakit Dr. Zainoel Abidin antara Januari 2023 hingga Agustus 2024. Data dianalisis untuk demografi, presentasi klinis, etiologi, manajemen, dan komplikasi.
Hasil: Terdapat 60 pasien dengan 92 mata yang terdampak dengan usia rata-rata antara 20-44 tahun. Keterlibatan bilateral terjadi pada 53,3% kasus dengan keluhan utama yang umum adalah penglihatan kabur (53,3%). Tuberkulosis adalah penyebab infeksi utama (41,3%), sementara 30,4% kasus bersifat idiopatik. Komplikasi berupa katarak (52%) dan glaukoma (12,6%) cukup banyak terjadi.
Kesimpulan: Penelitian ini menggambarkan pola uveitis di Aceh, dengan tuberkulosis sebagai penyebab utama. Penelitian lebih lanjut mengenai strategi diperlukan untuk mempercepat diagnosis dan pengobatan dengan mengikuti tren infeksi lokal..
Kata kunci: Karakteristik, etiologi, uveitis.

INTRODUCTION

Uveitis is a potentially vision-threatening eye disease characterized by inflammation in the uveal tract of the eye, including the iris, ciliary body, and choroid. Uveitis can be caused by multiple infectious or non-infectious factors, underscoring the importance of identifying its underlying cause to ensure appropriate management for patients. The management of uveitis continues to evolve, encompassing the use of both steroid and non-steroid eye drops, local eye injections, intraocular steroid implants, systemic immunosuppressants, and the administration of immunomodulatory therapy involving novel biological agents. [1,2]

Globally, uveitis affects between 12.4 and 580 per 100,000 people, with significant regional variation. In the Asia-Pacific region, countries like Taiwan and South Korea report rates around 194 and 173 per 100,000 people, respectively. India shows even higher prevalence rates, ranging from 317 to 730 per 100,000. Neighboring countries like Thailand have a prevalence of 580 per 100,000, highlighting uveitis as a significant concern.[3] In Indonesia, specific national data is scarce, but given regional trends, it's likely that uveitis is also common. In regions like Aceh, no reliable data exists despite many reported cases, underscoring the need for further research.

The exact causes of uveitis remain incompletely understood. Some hypotheses suggest that ocular trauma can lead to cell injury or death, triggering the release of inflammatory cytokines and subsequent post-traumatic uveitis. Uveitis associated with systemic inflammatory diseases is believed to occur due to molecular mimicry, where infectious agents elicit cross-reactivity with specific eye antigens, influencing disease progression and potential complications.[4]

Complications in uveitis patients are influenced by the development of inflammatory processes. Potential complications include macular edema, cataracts, glaucoma, and epiretinal membrane maculopathy. Certain types of uveitis, such as HLA-B27-associated uveitis, intermediate uveitis, and uveitis associated with juvenile idiopathic arthritis, are more prone to complications according to several studies. Other risk factors for complications in uveitis patients include older age, uveitis with active inflammation lasting more than three months, and the influence of therapeutic interventions such as intravitreal injections, sub-tenon steroid injections, and ocular surgery.[5]

The primary aim of this study was to provide more detailed information on uveitis. By analyzing the anatomy, causes, and inflammation of the condition, this research seeks to establish a solid foundation for accurate diagnosis and effective treatment, leading to improved patient outcomes and quality of life. Additionally, it also aims to provide reliable data on the incidence of uveitis in Aceh, as no definitive data is currently available despite the high number of cases reported each year.

METHODS

This study is a retrospective descriptive study with data collected from the medical records of patients at the eye department of dr. Zainoel Abidin Hospital (RSUDZA) in Banda Aceh from January 2023 to August 2024. Basic patient data includes gender, age, and laterality. Clinical data collected includes chief complaint, visual acuity, diagnosis, etiology, management, and complications. Data analysis was done descriptively and presented in tables. The inclusion criteria for this study are all patients diagnosed with uveitis who visited RSUDZA Banda Aceh for the first time from January 2023 to August 2024. Exclusion criteria were patients with incomplete data.

The classification of uveitis used in this study is based on the Standardization of Uveitis Nomenclature (SUN), which includes anterior uveitis, intermediate uveitis, posterior uveitis, and panuveitis. For visual examination results, we categorized respondents experiencing visual impairment based on the World Health Organization (WHO) Classification of Vision Impairment.

Each patient in this study underwent visual examination and the data collected were Best Corrected Visual Acuity (BCVA) using a Snellen chart. Etiology was established through physical examination, slit lamp, and other examinations, such as laboratory and radiology. Tuberculosis diagnosis was made through the Mantoux test and or Interferon-Gamma Release Assay (IGRA). To confirm a viral diagnosis, serological tests for Immunoglobulin M (IgM) and Immunoglobulin G (IgG) Anti-Cytomegalovirus (CMV), rubella, and Herpes Simplex Virus (HSV) were conducted. Toxoplasma diagnosis was established through fundoscopy findings and serological tests for IgM and IgG anti-toxoplasma antibodies. Syphilitic uveitis was established through Venereal Disease Research Laboratory (VDRL) and or Treponema Pallidum Haemagglutination (TPHA) tests. Autoimmune diagnosis was established through clinical examination and consultation with a rheumatologist. Vogt-Koyagi Harada's (VKH) diagnosis was confirmed with clinical eye findings and AUS (*American Uveitis Society*) criteria. Cases were classified as idiopathic when supporting investigations were either inconclusive for infectious markers or the severity of uveitis made it challenging to establish a definitive diagnosis.

RESULT

During the period from January 2023 to August 2024, a total of 60 patients met the inclusion criteria, with a total of 92 affected eyes. Of the 60 patients, 31 were male and 29 were female, with the mean age between 20-44 years. In the majority of cases, which is 32 (53.3%), the condition was bilateral. General patient characteristics are detailed in Table 1.

Table 1. General Characteristics

Characteristics	n	%
Gender		
Male	31	51.7
Female	29	48.3
Age		
0-19 years	3	5.0
20-44 years	32	53.3
45-64 years	18	30.0
≥ 65 years	7	11.7
Laterality		
Ocular dextra	16	26.7
Ocular sinistra	12	20.0
Bilateral	32	53.3

Table 2. Visual Acuity and Uveitis Classification

Clinical Profile	n	%
Chief complaint		
Blurry vision	32	53.3
Painful eye	12	20.0
Red eye	7	11.7
Uncomfortable on the eyes	4	6.6
Eyes feel gritty	1	1.6
Hazy vision	1	1.6
Floaters	3	5.0
Visual acuity		
0 (Mild or no visual impairment, better than 0.3)	21	22.8
1 (Moderate visual impairment, 0.3-0.1)	25	27.2
2 (Severe visual impairment, 0.1-0.05)	14	15.2
3 (Blindness, 0.05-0.02)	12	13.0
4 (Blindness, 0.02-Light Perception (LP))	20	21.7
5 (Blindness, No Light Perception (NLP))	0	0
Classification		
Uveitis anterior	17	18.4
Uveitis intermediate	0	0
Uveitis posterior	20	21.8
Panuveitis	55	59.8

The most common chief complaint of 60 patients was blurry vision, reported by 53.3%, followed by painful eye at 20.0%, and red eye at 11.7%. Out of the 92 affected eyes, visual acuity was mostly within the range of 0.3-0.1, indicating moderate visual impairment, accounting for 27.2%. Based on the classification of uveitis, 18.4% of patients were diagnosed with anterior uveitis, 0% with intermediate uveitis, 21.8% with posterior uveitis, and there were 59.8% with panuveitis (Table 2).

In this study, the most frequently given therapy was antituberculosis in 40.3% of patients diagnosed with tuberculosis. Other therapies given were systemic steroids, given to 17% of patients, followed by topical steroids and sub-tenon injections in 4.2%. The etiology of uveitis is most commonly associated with infections, with tuberculosis being the primary cause at 41.3%. Idiopathic was the second leading cause at 30.4%. The most common underlying risk factors of uveitis in HIV patients is ocular toxoplasmosis at 4.3%, followed by uveitis cytomegalovirus and syphilis at 2.2%. Other causes can be seen in Table 3.

Table 3. Uveitis Etiology

Etiology	n	%
Ocular Tuberculosis	38	41.3
Ocular Toxoplasmosis	4	4.3
Uveitis Cytomegalovirus	2	2.2
Ocular Syphilis	3	3.3
Spondyloarthritis Uveitis	5	5.4
Vogt-Koyanagi-Harada Uveitis	4	4.3
Idiopathic	28	30.4
HIV-related risk factors		
HIV + Ocular Toxoplasmosis	4	4.3
HIV + Uveitis Cytomegalovirus	2	2.2
HIV + Ocular Syphilis	2	2.2

Complications of uveitis occurred in 79 eyes (85.8%) out of the total 92 eyes affected by uveitis. The most frequent complications observed in this study were complicated cataracts at 52%, followed by secondary glaucoma at 12.6%, corneal scarring at 11.4%, and retinal scarring at 6.3%. (Table 4).

Table 4. Therapy and Complications of Uveitis

Therapy and complications	n	%
Therapy		
Topical steroid	4	4.2
Systemic steroid	16	17
Sub-tenon steroid injection	4	4.2
Immunosuppressant	4	4.2
Antitubercular medication	38	40.3
Antiretroviral	8	8.5
Antibiotics + topical steroid	5	5,3
Systemic antibiotics	6	6.4
Symptomatic therapy	10	10.6
Complications		
Complicated cataracts	41	52
Retinal detachment	5	6.3
Corneal scarring	9	11.4
Macular scarring	2	2.5
Retinal scarring	5	6.3
Papilledema	2	2.5
Ocular hypertension	1	1.2
Secondary glaucoma	10	12.6
Neovascular glaucoma	1	1.2
Cornea neovascularization	1	1.2
Choroidal Detachment	1	1.2
Vitreous opacity	1	1.2

DISCUSSION

Age

Understanding the demographics and patterns of uveitis helps doctors diagnose and treat it better. However, it is essential to remember that uveitis can vary a lot depending on geographic location. Our study on uveitis had a mostly similar group of people, with all of the patients coming from Aceh, Indonesia. In this study, uveitis was predominantly observed in young adults (20-44 years old) for 53.3%, with a total of 60 patients affected. While uveitis can occur across all age groups, numerous studies indicate a higher prevalence among the working-age group (20-50 years old), with some suggesting that 60%-80% of uveitis cases occur within this demographic. [6] Population-based studies conducted in 31 countries over the past five decades have reported the highest age distribution of uveitis patients to be within

the range of 29-46 years old. [7] Several factors contribute to these findings, including a history of ocular surgery, which may increase the likelihood of eye inflammation, a rising incidence of autoimmune diseases correlated with aging, and the diminishing effectiveness of the immune system in adults, particularly in the elderly. Consequently, uveitis is less commonly encountered in the elderly population (above 65 years old). This phenomenon is attributed to the decreased functionality and specificity of antibodies produced by B-cells, resulting in minimal or nonspecific clinical manifestations of uveitis in the elderly population. [3,7]

Gender

Of 60 patients collected in this study, 51.7% were male and 48.3% were female. Many studies worldwide found that males and females are equally affected by uveitis, however, these studies included both infectious and non-infectious causes of uveitis.[3] According to Ian YL Yeung et al, these conditions show specific gender trends, with some diseases more common in women and others in men. [8]

Autoimmune conditions, like uveitis linked to systemic lupus erythematosus (SLE) and sarcoidosis, are often diagnosed more frequently in women. While the exact reasons for this aren't clear, recent research suggests that sex hormones may play a role in how the immune system behaves. Estrogen seems to boost the immune response, while androgens have a dampening effect. However, it's worth noting that estrogen's impact on autoimmunity could vary based on its levels, with lower levels stimulating the immune response and higher levels inhibiting it. It's been noticed that men and women might have the same root cause of uveitis, but the severity or eye-related symptoms can differ. Also, differences in the occurrence of infectious uveitis between genders are often due to behavioral or cultural factors.[8] In infectious uveitis, eye disease affects men and women equally. However, differences arise due to job exposures, sexual behaviors, and other factors that vary between genders. Some infections are more common in men. For example, 87% to 90% of systemic and eye-related syphilis cases occur in men, mainly due to unsafe sexual practices, especially among men who have sex with men, accounting for 73% of cases. Ocular syphilis can cause various types of uveitis, optic neuritis, and interstitial keratitis.[8]

Laterality

Among the 60 uveitis patients, it is estimated that nearly half of them, which is 32 (51.7%) patients, are affected in both eyes, while the other 30 patients are unilateral. This indicates a relatively insignificant difference between eyes affected by uveitis occurring unilaterally or bilaterally. A similar trend was observed in a study by Prashant Borde et al regarding the pattern of uveitis in a tertiary eye care center in Central India. In that study, out of 210 patients, uveitis was unilateral in 119 cases (56.66%) and bilateral in 91 cases (43.33%). Specifically, anterior uveitis was predominantly unilateral (78.88%), while intermediate uveitis mainly presented with bilateral involvement (70.14%).[9]

Mudit Tyagi et al in their study also conveyed that among the 19,352 patients with uveitis, about one-third had it in both eyes, while most had it in just one eye. Specifically, 35.09% experienced it in their right eye, and 33.99% in their left. That's 31.01% with both eyes affected. Unilateral cases were more common overall, but for certain types like posterior uveitis, intermediate uveitis, and panuveitis, having it in both eyes was more frequent compared to anterior uveitis. Hence, although uveitis is generally characterized by unilateral involvement, panuveitis cases often exhibit bilateral presentation.[6]

A similar thing was also written in the Sitompul R study, acute anterior uveitis typically occurs in one eye (unilateral), but in chronic cases, it can affect both eyes (bilateral). Acute anterior uveitis can be caused by trauma, post-operative conditions, and hypersensitivity reactions. Chronic anterior uveitis is less common and often asymptomatic, but it can lead to complications such as cataracts and glaucoma.[10]

Chief Complaint

The most common chief complaints were blurry vision (53.3%), painful eye (20.0%), and red eye (11.7%). While uncomfortable of the eye (6.6%), eyes feel gritty (1.6%), hazy vision (1.6%) and floaters (5.0%) were less commonly seen. This is consistent with the study conducted by Jennifer KS Tsui et al, in their research on tuberculosis involving the uvea, the main complaints reported by patients were red eye (30%), painful eye (30%), and blurry vision (30%). Less frequently reported complaints included photophobia (10%), reduced vision (10%), itchy eyes (10%), and visual field defects (10%).[11]

The findings of this study also correspond with the research undertaken by Angela Jun et al about The Role of Primary Care Providers for Uveitis, the typical symptoms of acute anterior uveitis (AAU) commonly include pain, redness (hyperemia), sensitivity to light (photophobia), blurry vision, and watery eyes (epiphora). Pain usually develops gradually over hours to days, and hyperemia is often observed around the corneal limbus, known as limbal or ciliary flush. Chronic anterior uveitis typically presents with mild redness and blurry vision, while pain and photophobia are usually mild or absent. Patients with intermediate or posterior uveitis typically experience blurry vision and vague changes in vision, such as floaters or decreased visual acuity, without the typical symptoms of AAU. These symptoms may also be present in panuveitis. [12]

According to the study by Sitompul R, it was also said that the symptoms of uveitis are perceived to differ significantly based on their location. Anterior uveitis causes spasms of the ciliary muscle and pupil sphincter, resulting in dull/throbbing pain and photophobia. Severe pain may suggest increased intraocular pressure. Pupil sphincter spasms lead to miosis and trigger posterior synechiae. Decreased vision is primarily due to aqueous fluid cloudiness and corneal edema, although uveitis does not always cause corneal edema. In intermediate uveitis, symptoms are typically mild, characterized by decreased vision without accompanying pain or redness. However, if macular edema and cell aggregates in the vitreous (snowballs) occur, the decrease in visual acuity can worsen. In posterior uveitis, symptoms may arise gradually or suddenly, with blurry vision being a common complaint, often without pain, redness, or photophobia.[10]

Visual Acuity

At the time of diagnosis, visual acuity typically falls within the range of 0.3-0.1, indicating moderate visual impairment, which accounts for 27.2% of cases. Most vision problems in uveitis patients result from various eye complications, including corneal opacity, glaucoma, and cataracts. These complications are closely linked to how severe, how long, and how often the inflammation inside the eye occurs.[13]

Type of Uveitis

In this study, it was discovered that according to the classification of uveitis, 18.4% of patients were diagnosed with anterior uveitis, 0% with intermediate uveitis, 21.8% with posterior uveitis, and 59.8% with panuveitis. The absence of intermediate uveitis in this study can be attributed to the study setting in a tertiary

care center, where most patients presented with advanced or chronic cases, such as panuveitis.

The same discovery was also found by Nora et al in their study on Tuberculosis and other causes of Uveitis in Indonesia, where posterior uveitis and panuveitis were the most prevalent anatomical entities, each constituting 38%.[2] In contrast, according to epidemiological research in Southern India, the predominant presentation was anterior uveitis, observed in 38.14% of patients, followed by posterior uveitis in 27.89%, intermediate uveitis in 13.33%, and panuveitis in 11.08%. This trend aligns with findings from other Indian studies, which have also identified anterior uveitis as the most prevalent presentation (39%–47%).[6]

Etiology of Uveitis Based on Examination

The etiology of uveitis found in this study is most frequently caused by infections, with tuberculosis being the leading cause at 41.3%. The second most common finding is idiopathic uveitis, accounting for 30.4%. The high incidence of idiopathic findings is due to pending diagnostic tests and negative workup findings. Other causes of uveitis in this study include systemic inflammatory diseases such as spondyloarthritis 5.4% and Vogt-Koyanagi-Harada syndrome (4.3%). The most common underlying risk factors of uveitis in HIV patients is ocular toxoplasmosis at 4.3%, followed by uveitis cytomegalovirus and syphilis at 2.2%.

The same findings were discovered in research conducted in India, where the study revealed that tuberculosis was the primary cause of infectious uveitis across all groups, comprising 13.15% of all uveitis cases (2545 cases). Toxoplasmosis ranked as the second most prevalent infectious cause. Similar conclusions were drawn by the majority of Indian studies. One factor contributing to tuberculosis being the leading cause of uveitis in the Indian population is its prevalence in the country. Tuberculosis is endemic in India, with an estimated incidence of around 2.7 million cases. [6] This is consistent with the findings of uveitis etiology in Indonesia, which are largely attributed to tuberculosis, as Indonesia is also the second most endemic country for Tuberculosis in the world after India, followed by China.[14]

Another study by Putera et al in Indonesia informs us that in contrast to non-infectious uveitis, which is more prevalent in developed nations, developing countries including Indonesia show a higher incidence of infection-related uveitis. A prior investigation in their study demonstrated that around one-third of new uveitis cases stemmed from infections. Among these cases, Mycobacterium tuberculosis (Mtb) and Toxoplasma gondii (T. gondii) were the most frequent infectious causes identified. [15] In this study, all uveitis patients diagnosed with Mycobacterium Tuberculosis infection were previously confirmed through the Mantoux Test or Interferon-Gamma Release Assays (IGRA) test.

Ocular toxoplasmosis, also known as toxoplasmosis retinochoroiditis, is recognized as the most common type of infectious posterior uveitis worldwide. It typically manifests as a distinct area of retinal necrosis accompanied by inflammation in the vitreous, leading to subsequent scarring of the retina and choroid. Toxoplasmosis is caused by the protozoan parasite Toxoplasma gondii, which infects approximately 25–30% of the global population. While congenital infection often results in chronic recurrent retinochoroiditis, most cases of ocular toxoplasmosis occur after birth. Postnatally acquired ocular toxoplasmosis affects about 2 out of every 100 seropositive individuals, indicating that globally, approximately 1 in 400 people develops posterior uveitis due to T. gondii.[16] Ocular

toxoplasmosis (OT) is especially common in HIV-positive patients, and they often experience a more severe form of retinochoroiditis than HIV-negative individuals. In immunocompromised patients, the inflammation tends to be more severe, while in healthy individuals, it can sometimes resolve on its own but may become progressive in those with weaker immune systems.[17] The uveitis patients whose etiology was confirmed to be Toxoplasma in this study were confirmed by clinical findings from Indirect Funduscopy examination, showing Toxoplasmic Chorioretinitis/ Chorioretinal Scar in the macular area of the patients.

In this study, there were two out of eight confirmed AIDS patients with CD4+ counts below 200 cell/mL experienced uveitis phenomena clinically infected by Cytomegalovirus. Both patients anatomically presented with posterior uveitis. CMV posterior uveitis, particularly retinitis, typically manifests in immunocompromised individuals such as those with AIDS, organ transplant recipients, hematologic malignancies, and individuals receiving systemic or local immunosuppression treatments. Characteristic features include retinitis progression along vessels, hemorrhage with a circular appearance, and usually the absence of vitritis. Diagnosis of CMV retinitis is primarily clinical and relies on the retinitis's characteristic features. [18]

Two other patients with HIV-positive cases tested positive for Venereal Disease Research Laboratory (VDRL) and Treponema Pallidum Haemagglutination (TPHA) tests, indicating they had Syphilitic Uveitis. Coinfection with HIV is strongly associated with syphilitic uveitis. The proportion of ocular syphilis patients who are HIV-positive is significantly higher than those who are HIV-negative. Ocular manifestations of syphilis appear to be more severe in HIV-infected patients. HIV can alter the immune response to Treponema Pallidum (TP), affecting the natural progression of syphilis and increasing the risk of neurosyphilis and ocular syphilis, as evidenced by an increased risk of abnormalities in cerebrospinal fluid testing. HIV infection complicates the diagnosis of syphilitic uveitis. AIDS and other comorbidities related to fundus lesions must be ruled out. Sometimes, it is challenging to determine whether uveitis is caused by AIDS or syphilis. Eye changes associated with AIDS primarily occur in the posterior segment of the eye, including AIDS retinopathy, opportunistic infections, rare tumors, and neuro-ophthalmic diseases. Among these, retinal microvascular disease is the most common ocular symptom of AIDS, characterized by retinal soft exudates or hemorrhages. We also observed soft exudates or hemorrhages in all eight confirmed AIDS patients included in this study.[19]

In this study, it was found that 9.7% of uveitis patients had systemic inflammatory disease as the cause, with 5.4% being linked to Spondyloarthritis and 4.3% to Vogt-Koyanagi-Harada Syndrome. Among the patients studied, all of them had a type of Spondyloarthritis called Seronegative Spondyloarthritis, diagnosed based on typical clinical symptoms. Even two of them had positive lumbosacral X-ray results indicating ankylosing spondylitis. Spondyloarthritis covers various chronic inflammatory diseases like ankylosing spondylitis (AS), reactive arthritis, psoriatic arthritis (PsA), arthritis linked with inflammatory bowel disease (IBD), and undifferentiated spondyloarthritis. These conditions share similar features and a strong genetic link with the HLA-B27 antigen. Common symptoms include ongoing lower back pain, joint swelling in the limbs, finger or toe swelling (dactylitis), and inflammation where ligaments and tendons attach to bones (enthesitis). Complications may arise, such as

psoriasis, IBD, and acute anterior uveitis (AU). Uveitis, especially associated with Spondyloarthritis, affects about one-fourth of patients and is more prevalent in AS compared to other conditions like PsA, reactive arthritis, or IBD. The risk of uveitis rises with disease duration and inflammation exposure.[20]

The diagnosis of uveitis due to Vogt-Koyanagi-Harada Syndrome in this study was based on clinical findings from the four patients confirmed to have uveitis due to VKHD, two experienced complaints of sensory hearing loss, while the other two complained of tinnitus and vertigo. All four patients also reported experiencing headaches. Vogt-Koyanagi-Harada disease (VKHD) is an autoimmune condition causing widespread inflammation, primarily affecting the eyes, central nervous system, inner ear, and skin. It's a common form of uveitis among Asians and certain other ethnic groups. The disease progresses through four stages: prodromal, acute uveitis, chronic convalescent, and chronic recurrent, with the latter indicating lasting vision impairment and a poor prognosis. Treatment typically involves a combination of corticosteroids and immunosuppressive drugs, with early intervention offering better treatment outcomes.[21]

Treatment

For patients with treatable causes of inflammation such as infections, specific medications are given along with anti-inflammatories. In this study, 40.3% of the affected eyes received antitubercular medication as therapy for tuberculosis. Treating TB uveitis with anti-tuberculosis therapy typically yields positive outcomes, but it may not be as effective in cases where panuveitis affects the choroid accompanied by vitreous haze. [22]

Corticosteroid monotherapy is the initial treatment for non-infectious uveitis. Topical corticosteroids, such as 1% prednisolone or 0.1% dexamethasone, are commonly used. Alongside topical treatment, mydriatic and cycloplegic agents are often prescribed to prevent posterior synechiae formation and to relieve photophobia and pain. Systemic steroids are reserved for cases of severe eye inflammation. Oral prednisone is the most common choice, starting at a dose of 1-2 mg/kg and gradually tapered based on clinical improvement. Methylprednisolone is the preferred intravenous medication, given at 30 mg/kg (maximum 1 gram) for three consecutive days or daily. When corticosteroids aren't effective enough or when new complications arise, immunosuppressive agents are considered as an alternative treatment.[23] Any additional therapy depends on the underlying etiology. Symptomatic therapy is also often given.

Complication

The most common complication found in this study was cataracts at 52%. Cataract is often found in uveitis patients, especially in panuveitis. One of the factors causing cataracts besides eye inflammation is steroid therapy in uveitis patients which causes posterior subcapsular opacification. It's recognized that children have a higher vulnerability to developing cataracts because of steroid usage.[24]

Intraocular inflammation frequently leads to severe secondary glaucoma and was categorized as uveitic glaucoma by Priestly in 1891. In this study, 12.6% of the eyes were found to experience it. Research conducted by Al-Ani et al identified uveitic glaucoma as the most common ocular complication of anterior uveitis and subsequently the most common cause of moderate and severe vision loss.[25] The increase in intraocular pressure (IOP) among patients with uveitis can stem from various factors: trabeculitis, trabecular meshwork obstruction, posterior synechiae causing pupil blockage, or the effects of

steroid use.[26] Uveitic glaucoma is challenging because it requires simultaneous treatment of inflammation and increased intraocular pressure (IOP). Glaucoma filtering surgery combined with phacoemulsification is often necessary. [27]

Based on our data, 11.4% of cases experienced corneal scarring. Corneal scarring is reported as one of the leading causes of moderate visual loss in patients with anterior uveitis. Retinal scarring was also found in 6.3% of cases. At the first ophthalmologic examination of chorioretinitis patients, over 70% of patients were noticed to have active lesions and previously healed retinal scars. This suggests that peripheral retinitis might go unnoticed in many instances.[25]

This study found that retinal detachment also occurred in 6.3% of cases. Retinal detachment can be categorized into different types: rhegmatogenous (caused by a retinal tear), traction (due to inflammatory or neovascular membranes), exudative (caused by fluid accumulation), or combination. Rhegmatogenous retinal detachment (RRD) is the most common type, with a reported prevalence of 3.1% in uveitis patients. Conditions like cytomegalovirus retinitis pose a risk for retinal detachment.[24]

A limitation of this study is the incomplete follow-up of supporting diagnostic tests by some patients, which may have led to missing data and potentially affected the identification of disease etiology.

In light of these findings, it is strongly recommended that clinicians prioritize early detection and tailored treatment protocols to mitigate complications, particularly cataracts and glaucoma, which were identified as the most common complications of uveitis. Patient education on adherence to follow-up schedules and awareness of the potential side effects of therapies is also crucial. Prevention and management strategies, such as the judicious use of steroids and prompt intervention in cases of increased intraocular pressure, can significantly enhance visual outcomes and improve the quality of life in uveitis patients.

CONCLUSION

Most patients were aged 20-44 and more than half had bilateral involvement. The most common complaint was blurred vision with moderate visual impairment. Panuveitis was the most common type with tuberculosis being the leading cause (41.3%). Cataracts and secondary glaucoma were the main complications. Uveitis screening can be done through eye examination for individuals at risk or diagnosed with infectious diseases that can cause uveitis, such as tuberculosis which is the most common cause in Aceh. Further research is needed to develop strategies and address uveitis in areas with similar infection trends.

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