Asian Journal of Research and Reports in Ophthalmology

4(4): 1-9, 2021; Article no.AJRROP.77707

Uveitis: Classification, Diagnosis, and Treatment

Omar Elsaka [a*]

[a] *Department of Ophthalmology, Mansoura University, Faculty of Medicine, Mansoura Manchester Medical Program (MMMP), Egypt.*

Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

Article Information

Editor(s):
(1) Dr. Francesco Saverio Sorrentino, Major Carlo Alberto Pizzardi Hospital, Italy.
Reviewers:
(1) Suresh BK Rasaily, Rapti Eye Hospital, Nepal.
(2) Jasmin Ahmad, Institute of Community Ophthalmology, Bangladesh.
Complete Peer review History, details of the editor(s), Reviewers and additional Reviewers are available here: https://www.sdiarticle5.com/review-history/77707

Review Article

Received 06 October 2021
Accepted 13 December 2021
Published 13 December 2021

ABSTRACT

Background: Uveitis is a common disease that mainly affects young people. This leads to a significant loss of material. Acute anterior uveitis is the most common form and is most often associated with spondyloarthritis, in which uveitis may be the first manifestation of the disease. Specific patterns of uveitis are generally associated with systemic disease. Therefore, close collaboration between ophthalmologists and orthopedic surgeons avoids unnecessary diagnostic tests and is essential for accurate diagnosis and treatment of these patients. Acute anterior uveitis is often better diagnosed than other forms of uveitis. However, it can cause paralysis when inflammation is common. Small prospective studies with sulfasalazine have shown a decrease in growth. In some forms of uveitis, diagnosis is difficult and systemic corticosteroids and/or suppression of the immune system may require medication. Infliximab is a promising treatment for select patients.

Conclusion: Uveitis in childhood is a serious disease associated with vision-threatening problems. Uveitis associated with juvenile rheumatoid arthritis remains the leading cause of eye disease in patients with childhood uveitis.

Keywords: Iritis; pars planitis; choroiditis; retinitis; chorioretinitis; anterior uveitis; posterior uveitis; sarcoid uveitis.

**Corresponding author: E-mail: omarelsaka0808@gmail.com;*

1. INTRODUCTION

Uveitis is a type of eye infection. It affects the middle layer of tissue in the eyewall. Signs of uveitis often appear suddenly and worsen rapidly. These include redness, pain, and blurred vision in the eyes. This condition can affect one or both eyes and can affect people of all ages, including children. Uveitis infection, injury, or possible cause of autoimmune or inflammatory disease. In many cases, the cause cannot be determined. Uveitis is dangerous and can cause permanent loss of vision. Early diagnosis and treatment are needed to avoid complications and maintain vision [1].

2. CAUSES AND RISK FACTORS

Uveitis is often associated with primary systemic disease, but about 50% of patients with idiopathic uveitis may not be associated with other clinical disorders. Acute granulomatous vasculitis is associated with human leukocyte antigen B27 (HLA B27) diseases such as ankylosing spondylitis, inflammatory bowel disease, functional arthritis, psoriatic arthritis, and Behcet's disease. Herpes simplex, herpes zoster, Lyme disease, and trauma are also associated with acute non-granulomatous uveitis. Chronic non-granulomatous body weight is associated with rheumatoid arthritis, chronic infantile iris-like inflammation. Chronic granulomatous uveitis is characterized by sarcoidosis, syphilis, and tuberculosis. Posterior uveitis is found in diseases such as toxoplasmosis, ocular histoplasmosis, syphilis, sarcoidosis, and immunodeficient hosts with CMV or Candida or herpes infections. Embolic retinitis can also cause uveitis [2].

3. MECHANISM OF UVEITIS

The etiology of uveitis is usually idiopathic; However, genetic, destructive, or infectious mechanisms can promote or exacerbate uveitis. Diseases that cause uveitis in the patient and can be admitted to the emergency room include inflammatory bowel disease, rheumatoid arthritis, systemic lupus erythematosus (SLE), sarcoidosis, tuberculosis, syphilis, and AIDS. The traumatic approach is believed to be a combination of microbial contamination and the accumulation of necrosis products at the wound site, causing the body to promote an inflammatory response in front of the eye. With infectious uveitis, an immune response directed at foreign molecules or antigens is reported to damage the uveal tract and vessels of cells. If uveitis is diagnosed with an autoimmune disorder, the immune system may have a hypersensitivity reaction, which involves injecting the immune complex into the uveal region. The prevalence of etiology in all anatomical forms of uveitis, anterior, intermediate, and posterior is as follows: idiopathic (34%), seronegative spondyloarthropathy (10.4%), sarcoidosis. (9.6%), juvenile rheumatoid arthritis (JRA) (5.6%), SLE (4.8%), Behcet's disease (2.5%) and AIDS (2.4%) [3].

Seronegative arthropathy includes non-specific ankylosing spondylitis, Reiter's syndrome, psoriatic arthropathy, and inflammatory bowel disease. In a similar study, Rodríguez et al. Anterior uveitis was the most common form with 51.6%, and the etiological distribution was as follows: idiopathic (37.8%), seronegative arthropathy (21.6%), JRA (10.8%), herpesvirus (9.7%), sarcoidosis (5.8%), SLE (3.3%), rheumatoid arthritis (0.9%), posterior uveitis were the most common, the most common causes in 19.4% were toxoplasma (24.6%), idiopathic (13.3%), cytomegalovirus (CMV) (11.6%). , SLE (7.9%) and sarcoid (7.5%) [4].

Pathological examination of eye specimens has provided invaluable information regarding cell mediators, tissue damage, and treatment options in patients with uveitis. Immune cells identified in pathological samples include T and B cell lymphocytes, macrophages, and epithelial cells. For example, in uveitis associated with sarcoid, CD4+ T cells are increased, although CD8+ T and B cells have also been found. Granulomas including large polynuclear cells (aggregates of macrophages) and epithelial cells have also been identified; However, granulomas have been identified in other uveal diseases, including ophthalmoplegia and microscopic ophthalmology. After inflammatory cells infiltrate the eye tissue, tissue damage and injury, and fibrosis result from the release of cytokines and the recruitment of additional leukocytes. These processes have been described in late-stage Vogt–Koyanagi–Harada disease (VKH), which includes subretinal fibrosis and choroidal neovascularization in a significant percentage of patients with chronic VKH disease (Fig. 1) [5].

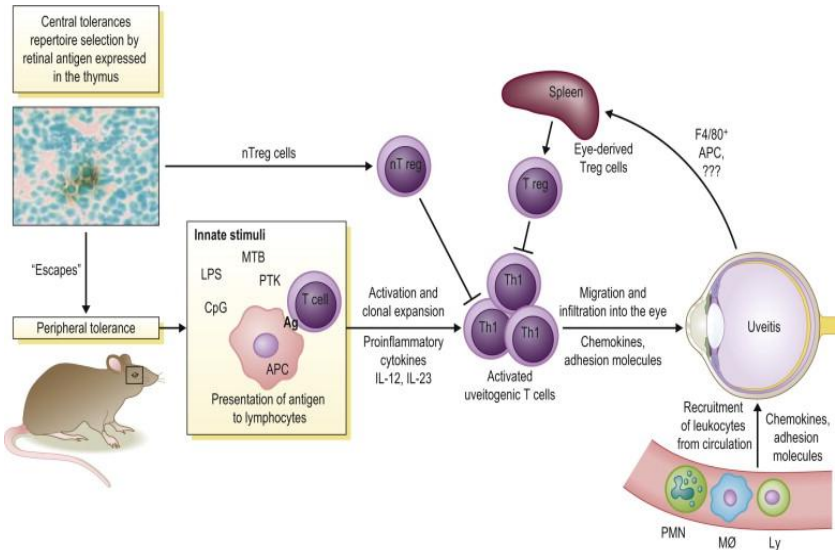

Fig. 1. Mechanism of Uveitis [5]

4. CLASSIFICATION OF UVEITIS

Anterior: The most common type of anterior uveitis causes inflammation in the front of the eye. Symptoms may appear suddenly and, in mild cases, may resolve spontaneously. Some people have chronic recurrent eye inflammation that disappears with treatment and then relapses. If you have, you are likely to have anterior uveitis: rheumatoid arthritis, including ankylosing spondylitis (AS). Independent diseases such as sarcoidosis and juvenile idiopathic arthritis. Enteropathy such as inflammatory bowel disease (IBD), Pre-infection with herpesvirus (cold or genital herpes) or chickenpox [6].

Intermediate: Young adults are more susceptible to moderate uveitis. This condition causes swelling in the middle part of the eye. Also called cyclitis or vitritis, it usually affects the fluid-filled space inside the eye. Symptoms can get better, go away, come back, and get worse. About one in three people with moderate uveitis also have: multiple sclerosis (MS) and sarcoidosis [6].

Posterior: A very rare form, posterior uveitis affects the inner part of the eye. It is often also very difficult. It can affect the retina, optic nerve and choroid. Choroid contains blood vessels that carry blood to the retina. It is sometimes called choroiditis or chorioretinitis. This type can cause recurrent symptoms that last for months or years. Possible causes include: birdshot chorioretinopathy, Viral etiologies such as the herpes virus or chicken pox virus. Lupus, Sarcoidosis, Syphilis and Tuberculosis [6].

Panuveitis: Rarely, uveitis affects all three layers of the eye. This type is very difficult and raises the risk of permanent vision loss. Possible causes include: Bacterial or fungal retinitis. Viral retinitis, Toxoplasmosis, Lupus, Sarcoidosis, Syphilis and Tuberculosis (TB) (Fig. 2) [6].

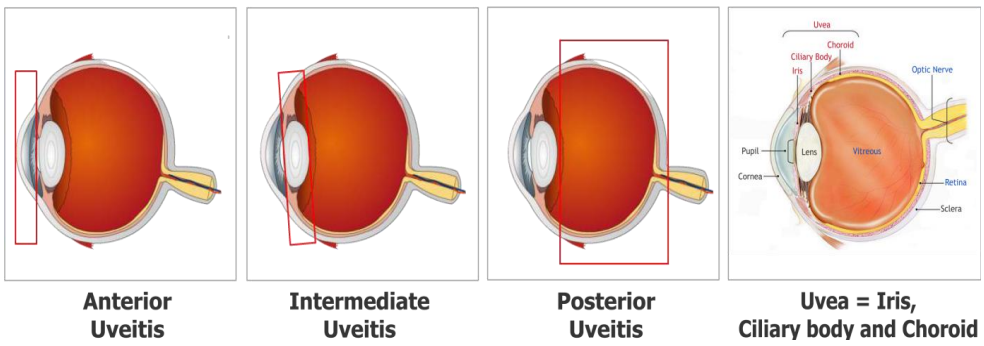

Fig. 2. Classification of Uveitis [7]

5. SIGNS AND SYMPTOMS

Signs and symptoms of uveitis may include the following: redness, eye pain, soreness, blurred vision, darkening, floating areas in your visual field (floating), loss of vision, symptoms can appear suddenly and worsen quickly and may occur, although in some cases they progress slowly. They can affect one or both eyes. Sometimes symptoms do not appear and the symptoms of uveitis are diagnosed with a routine eye exam. The uvea is the middle layer of tissue in the wall of the eye. It consists of the iris, ciliary body, and choroid. When you look in the mirror, you can see the white part of the eye (sclera) and the colored part of the eye (iris). The iris is located in front of the eye. The ciliary body is the posterior structure of the iris. The choroid is the layer of blood vessels between the retina and the skin. The retina is placed inside the fundus. The back is filled with a jelly-like fluid called vitreous humor [8].

The type of uveitis you have depends on which part or areas of the eye are swollen. Anterior uveitis affects the front of your eye (between the cornea and iris) and the ciliary body. It is also called iritis and is the most common type of uveitis. Moderate uveitis affects the retina and blood vessels just behind the lens and in the middle of the eye (vitreous humor). Posterior uveitis affects the back of your eye, the lining of the retina, or choroid. Panuveitis occurs when all layers of UVEA burn from front to back of the eye [9].

6. COMPLICATIONS

If left untreated, uveitis can cause additional complications. Problems are more likely when: Age 60 or older, chronic uveitis, rare forms of middle or posterior uveitis (middle or posterior uveitis), the most common problems with uveitis are Glaucoma: when the optic nerve that connects the eyes. The brain is damaged. Cataracts can lead to vision loss if not detected and treated in time: Cystic luteal edema: inflammation of the retina when a change in the crystal lens of the eye causes blurred vision and blurred vision or fog leads to blindness, can affect people with a chronic illness. Or posterior phlebitis, retinal displacement: when the retina begins to lose blood vessels that provide oxygen and nutrients, and then adhesion: inflammation that attaches to the iris of the lens. Uveitis is more likely to develop if not treated immediately [10].

It is important to make an accurate diagnosis and make a follow-up plan before starting treatment. Topical corticosteroids are a common treatment for premature uveitis. However, they can increase intraocular pressure (IOP). Therefore, the patient should observe ophthalmology to focus on resolving and controlling IOP. Long-term or short-term intraocular inflammation can lead to pathological changes in the eye that can lead to permanent loss of vision. These complications include cataracts, posterior synechia, cystoid macular edema (CME), band keratopathy, hypotonia, glaucoma, and optic neuritis. Although waiting room inflammation can be treated with topical steroids, some types of inflammation should never be treated with intraocular, or oral steroids unless there is a risk of serious illness and a clear diagnosis. No description. Infectious etiology is not excluded from laboratory tests and analyzes. If possible, middle and Posterior Panuveitis should be referred to ophthalmologists, especially uveitis specialists, for diagnosis and treatment [11].

7. INVESTIGATIONS AND DIAGNOSIS

Laboratory tests: This behavior should be related to the patient's history or signs or symptoms that indicate a particular etiology. In some cases, you may not need to work in the laboratory. If you have a history of trauma, known systemic disease, or unilateral soft tissue uveitis, laboratory tests may not be useful unless your body shows systemic disease. Indirect efficacy is shown when history and physical examination findings are irrelevant in the presence of bilateral uveitis, granulomatous uveitis, or recurrent uveitis. Follow-up tests do not have to be done in the emergency room. It can be ordered by a doctor in the hospital. Complete blood count, erythrocyte sedimentation rate (ESR), antinuclear antibody (ANA), plasma rapid regin (RPR), Venereal disease research laboratory test (VDRL), purified protein derivative (PPD), lime titer, HLA-B27, urine Degradation and HIV. Seeing an ophthalmologist can examine the eyes for a complete medical history. Visual acuity tests usually include a visual acuity test (usually using spectacles if wearing spectacles) and the student's response to light [12].

7.1 Tonometry

Tonometry measures the pressure inside the eye (intraocular pressure). Anesthetic eye drops can be used for this test [12].

7.2 A slit-lamp Examination

A slit lamp is a microscope that magnifies the area in front of you and illuminates it with a strong line of light. This assessment is necessary to identify the microscopic inflammatory cells in the front of the eye (Fig. 3) [12].

7.3 Ophthalmoscopy

Also known as fundoscopy, this test involves widening the pupil with eye drops and bright light in the eye to examine the back of the eye (Fig. 4) [13].

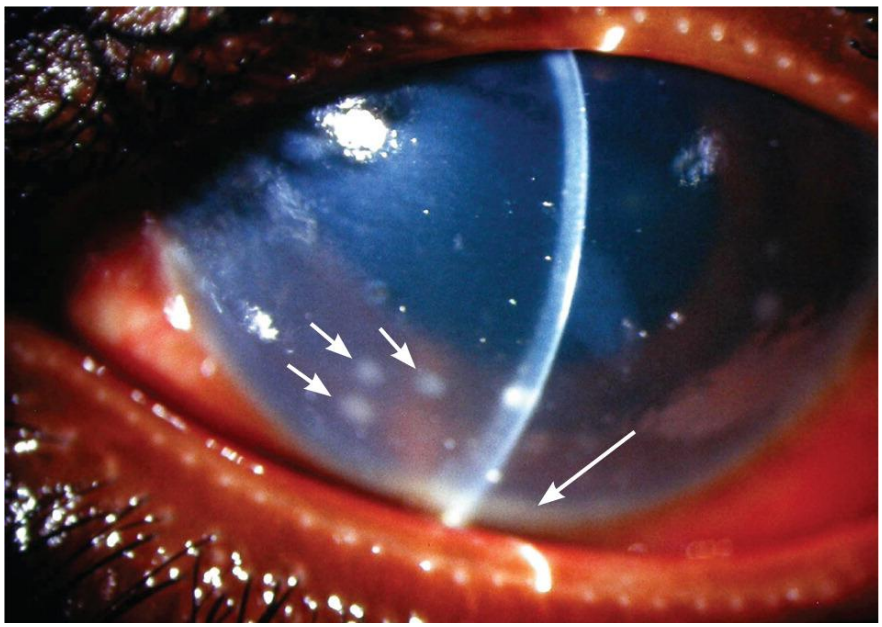

Fig. 3. Acute anterior uveitis caused by sarcoidosis. The eye is intensely red and the cornea is shaded. Large groups of inflammatory cells are seen on the posterior surface of the cornea (small arrows); there is a 1 mm hypopion (long arrow) [12]

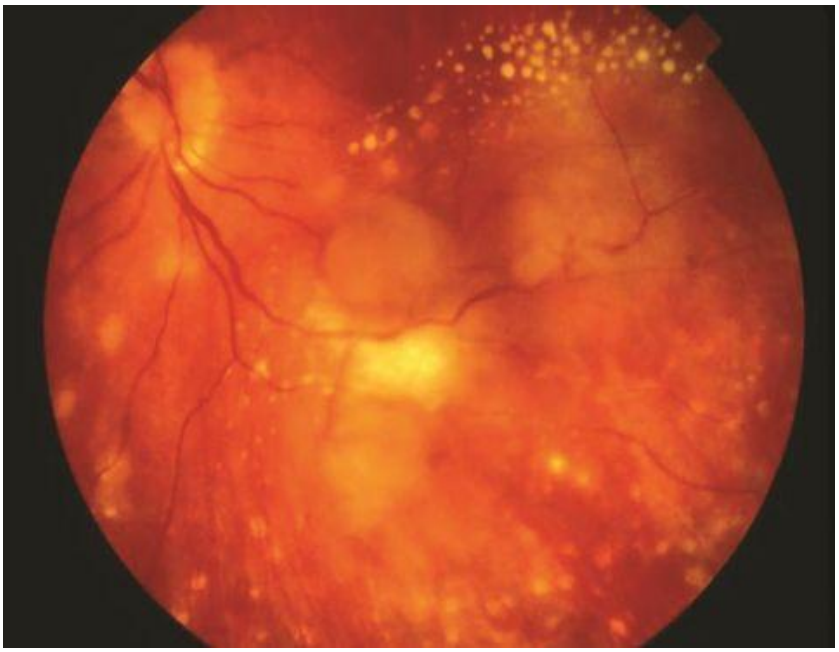

Fig. 4. Severe sarcoid panuveitis with multiple choroidal granulomas and peripheral chorioretinal scarring in the posterior pole [13]

7.3.1 Color photography of the inside of the eye (retina)

Retina Funds Color Image Funds uses the camera to record color images of the position of the inner surface of the eye, to document the presence of discrepancies, and to track their changes over time. This allows the technician to take pictures of a very large area and get a clear picture of the funds [14].

7.3.2 Optical coherence tomography (OCT) imaging

This test measures retinal and choroid thickness to detect inflammation in these layers [14].

7.3.3 Fluorescein angiography or indocyanine green angiography

An intravenous (IV) catheter must be inserted into a vein in the arm to color these tests. This color reaches the blood vessels of the eye and allows you to take pictures of inflammation of the blood vessels in the eye [15].

7.4 Analysis of Aqueous or Vitreous Fluid from the Eye, Radiography and CT

7.4.1 MRI scans

If ophthalmologists think that the underlying disease may cause your uveitis, you may be referred to another doctor for regular checkups and laboratory tests. Sometimes the sole cause of uveitis is difficult to identify. Uveitis can be successfully treated, even if no specific cause is identified. In most cases, identifying the cause of uveitis is not a treatment. It is still important to use treatment to control inflammation (Fig. 5) [16].

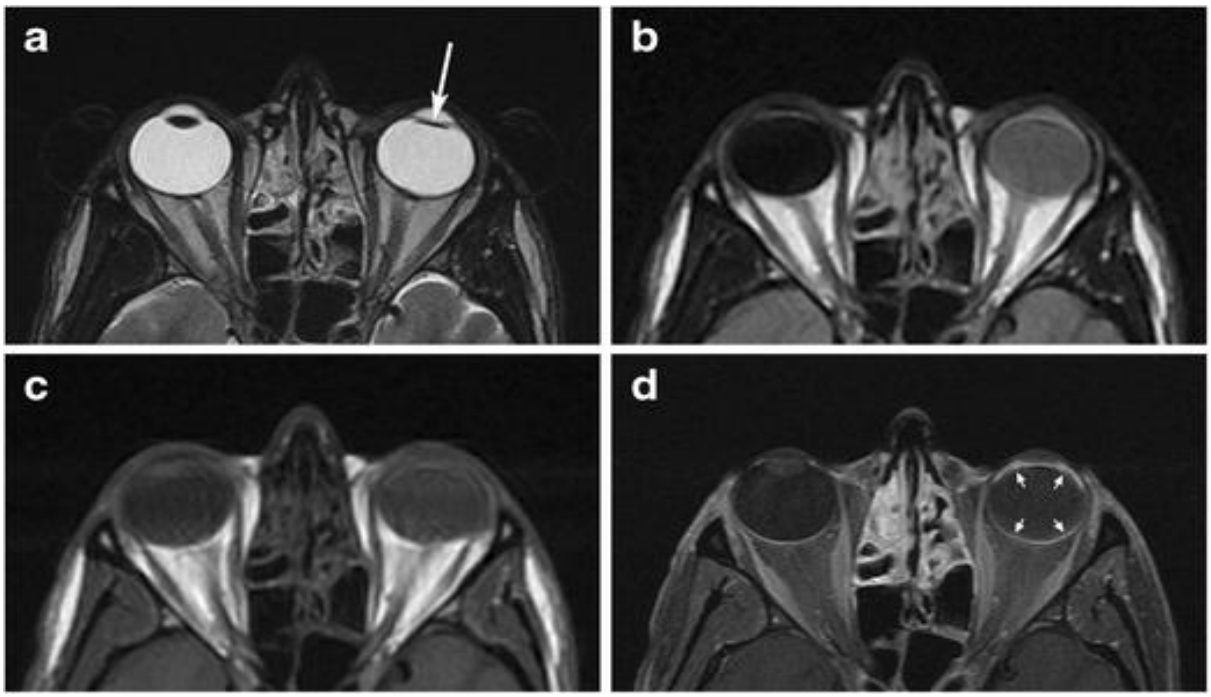

Fig. 5. Panuveitis in patients with a - d ankylosing spondylitis. Improved axial T2WI (a), axial (a), FLAIR (b), T1WI (c), and T1WI images in which luma and saturation (d) show a balance between water and glass, and increase the light of gadolinium - Left eye calf groove. The jokes of the left globe are much more dynamic than those of the right in the images with unchanged T1 weight and are surprisingly more intense in the unrevealed FLAIR. There is no significant difference in T2 weight images. The increased brightness of the left ventricular line (arrow) is commendable compared to the normal right eye and the front brightness (c) and post contrast axial (d) images with T1-weighted images. Also noted the formation of cataracts in the left eye (arrow) [17]

7.5 Treatment

If uveitis is caused by a low-grade condition, treatment may focus on that specific condition. Treatment for uveitis is usually the same regardless of the underlying cause unless it is contagious. The goal of treatment is to reduce the inflammation in your eyes and other parts of the body if that happens. In some cases, treatment may be necessary for months or even years. There are many treatments available. Medications that reduce inflammation. Your doctor may prescribe oral contraceptives, such as corticosteroids. Eye drops are not enough to treat inflammation outside the eye, so corticosteroid injections or corticosteroid tablets (taken orally) may be needed inside or near the eye. Medications that control pain: Eye drops that enlarge the pupil (significantly) may control the iris and ciliary body spaces, which can help relieve eye pain. Antibiotics: If uveitis is caused by an infection, the doctor may prescribe other medications to control the infection, with or without antibiotics, or corticosteroids. Drugs that affect the immune system or destroy cells. If your uveitis affects both eyes, does not respond well to corticosteroids, or is so severe that your vision is at risk, you may need immunosuppressive medication. Some of these medications can cause serious eye side effects, such as glaucoma and cataracts. Oral or injectable drugs can cause side effects in other parts of the body besides the eyes. You may need to see your doctor for follow-up and blood tests every three months [18].

7.6 Surgical or Other Procedures

7.6.1 Vitrectomy

Surgery to remove another vitreous from your eye is rarely used to diagnose or control the condition (Fig. 6) [19].

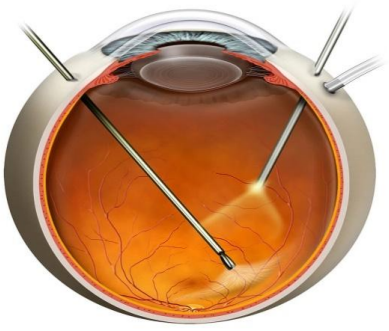

Fig. 6. Vitrectomy [20]

7.6.2 A medication-releasing implant

Ophthalmic instruments can be an option for people with posterior uveitis who are difficult to treat. This device gently removes corticosteroids from the eyes for 2-3 years. Cataracts are common in people who have not yet developed cataracts. Up to 30% of patients require high-pressure eye treatment to prevent the development of glaucoma. The cure rate depends in part on the type of uveitis and the severity of the symptoms. Uveitis that affects the fundus (retinal uveitis or panuveitis, including retinitis or choroiditis) is usually greater than anterior uveitis (anterior uveitis or iritis). Acute inflammation lasts longer than mild inflammation. Uveitis may recur [21].

8. DISCUSSION

For many years, uveitis was considered a unique disease. Therefore, the treatments were very different. As knowledge of the course of the disease increased and the complexity of immunological and microbiological tests increased, uveitis was found to cover a wide range of diseases. Some disorders are disorders of the local immune system, but most are systemic disorders that include eye symptoms. Patients with uveitis may face some of the most difficult diagnostic problems in ophthalmology. The treatment and diagnosis of different uveal tissues are very different and require an accurate diagnosis. Fuchs uveitis syndrome (also known as Fuchs achromatic iris-like inflammation), Behcet's disease, toxoplasmosis, cytomegalovirus (CMV) retinitis, ocular histological traits, and Vogt-Koyanagi-Harada (VKH) disease. Many diseases, including clinical symptoms, have mild symptoms. General when available. , Laboratory analysis. Similarly, patients with the first episode of acute non-granulomatous anterior uveitis do not require a sudden examination and physical examination of the system [22].

Laboratory tests are rarely useful as diagnostic tools. When deciding which tests to perform, it is helpful to use historical and physical indicators, as well as knowledge of the preexisting diagnostic capabilities of the disease. This diagnostic procedure is important to avoid false results and expensive and unnecessary tests. Therefore, there is no standard laboratory test available for a patient with uveitis other than the diagnosis of syphilis and sarcoidosis, which can occur in different ways. The key to a focused and

effective patient evaluation is a complete history, physical exam, and systemic exam. With this information, the doctor can make a different diagnosis and perform more laboratory tests [23].

9. CONCLUSION

Uveitis is a medical condition that can occur in emergency departments or primary care settings. It is important to identify the symptoms and make an accurate diagnosis. Healthcare providers must refer patients to ophthalmologists if uveitis is suspected. If the patient is admitted to the center with symptoms associated with uveitis and the center is unable to adequately diagnose the complaint; The patient should be referred to the facility where these tests can be performed. When diagnosing uveitis, it is important to start treatment with topical corticosteroids and cycloplegic drugs. Because it is visually impaired, healthcare providers need to ensure that patients are treated with scheduled treatment before discharge. If the patient is unable to pay for the medication, social services can help the patient. Uveitis causes about 10% of blindness in the United States, so proper treatment and treatment is very important. Uveitis management should be led by a professional team of ophthalmologists, retinal and uveitis specialists, nurses and trained pharmacists who work together to support the treatment of the uveitis patient and achieve a better outcome.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Abad S, Seve P, Dhote R, Brezin AP. [Guidelines for the management of uveitis in internal medicine]. Rev Med Interne. 2009 Jun. 30(6):492-500.
2. Acharya NR, Tham VM, Esterberg E, Borkar DS, Parker JV, Vinoya AC, et al. Incidence and prevalence of uveitis: results from the Pacific Ocular Inflammation Study. JAMA Ophthalmol. 2013 Nov.;131 (11):1405-12.
3. Al-Dhibi HA, Al-Mahmood AM, Arevalo JF. A systematic approach to emergencies in uveitis. Middle East Afr J Ophthalmol. 2014 Jul-Sep;21 (3):251-8.
4. Dunn JP. Uveitis. Prim Care. 2015 Sep. 42 (3):305-23.
5. Dunne JA, Travers JP. Topical steroids in anterior uveitis. Trans Opthalmol soc UK. 1979;99(4):481-4.
6. Foster CS, Alter G, DeBarge LR, Raizman MB, Crabb JL, Santos CI, et al. Efficacy and safety of rimexolone 1% ophthalmic suspension vs 1% prednisolone acetate in the treatment of uveitis. Am J Ophthalmol. 1996 Aug;122(2):171-82.
7. Gritz DC, Wong IG. Incidence and prevalence of uveitis in Northern California; the Northern California Epidemiology of Uveitis Study. Ophthalmology. 2004 Mar;111(3):491-500; discussion 500.
8. Lim LL, Smith JR, Rosenbaum JT. Retisert (Bausch & Lomb/Control Delivery Systems). Curr Opin Investig Drugs. 2005 Nov;6(11):1159-67.
9. Logothetis HD, Leikin SM, Patrianakos T. Management of anterior segment trauma. Dis Mon. 2014 Jun.;60 (6):247-53.
10. Lyon F, Gale RP, Lightman S. Recent developments in the treatment of uveitis: an update. Expert Opin Investig Drugs. 2009 May.;18(5):609-16.
11. McCannel CA, Holland GN, Helm CJ, Cornell PJ, Winston JV, Rimmer TG. Causes of uveitis in the general practice of ophthalmology. UCLA Community-Based Uveitis Study Group. Am J Ophthalmol. 1996 Jan.;121(1):35-46.
12. Mohammad DA, Sweet BV, Elner SG. Retisert: is the new advance in treatment of uveitis a good one?. Ann Pharmacother. 2007 Mar.;41(3):449-54.
13. Mozayan A, Farah S. Acute anterior uveitis following intravitreal injection of bevacizumab. Ophthalmic Surg Lasers Imaging Retina. 2013 Jan-Feb.;44(1): 25-7.
14. Nishimoto JY. Iritis. How to recognize and manage a potentially sight-threatening disease. Postgrad Med. 1996 Feb. 99(2):255-7, 261-2.
15. Rodriguez A, Calonge M, Pedroza-Seres M, Akova YA, Messmer EM, D'Amico DJ, et al. Referral patterns of uveitis in a tertiary eye care center. Arch Ophthalmol. 1996;114(5):593-9.

16. Syed BA, Kumar S, Bielory L. Current options and emerging therapies for anterior ocular inflammatory disease. Curr Opin Allergy Clin Immunol. 2014 Oct.;14 (5):485-9.
17. Wirbelauer C. Management of the red eye for the primary care physician. Am J Med. 2006 Apr. 119(4):302-6.
18. Yawn BP, Wollan PC, St Sauver JL, Butterfield LC. Herpes zoster eye complications: rates and trends. Mayo Clin Proc. 2013 Jun.;88(6):562-70.
19. Wildner G, Diedrichs-Möhring M. Autoimmune uveitis induced by molecular mimicry of peptides from rotavirus, bovine casein and retinal S-antigen. Eur J Immunol. 2003 Sep;33(9):2577-87.
20. Fraunfelder FW, Rosenbaum JT. Drug-induced uveitis. Incidence, prevention and treatment. Drug Saf. 1997 Sep;17(3):197-207.
21. Harman LE, Margo CE, Roetzheim RG. Uveitis: the collaborative diagnostic evaluation. Am Fam Physician. 2014 Nov 15;90(10):711-6.
22. Conrady CD, Larochelle M, Pecen P, Palestine A, Shakoor A, Singh A. Checkpoint inhibitor-induced uveitis: a case series. Graefes Arch Clin Exp Ophthalmol. 2018 Jan;256(1):187-191.
23. Groen F, Ramdas W, de Hoog J, Vingerling JR, Rothova A. Visual outcomes and ocular morbidity of patients with uveitis referred to a tertiary center during first year of follow-up. Eye (Lond). 2016;30(3):473-80.

Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle5.com/review-history/77707