ETIOLOGICAL PATTERN , CLINICAL COURSE , COMPLICATIONS AND VISUAL PROGNOSIS OF PAEDIATRIC UVEITIS IN SOUTH INDIA

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CERTIFICATE

Certified that this dissertation entitled **"ETIOLOGICAL PATTERN , CLINICAL COURSE , COMPLICATIONS AND VISUAL PROGNOSIS OF PAEDIATRIC UVEITIS IN SOUTH INDIA"** submitted for MS (Branch III) Ophthalmology, March 2013, is the bonafide work done by **DR.RAJESH.V**, under our supervision and guidance in the Uvea Services of Aravind Eye Hospital and Post Graduate Institute of Ophthalmology, Madurai, during his residency period from May 2010 to April 2013.

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INTRODUCTION :

Uveitis is an intraocular inflammatory disease caused by disorders of various etiologies which include both infectious and immune-mediated disorders. The causes of uveitis vary in different populations depending upon the ecological, racial and socio-economic variation of the population studied[1,2]. Tropical countries are unique in their climate, prevailing pathogens and in the existing diseases which further influence the epidemiological and geographic distribution of specific entities[3].

The incidence of uveitis is 20 per 100,000 in the population per year, resulting in a prevalence of about 200 per 100,000 in the population [4,5]. A recent study of the prevalence of uveitis in an urban population in Hyderabad, South India, found evidence of either past or active uveitis in 1 of 140 people in the population[6] suggesting that the prevalence of uveitis may be at an order of magnitude higher in developing than in developed nations.

Uveitis accounts for 25% of blindness in the developing world[7]. Paediatric uveitis accounts for 5% to 10% of all uveitis patients with an incidence of 4.3 to 6 [8] and a prevalence of 30 patients in 100,000 populations [5,10] . Up to one third of all children with uveitis ended with severe visual impairment.

The management of uveitis in children is challenging because they can't verbalize their symptoms[11,12] and brought late. They also tend to develop complications of uveitis more often than adults. Prevention, early identification and treatment of such complications are essential, particularly in young children who are at increased risk of developing amblyopia.

Medical therapy is more challenging in children with uveitis because of poor compliance with frequent dosing schedules, the increased tendency for corticosteroids to induce ocular hypertension and cataract and the occurrence of corticosteroid-induced growth retardation in prepubescent children [7,13]. So a thorough knowledge of the diseases in our locality and early identification and treatment of complications can help us decrease the morbidity of uveitis in children.

In this study we have prospectively analyzed the etiology, clinical pattern, complications and visual prognosis of uveitis in the paediatric age group.

REVIEW OF LITERATURE :

- **REPORTS FROM DEVELOPING COUNTRIES :**

1. **GLOBAL VARIATION AND PATTERN CHANGES IN EPIDEMIOLOGY OF UVEITIS** – Rathinam et.al

This a retrospective study done by Rathinam .et.al which included 616 paediatric uveitis patients .

RESULTS : The infectious etiology was the most common 338(54.9%) of which trematode uveitis 182 (29.5) was the most common and toxoplasma was only 29 (4.7%) , the non infectious cause of uveitis were 78(12.6) , of which traumatic uveitis was the most common 36 (5.8) while JIA contributed only to 11 (1.8%) . the idiopathic group contributed to 200 (32.5)patients .

The anatomical classification of uveitis being Anterior Uveitis (59.9%) , Intermediate Uveitis(8.4%) ,Posterior Uveitis (11%) ,Diffuse Uveitis (20.6%) , JIA (1.8%) ,Toxoplasma (4.7%) , Idiopathic (32.5%).

2. **Uveitis in children and adolescents.** BenEzra et.al

This study was done by BenEzra from 1989 to 1999 in 821 patients at uveitis clinic of the Hebrew University Hospital, Israel.

RESULTS: The uveitis was bilateral 70.3% of the cases . Anterior uveitis was seen in 13.4% of patients followed by intermediate uveitis in 41.7% , posterior uveitis in 14.1% and panuveitis in 30.8% of the cases.

The etiological cause was infectious in 92 (33.3%) of the cases and noninfectious in 184 (66.7%) of the 276 cases.

Toxoplasma 20 (7.2%),Toxocara 13 (4.7%), DUSN 3 (1.1%) , Herpes 10 (3.6%), ARN 2 (0.7%) , Varicella 2 (0.7%) , EBV 7 (2.6%) CMV 5 1.8% were the common etiology .

3. **Patterns of Uveitis in Children Presenting at a Tertiary Eye Care Centre in South India - Kannan M Narayana et.al.**

Narayana ET AL Studied 31 (6.29%) paediatric uveitis patients during the year 2000 .

RESULTS: Anterior , intermediate and posterior uveitis were seen in equal number 9 cases. Four patients had panuveitis . The uveitis was bilateral in 9 cases (29.03%) and unilateral in 22 cases (70.96%) ,Pars planitis - 9 (29. 0) , Idiopathic anterior uveitis 5 (16. 1%) .

Toxoplasmosis 5 (16. 1%), Juvenile rheumatoid arthritis (JRA) 4 (12. 9%) ,Toxocariasis 3 9.7% , Sarcoid panuveitis 2 (6. 5%) ,Idiopathic posterior uveitis 2 (6. 5%) and Traumatic anterior uveitis 1 (3. 2) were the common etiology.

- **DEVELOPED COUNTRIES**

4. **Changing patterns of uveitis in childhood** . Tugal-Tutkun et.al

Ophthalmology 1996;103:375-383.

Tugal-Tutkun and colleagues analyzed 130 children 16 years of age or younger at the Massachusetts Eye and Ear Infirmary between 1982 and 1994.

RESULTS: Anterior uveitis was seen in 58.4%, followed by intermediate uveitis 20%, posterior uveitis in 13.8%, and diffuse uveitis in 7.6%. 36.8% of the children had idiopathic etiology of which 15.3% had pars planitis. The most common causes of uveitis were JIA (41.5%), toxoplasmosis (7.7%), and toxocariasis (3.1%).

Most common cause of anterior uveitis was JIA and posterior uveitis was toxoplasma. The second most common cause of posterior uveitis in chidren was ocular toxocariasis. The most common complications in the eyes of children with JIA included cataract (71%), band keratopathy (66%), maculopathy (37%), glaucoma (30%), and hypotony (19%). But the most frequent complications in the eyes of patients with idiopathic intermediate uveitis were maculopathy

(55.2%), cataract (50%), retinal neovascularization (18.3%), and vitreous hemorrhage (13.1%). The authors noted that treatment of JIA usually required systemic immunosuppressive .

5. **Uveitis in children. Pivetti-Pezzi et.al** Eur J Ophthalmol 1996;6:293-298.

Pivetti-Pezzi described 267 patients less than 16 years of age seen at La Sapienza University in Rome between 1986 and 1994.

RESULTS: Anterior uveitis was the most common and seen in 33.3% followed by posterior uveitis 26.6%, intermediate uveitis in 25.1% and pan uveitis in 15%. The uveitis was of idiopathic etiology in 54.3% of patients, of which 25.1% of patients had pars planitis. The most common etiological diagnosis of uveitis in these children included toxoplasmosis (11.6%), JIA (9.4%), herpetic anterior uveitis (5.6%), and Fuchs' uveitis syndrome (4.8%).

6. **Epidemiology and course of disease in childhood uveitis**

Smith.et.al Ophthalmology. 2009 August ; 116(8): 1544–1551

Smith.et.al Studied 527 pediatric uveitis patients from the National Eye Institute, University of Illinois, Chicago and Oregon Health Sciences University 1980 – 2005

RESULTS: 527 pediatric patients with uveitis were identified, of whom 285 (54 %) were female . The three most common diagnoses were idiopathic uveitis (28.8%), juvenile idiopathic arthritis (20.9%), and pars planitis (17.1%). Anterior uveitis was most common (44.6%), followed by intermediate uveitis (28.0%), posterior uveitis (14.4%) and panuveitis (13.0%).

The most common etiology was idiopathic for anterior and panuveitis, pars planitis for intermediate, and infection for posterior uveitis (toxoplasmosis: 5.6%) . The majority of cases, 399 (75.7%), were bilateral . Of all complications cystoid macular edema and hypotony had the most significant visual impact.

18.9% of patients underwent ocular surgery. Posterior uveitis and panuveitis had more severe vision loss.

7. **Analysis of Pediatric Uveitis Cases at a Tertiary Referral Center** Kump.et.al.

Kump.et.al. described 267 patients less than 16 years of age seen at the Ocular Immunology and Uveitis Service of the assachusetts Eye and Ear Infirmary (MEEI) between 1985 and 2003.

RESULTS: Nongranulomatous (77.6%) and noninfectious (85.7%) were the most frequent types of inflammation. The process was bilateral in 74.4% of patients.

Anterior uveitis was seen in 56.9% of cases , intermediate in 20.8% , panuveitis in 16% and posterior uveitis in 6.3% .

The most common etiology being Juvenile idiopathic arthritis and toxoplasma . In 139 patients (52%) the cause of uveitis was not identified. Of all the patients intermediate uveitis was responsible for the major part of the idiopathic patients.

8. **Uveitis in children**- Emmett T. Cunningham ,Jr. Ocular Immunology and Inflammation –2000, Vol. 8, No. 4, pp. 251-261

This is a retrospective study which summarizes the prevalence and pattern of uveitis in children after reviewing pertinent articles .

RESULTS: Pediatric uveitis constitutes 5-10% of tertiary referral centers .

Anterior uveitis was seen in 30-40% of the patients followed by posterior uveitis in 40-50%, intermediate in 20% , and diffuse 10% of paediatric uveitis .

The most common etiology of anterior uveitis was JIA and that of posterior uveitis was toxoplasmic retinochoroiditis. Idiopathic uveitis was the most common cause of intermediate and diffuse uveitis in children.

The most common complications in children with uveitis are cataract, band shaped keratopathy, glaucoma, and cystoid macular edema. one-third of the children with uveitis suffer from severe vision loss as a result of their disorder.

ANATOMICAL CLASSIFICATION– SUN NOMENCLATUTRE[13]

1. **Anterior (Anterior chamber) :**

(Iritis , Iridocyclitis, Anterior cyclitis)

- JIA
- Toxoplasmosis
- Idiopathic
- Infections (herpes simplex or varicella zoster virus, syphilis, trematode uveitis)
- HLA-B27 (ankylosing spondylitis, psoriatic arthritis, inflammatory bowel disease, or Reiter syndrome)
- Behcet's disease
- Fuchs' iridocyclitis
- Crohn's Disease
- Sarcoidosis
- VKH

2. Intermediate (Vitreous)

(Pars planitis, Posterior cyclitis, Hyalitis)

- Pars planitis
- Idiopathic
- HLA-B27
- JIA
- Sarcoidosis
- Infections

3. Posterior uveitis (Retina or choroid)

(Choroiditis, Chorioretinitis , Retinochoroiditis,Retinitis, Neuroretinitis)

- Toxoplasmosis
- Idiopathic
- Retinal vasculitis
- Pars planitis
- Sarcoidosis
- VKH
- Behcet's Disease

4. **Panuveitis :**

   (Anterior chamber, vitreous, and retina or choroid)

- Idiopathic
- VKH
- Behcet's Disease
- Sarcoidosis
- Sympathetic Ophthalmia
- Infections
- Pars planitis
- JIA

ETIOLOGICAL CLASSIFICATION

CAUSES OF PAEDIATRIC UVEITIS :

1. NON – INFECTIOUS :

- Juvenile idiopathic arthritis
- Post-traumatic uveitis
- HLA-B27-associated uveitis (ankylosing spondylitis, Reiter's syndrome, inflammatory, bowel disease, or psoriatic arthritis)
- Fuchs' uveitis syndrome
- Behcet's disease
- Sympathetic ophthalmia
- Ocular sarcoidosis
- Post-viral uveitis
- Spondyloarthritis
- Vogt-Koyanagi-Harada disease

2. INFECTIOUS :

- Leptospirosis
- Tuberculosis
- Herpetic anterior uveitis (herpes simplex virus or varicella zoster)
- Toxoplasmic retinochoroiditis
- Toxocariasis
- Syphilis
- Herpetic-necrotizing retinitis (varicella zoster virus, herpes simplex virus)
- Lyme disease
- Diffuse unilateral subacute neuroretinitis (DUSN)
- Rubella retinitis
- Cytomegalovirus infection

CLINICAL WORK UP:

It is often the history and clinical examination that gives more information than any laboratory investigations and may avoid unnecessary investigations for the patients . Complete ocular history and systemic health history directed at most likely etiology should be obtained. It is essential that a detailed history is taken on systemic problems if the patient suffers from any such condition. The usual systemic history covers joint problem, skin disease, respiratory disease, neurological disease, gastrointestinal disease, mouth ulcers and fever. History is followed by complete ocular and systemic examination and formation of differential diagnosis. Laboratory work up is designed for each patient in a tailored manner. And any interventional procedures (i.e vitreous tap) are done when necessary .

General examination:

While examining a patient of uveitis we should examine the patient as a whole. Many uveitic diseases are associated with other systemic disorders so a detailed systemic examination can provide useful diagnostic clues (eg) we should always examine the skin for rashes, nodules, or vitiligo ,vascular lesions of lid , lid granulomas and of lesions on the extremities which may point to specific diagnosis .

CLINICAL FEATURES OF UVEITIS :

1. Anterior segment examination :

- **Conjunctiva** :

Conjunctival hyperemia is a common sign of acute anterior inflammation . Scleritis and episcleritis may occur in conjunction with some types of intraocular inflammation. Injected deep scleral vessels, a purple scleral hue, and severe pain distinguish true scleritis from more superficial inflammation .

- **Cornea :**

Keratic Precipitates (KP) - They are small aggregates of inflammatory cells that accumulate on the endothelial surface of the cornea. They provide useful diagnostic information and indicates the current level of inflammatory activity . They are of two types . The larger granulomatous aggregates are composed of macrophages and giant cells and occur in chronic inflammation . The smaller nongranulomatous ones occur in acute inflammation and are more likely to be composed of neutrophils and lymphocytes.

Corneal dendrites may be seen with uveitis as a result of herpes simplex virus infection. Interstitial keratitis may be associated with syphilis or Cogan's syndrome.

- **Anterior chamber:**

The presence of cells or increased protein (flare) in the anterior chamber is an evidence of spillover from the inflamed iris or ciliary body. Anterior chamber cells are primarily lymphocytes and neutrophils. These cells represent an index of activity but not a direct measure of the active inflammation.

When the slit beam is obliquely aimed across the anterior chamber, the ability to visualize the path of the beam is termed flare.

Chronic flare alone is not a sign of active inflammation . The grading of cells and flare based on Standardization of uveitis nomenclature(SUN) [12] are as follows .

Grade	Cells in Field
0	<1
0.5	1-5
1	6-15
2	16-25
3	26-50
4	>50

The SUN Working Group Grading Scheme for Anterior Chamber Cells: (Field size is a 1 mm by 1 mm slit beam)

The SUN Working Group Grading Scheme for Anterior Chamber Flare

Grade	Description
0	None
1+	Faint
2+	Moderate (iris and lens details clear)
3+	Marked (iris and lens details hazy)
4+	Intense (fibrin or plastic aqueous)

- **HYPOPYON :**

A hypopyon is a collection of leukocytes that settles in the lower angle of the anterior chamber. Most commonly associated with Behçet's disease and endophthalmitis and severe acute inflammation associated with many other types of uveitis.

- **Iris :**

Synechiae:

Synechiae are of two types

1. Posterior synechiae are adhesions between the iris and the anterior lens capsule
2. Peripheral anterior synechiae (PAS) is adhesion between the iris and the cornea near the anterior chamber angle.

Synechiae may cause increased intra ocular pressure. The presence of synechiae indicates that the inflammation has been chronic or recurrent.

The iris may also become atrophic in certain uveitic conditions. Iris nodules are accumulations of inflammatory cells in the iris or on its surface.

1. The Koeppe nodule develops on the pupillary border.
2. The Busacca's nodules occur on the iris surface.

- **Lens:**

Many patients with uveitis develop cataracts both because of underlying inflammation and the use of corticosteroids to treat the disease. Posterior sub capsular opacities are commonly seen early, later a complicated cataract develops.

2.POSTERIOR SEGMENT EXAMINATION :

- **Vitreous:**

Inflammation in the vitreous is characterized by increased cells and protein which arise from the choroid, retina, and ciliary body. In many diseases (sarcoidosis and pars planitis) vitreous cells tend to aggregate into clumps called ‘snowballs’ and settle in the inferior periphery.

- **Retina and choroid:**

Cystoid macular and retinal vascular alterations are also a common finding in patients with intermediate or posterior uveitis.

Vascular sheathing of the arteries or veins are caused by infiltration of inflammatory cells around the vessels. Sheathing is often accompanied by vessel narrowing and sometimes by vascular obliteration.

Retinal hemorrhages and cotton-wool spots frequently accompany retinal vasculitis. Active retinal infiltrates have fuzzy edges, overlying vitreal cells, and surrounding retinal edema.

Exudative retinal detachments can be associated with a number of ocular inflammatory diseases, but are characteristic of specific conditions such as Vogt–Koyanagi–Harada syndrome.

Choroidal lesions are common in posterior inflammatory disease they often appear as grayish-yellow elevated masses. Dalen–Fuchs nodules tend to be small, discrete, deep, yellow-white chorioretinal lesions that may be associated with hyper pigmentation. Dalen–Fuchs nodules are associated with sarcoidosis and sympathetic ophthalmia.

- **Optic nerve:**

Disc hyperemia, papillitis, or papilledema may be seen in a number of uveitic conditions. Prominent disc hyperemia is frequently noted with Vogt–Koyanagi–Harada syndrome. Secondary glaucoma is one of the most common causes of irreversible vision loss in the uveitis patient. Optic neuritis is also observed in patients with uveitis.

COMPLICATIONS :

The patients of paediatric uveitis suffer from many sight threatening complications. Not only the disease persae but also the drugs used for the treatment of uveitis causes various ocular and systemic complications. Children may be at special risk of complications, because inflammation is frequently chronic, and diagnosis is often delayed because they can't say their symptoms clearly [11] . Ocular complications of uveitis may produce profound and irreversible loss of vision, especially when unrecognized or treated improperly.

The most common complications seen include:

1. Cataract [14]
2. Glaucoma
3. Posterior synechiae
4. Band keratopathy
5. Cystoid macular edema
6. Retinal detatchment
7. Cyclitic membrane with hypotony.

Posterior sub capsular cataract is common and results from chronic inflammation and chronic use of corticosteroid therapy.

Secondary glaucoma is a sight-threatening complication that may result from trabecular meshwork damage from chronic inflammation and/or peripheral anterior synechiae, or pupillary block from posterior synechiae. Increase in intraocular pressure may also result from prolonged use of topical corticosteroids.

Band keratopathy occurs in long-standing inflammation and tends to affect the interpalpebral area.

Other less frequent complications are vitritis, cystoid macular edema, disc edema, and disc neovascularization [11].

In severe cases retinal detachment, hypotony, and phthysis bulbi may occur, indicating poor prognosis.

TREATMENT :

Children with uveitis present a number of unique therapeutic challenges. Medical therapy tends to be more challenging in children with uveitis than in adults because of poor compliance of the patient with frequent dosing schedules, the increased tendency for corticosteroids to induce ocular hypertension [15] and cataract [16] and the occurrence of corticosteroid-induced growth retardation in prepubescent children [17] .

Because of the following reasons many recommend early use of corticosteroid-sparing agents, such as methotrexate and cyclosporine in children with chronic noninfectious uveitis.[18]

Controlling the inflammation can be more difficult in children , because certain drugs used for treatment of uveitis are very toxic for their age. Children are also more prone for the development of complications than adults. Ocular surgery carries added risks in children compared to adults, because children tend to mount more inflammation following surgical procedures than adults.

We also have only limited surgical and pharmacological options to treat uveitis and its complication in children. Children at 8 to 10 yrs of age with uveitis are also at risk of developing amblyopia which makes the management of uveitis in children challenging.

1. MEDICAL :

Treatment of uveitis is focused on the control of inflammation and a specific treatment for the underlying pathology whenever possible. Treatment typically includes anti-inflammatory medications, such as corticosteroids and when needed this is given in combination with immunosuppressive agents. Other supportive treatments are also given (mydriatic agents) to keep the pupil dilated and to prevent a synechiae formation. Anti glaucoma drugs are used to control the secondary glaucoma whenever needed. Specific infectious uveitis entities such as tuberculosis, leprosy uveitis, toxoplasmosis, viral uveitis and retinitis, syphilis, herpetic anterior uveitis are treated with appropriate antibiotic, anti viral or anti parasitic treatment in addition to steroids and supportive treatment.

Treatment of uveitis will follow standard practice for ocular inflammatory disorders [19-23], including the use of corticosteroids in the form of eye drops (1% Prednisolone acetate and mydriatic agents), periocular injections(0.5 Mg Depot Triamcinolone injection) , and oral steroids(Oral Prednisolone,1 Mg per Kg body weight), and specific anti bacterial, anti fungal, anti mycobacterial or anti viral treatment will be given depending on the specific etiology of the particular case. Oral Doxycycline 100 mg twice a day for ten days will be given in addition to steroid when leptospiral etiology was diagnosed.

Inflammation was effectively controlled over the follow-up period. The duration of corticosteroids therapy was decided upon the inflammatory control.

2. SURGICAL :

The major challenge in uveitis management is often the opaque media, in such conditions surgical treatment like cataract removal or vitrectomy is needed to clear the opaque lens, the vitreous opacities, vitreo retinal traction bands, or epiretinal membranes. Scraping of BSK is done when it hinders the vision. Surgery is also required to treat the complications of severe, chronic inflammation such as glaucoma with filtering surgeries.

VISUAL PROGNOSIS:

Paediatric uveitis patients usually have a poor visual prognosis and also more than one third of these patients suffer from severe visual disability because of the following reasons :

1. These young children cannot verbalise their symptoms and are usually brought by the parents when they notice a white reflex or deviation of eyeball or redness of the eyes. Most of these patients present late when the disease is advanced and when the complications have already set in.
2. It is also difficult to examine these children thoroughly as most of them requires examination under anesthesia so the diagnosis is delayed.
3. They also tend to develop complications like cataract and glaucoma more readily than the adults.
4. They also suffer from amblyopia when the vision is hindered because of the complication which may further affect the final visual prognosis even after treating the complication.

COMMON UVEITIC ENTITIES:

- **Tuberculosis:**

Tuberculosis is a chronic infection caused by Mycobacterium tuberculosis. It is characterized by the formation of necrotizing granuloma.

Tuberculosis can affect all layers of the eyeball . It usually causes granulomatous anterior uveitis, with mutton fat keratic precipitates, posterior synechiae , and iris or angle granulomas. It can also cause vitritis with snowball opacities, snow banking, peripheral vascular sheathing, and peripheral granuloma.

In the posterior segment it causes vitreous infiltrates,retinal hemorrhages, perivascular choroiditis scars, neovascularization, ,neuroretinitis and serpiginous like choroiditis.

The treatment includes anti-tubercular therapy along with systemic steroids to suppress the inflammatory damage caused by the immune reaction .

- **Leptospirosis :**

Leptospirosis is a zoonotic infection caused by the gram negative spirochete Leptospira interrogans.

A history of water or animal contact is frequently present . The patients usually present with bulbar and palpebral conjunctival hyperemia they also have other signs of panuveitis like retinal periphlebitis and hypopyon.

The prognosis for these patients is generally good. It is treated with Doxycycline 200 mg orally once a week .

- **Varicella-Zoster and Herpes Simplex Virus :**

Both varicella-zoster (VZV) and herpes simplex viruses (HSV) can cause devastating intraocular inflammation. Both VZV and HSV can affect a variety of ocular tissues and result in manifestations such as blepharitis, conjunctivitis, scleritis, keratitis, anterior uveitis, glaucoma, vitritis, and retinitis.

Congenital VZV or HSV retinitis may appear as a pigmentary retinopathy in babies born to mothers known to have varicella-zoster or congenital herpes simplex infection during pregnancy .

The most common clinical manifestation of VZV or HSV retinitis has been called the acute retinal necrosis syndrome. Typically, it presents with a severe uveitis, retinal vasculitis, and retinal necrosis in presumably immunocompetent patients.

Treated with oral aciclovir early in the course of herpes infection. The anterior uveitis and glaucoma and treated with topical corticosteroids, cycloplegics, and appropriate glaucoma therapy.

- **TOXOPLASMA:**

Ocular inflammation caused by infection with the obligate intracellular parasite *Toxoplasma gondii.* It is the most common posterior uveitis in immunocompetent individuals . it is mostly a congenital disease but can also be acquired . it causes a localized necrotizing retinitis . The most common manifestation of congenital toxoplasmosis is retinochoroiditis. Chorioretinal scars, often bilateral, are seen in about 80% of patients.

Treated only when it endangers the vision with a “triple therapy” regimen of pyramethamine in conjunction with sulfadiazine and oral corticosteroids.

- **TOXOCARIASIS :**

Toxocariasis is caused by Toxocara canis, an ascarid that can only complete its lifecycle in the dog. Usually present unilaterally with a subacute or chronic course .

Causes a hypopyon uveitis with vitritis and peripheral retinitis with granuoma .

It is treated with both anthelmintic drugs such as thiabendazole or diethylcarbamazine, and prednisone to reduce the secondary inflammatory response.

- **SYPHILIS:**

Caused by the spirochete *Treponema pallidum* . Congenital syphilis occurs with transplacental spread of the spirochete .

Patients with congenital syphilis present with a characteristic salt and pepper chorioretinitis in both eyes . Optic disc pallor , iritis and glaucoma may also be seen. Treated with penicillin.

- **Cytomegalovirus retinitis :**

CMV is a herpes class virus and contains double-stranded DNA.CMV infection of the retina occurs as an opportunistic infection only in immunosuppressed persons or in infants with congenital CMV infection.

CMV retinitis begins as small, white retinal infiltrates.

Two types of clinical appearance may be seen

1. a perivascular fluffy white lesion with many scattered hemorrhages
2. a more granular-appearing lesion that has few associated hemorrhages and often has a central area of clearing.

It may cause CRVO , BRVO , macular edema , papillitis and optic atrophy .

Treated with ganciclovir and vanganciclovir along with HAART treatment whenever needed.

NON INFECTIOUS UVEITIS :

- **VOGT-KOYANAGI-HARADA SYNDROME:**

The Vogt–Koyanagi–Harada syndrome (VKH) is a systemic disorder involving many organ systems, including the eyes, ears, skin, and meninges.

VKH causes a chronic progressive bilateral granuomatous panuveitis. It is usually associated with an exudative nonrhegmatogenous retinal detachment . The common complications seen are cataract , glaucoma and retinal detatchment .It is usually treated with systemic steroids .

- **BEHCET'S DISEASE**:

Behcet's disease is a multisystem disorder. It causes vasculitis which affects many organs.

It is usually bilateral and causes recurrent sterile hypopyon , iridocyclitis, retinal hemorrhages and exudates , vascular sheathing , serous retinal detatchment and optic disc edema . Posterior segment pathology results in vision loss. It is usually treated with systemic steroids and immunosuppressive agents.

- **Fuchs' heterochromic iridocyclitis:**

Many patients with Fuchs' heterochromic iridocyclitis are unaware of their disease until their vision decreases because of cataract or progressive glaucoma.

It is characterized by the presence of fine, evenly distributed KPs in a white eye with mild anterior chamber cells and flare, cataract, and increased intraocular pressure .

It causes chronic mild inflammation and usually not treated with steroids . Cataracts and glaucoma in these patients should be treaded specifically.

- **SYMPHATHETIC OPHTHALMIA**:

This is a bilateral condition. Usually the patient gives history of penetrating ocular injury . It usually develops within the first year after injury .

Symptoms may vary from mild photophobia lacrimation or conjunctival redness to severe visual loss. the patients present with granulomatous mutton-fat keratic precipitates on the corneal endothelium and acute anterior uveitis.

There is generally a moderate to severe vitritis with multiple white-yellow lesions in the periphery (Dalen–Fuchs nodules) circumpapillary choroidal lesions and papillitis .

Fluorescein angiography is useful in evaluating the degree of posterior segment disease.

According to the amount of the inflammation patients can be treated only with tropical steroids or they may require oral steroids and or immune suppressive agents . If the inflammation is not controlled with maximal therapy then the enucleation of the exciting eye should be considered if the vision is very poor.

- **Juvenile Idiopathic Arthritis:**

Juvenile idiopathic arthritis (JIA) is a chronic arthritis of at least 3 months' duration in a child under 16 years of age, when other causes of arthritis have been excluded.

Children with uveitis are often asymptomatic . It causes a chronic anterior uveitis. Chronic inflammation may lead to band keratopathy, posterior synechiae, cataract, hypotony, and glaucoma.

Glaucoma has been reported in up to 20% of eyes.Band keratopathy occurs in more than half of patients and can cause significant visual disturbance . Cataract occurs in at least 60% of eyes and in young patients may lead to amblyopia[24].

Treatment : Topical corticosteroids remain the mainstay of therapy.

Glaucoma and cataract are frequent side effects of topical steroid therapy in children with JIA. Especially in young patients, cataracts may lead to the development of amblyopia and require prompt surgical removal.

A number of other immunosuppressive agents have been used to treat severe uveitis associated with JIA.More recently, anti-TNF agents have also been used to treat JIA.

Sarcoidosis :

Sarcoidosis is a multisystem granulomatous disease that can affect almost every organ in the body. They usually present with generalized symptoms such as fever, fatigue, or weight loss. Generalised lymphadenopathy is more common .

Sarcoid is usually bilateral and present as a conjunctival sarcoid granulomas and enlargement of the lacrimal gland. Acute iridocyclitis, vitritis, vitreal snowballs, macular edema, perivenous sheathing, choroidoretinitis and optic disc swelling may be seen . Noncaseating epithelioid cell granulomas is seen on histopathology of the tissue.

The mainstay of therapy for both systemic and ocular sarcoidosis is administration of corticosteroids

Acute anterior inflammation is best managed by topical corticosteroids, but frequently periocular injections of corticosteroids are needed to control severe anterior uveitis. Ciclosporin and other immunosuppressive agents have had therapeutic effects in patients with sarcoidosis.

Sarcoidosis produces a high incidence of glaucoma and cataract, and surgical intervention is frequently required.

AIMS OF THE STUDY:

To study the

- Etiological pattern of paediatric uveitis
- Clinical course of paediatric uveitis
- Complications and Visual outcome of paediatric uveitis

MATERIALS AND METHODS :

All uveitic patients presenting to the uvea department aravind eye hospital Madurai of <17 yrs of age between feb 2011 – jan 2012 will be included in our study .

Inclusion criteria :

Age ≤ 16 yrs at the time of diagnosis.

Patients in whom follow-up is possible.

Exclusion criteria :

Age more than 16 years of age.

Patients in whom follow-up is not possible. (Our exclusion criteria is broad because most of the systemic conditions will itself be an unique entity in uveitis)

Setting : University affiliated teaching center attached to a community based eye hospital offering primary to tertiary care .

Centre : Aravind Eye Hospital , Madurai .

Department : Uvea clinic and Uveitis services , Aravind Eye Hospital , Madurai .

Methods:

Demographic data were gathered including age, gender, occupation, history of exposure to contaminated environment and place of residence. Uveitis history included the ocular symptoms, details on disease severity, laterality, chronicity, course of illness, response to therapy, associated systemic conditions, precipitating events and number of episodes or recurrences.

A complete ocular and systemic history were obtained from these patients. The usual systemic history covers joint problem, skin disease, respiratory disease, neurological disease, gastrointestinal disease, mouth and genital ulcers.

History was followed by complete ocular and systemic examination .

A complete ocular examination was performed at every visit which included :

- BCVA in BE by Snellen's or (appropriate chart for age)
- IOP by non-contact tonometer
- Ocular motility
- Slit lamp biomicroscopy
- Indirect ophthalmoscopy
- Examination under anesthesia < 3 yrs

Ocular parameters examined, included ocular signs at initial diagnosis (i.e., anterior chamber cells and flare , non granulomatous/granulomatous uveitis, anterior/intermediate/pan /posterior uveitis , presence or absence of keratic precipitates, posterior/anterior synechiea, hypopyon, vitreous cells, papillitis, vasculitis, cataract, glaucoma, vitreous heamorrhage, retinochoroiditis, cystoid macular edema, exudative retinal detachment, optic atrophy and neuroretinitis) and number of episodes of the ocular inflammation.

Complications of uveitis studied, included cataract, glaucoma , band shaped keratopathy , cystoid macular edema, vitreous hemorrhage and retinal detachment. Visual acuity by Snellen charts will be recorded on each presentation to the Uveitis Service.

In order to characterize the pattern of eye inflammation, the data has been classified on the basis of location of primary inflammation, laterality, chronicity, granulomatous or non granulomatous type and associated complications. Anatomical location of the inflammation were assigned based on Standardization of uveitis nomenclature .

Laterality is classified as unilateral (affecting only one eye), alternating (affecting either eye but not both simultaneously), or bilateral (both eyes involved simultaneously). The chronicity of uveitis will be classified as acute when the episode was sudden and lasted for less than 3 months, recurrent, meaning inflammation for less than 3 months with complete resolution between the episodes and then at least one recurrent episode, or chronic, meaning inflammation persisting for three months or more.

Anterior and Pan uveitis were defined as granulomatous if large keratic precipitates or iris nodules were present. A patient was considered to have a flare up if he or she showed an increase of cells in the vitreous or in anterior segment. Anterior chamber cell and flare were graded by Standardization of uveitis nomenclature.

All patients had a systemic examination by a non-ophthalmologist physician, specialist opinion was sought whenever dermatologist, rheumatologist, oncologist, pulmonologist or paediatrician opinion were needed.

Established diagnostic criteria were used to identify the aetiological diagnosis including HLA B27 related uveitis, Behcet's syndrome, sarcoidosis, syphilis, tuberculosis, leprosy, acute retinal necrosis, VKH syndrome, sympathetic ophthalmia and others. [25-32]

Laboratory investigation :

The investigations are aimed to :

- Identify any underlying systemic disease.
- Provide a 'definitive' etiology.
- Confirm or reject a diagnosis.
- Help in the management of the patient.

General Investigations:

- Complete blood count,
- Erythrocyte Sedimentation Rate (ESR)
- FTA-ABS (tests for active cases of syphilis)
- Mantoux test and anergy panel (for TB and sarcoidosis)
- Chest x-ray (TB and sarcoidosis)
- Other remarkable history or examination findings may prompt a "targeted workup" to the disease suspected.

Specific Investigations:

- ANA (antinuclear antibody - positive in some autoimmune disorders)
- Rheumatoid factor
- Anti-neutrophil cytoplasmic antibody (ANCA) (Wegener's granulomatosis)
- Angiotensin converting enzyme (ACE) (sarcoidosis)
- HIV- ELISA & Western blot
- x-ray (Chest or Sacroiliac joint)
- CT scan of chest (sarcoidosis)
- MRI head scan (lymphoma, Neurosarcoidosis)
- OCT to study the macular status
- UBM (Ultrasound Bio Microscopy) to study the angle structures.
- FFA & ICG – (Fundus angiography – choroidal inflammatory diseases)
- CT scan of orbits / Ultrasonography (posterior scleritis)
- Conjunctival biopsy (sarcoidosis)
- Polymerase chain reaction of intraocular fluid (Eg: Herpes)
- MAT - Micro Agglutination Test for Leptospirosis
- ELISA – Leptospirosis, Toxoplasmosis, Toxocariasis.
- Vitreous biopsy , Choroidal biopsy
- Enucleated eye ball for histopathology – Sympathetic ophthalmia

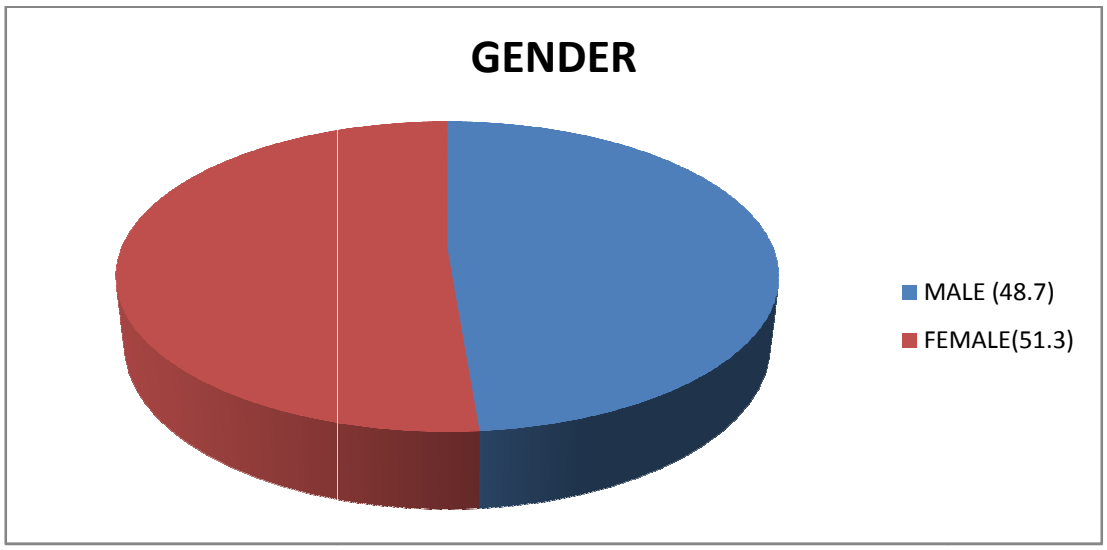
RESULTS AND DISCUSSION :

78 patients with uveitis fulfilled our criteria and were examined and followed up in our study .

CLINICAL CHARACTERISTICS : TABLE 1

	ANTRIOR UVEITIS	INTERMEDIATE UVEITIS	POSTERIOR UVEITIS	PAN UVEITIS	TOTAL
GENDER					
MALE	20(25.6)	6(7.7%)	4(5.1%)	8(10.3%)	38(48.7%)
FEMALE	15(19.2%)	11(14.1%)	8(10.3%)	6(7.7%)	40(51.3%)
LATERALITY					
UNILATERAL	25(32%)	10(12.8%)	9(11.5%)	7(9%)	51(65.38)
BILATERAL	10(12.8%)	7(9%)	3(3.8%)	7(9%)	27(34.62)
CHRONOCITY					
ACUTE	27	8(10.3%)	11(14.1%)	8(10.3%)	54(69.23)
CHRONIC	6(7.7%)	8(10.3%)	1(1.3%)	6(7.7%)	21(26.9)
RECURRENT	2(2.6%)	1(1.3%)	0	0	3(3.85)

GENDER :

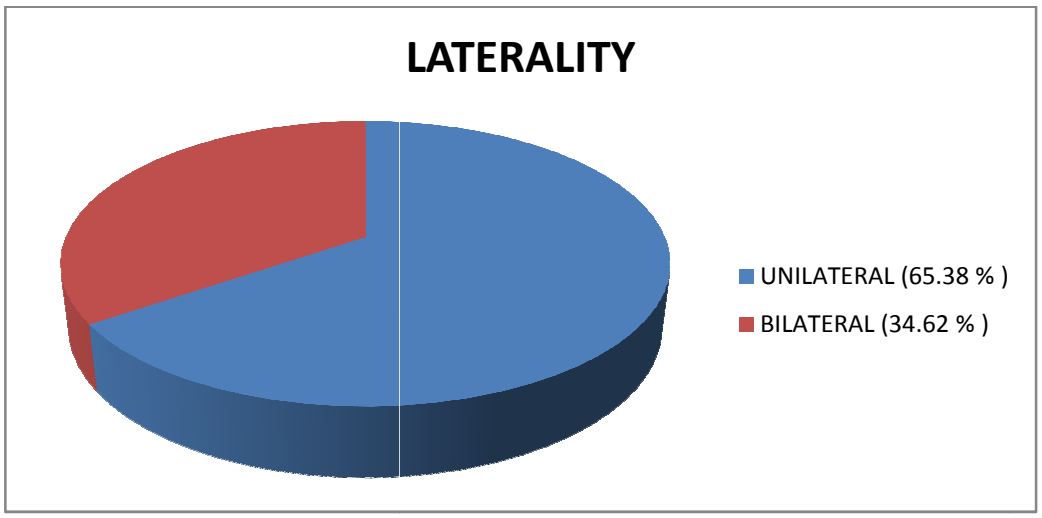


No significant gender predominance was found. Females represented 51.3%

(male : female ratio, 1:1.05)

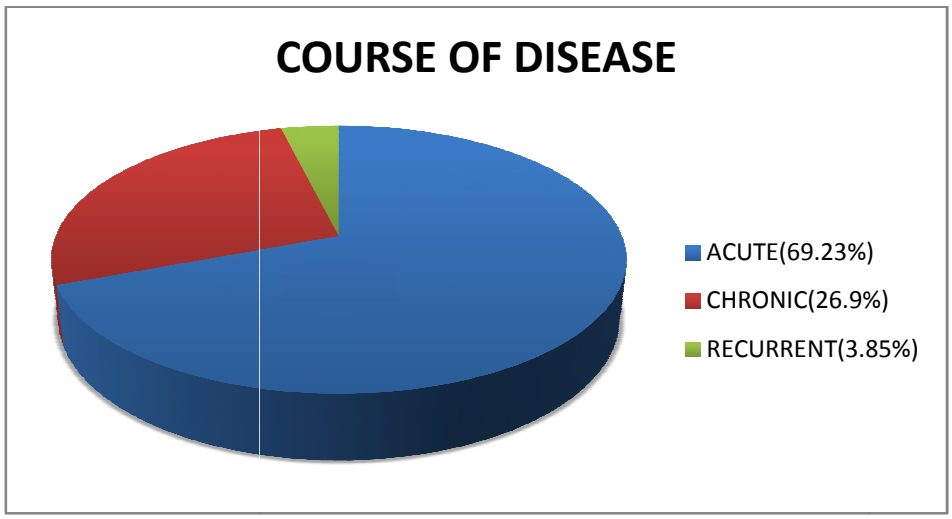
The age of the patients ranged from 1 to 16 years, with a mean age at diagnosis of 10.12 and a mean age at presentation was 10.41 . Mean duration of uveitis at the time of onset to presentation was 68 days.

LATERALITY :



65.38 % of patients were unilateral and 34.62 % patients were bilateral . This is in contrast to the studies done in the western population [37] where bilateral uveitis is more common because JIA , sarcoid and bechets were the most common cause of uveitis in the developed world but in South India tuberculosis , traumatic uveitis , viral and anterior trematode granulomas are the major cause which are commonly unilateral.

COURSE OF THE DISEASE :

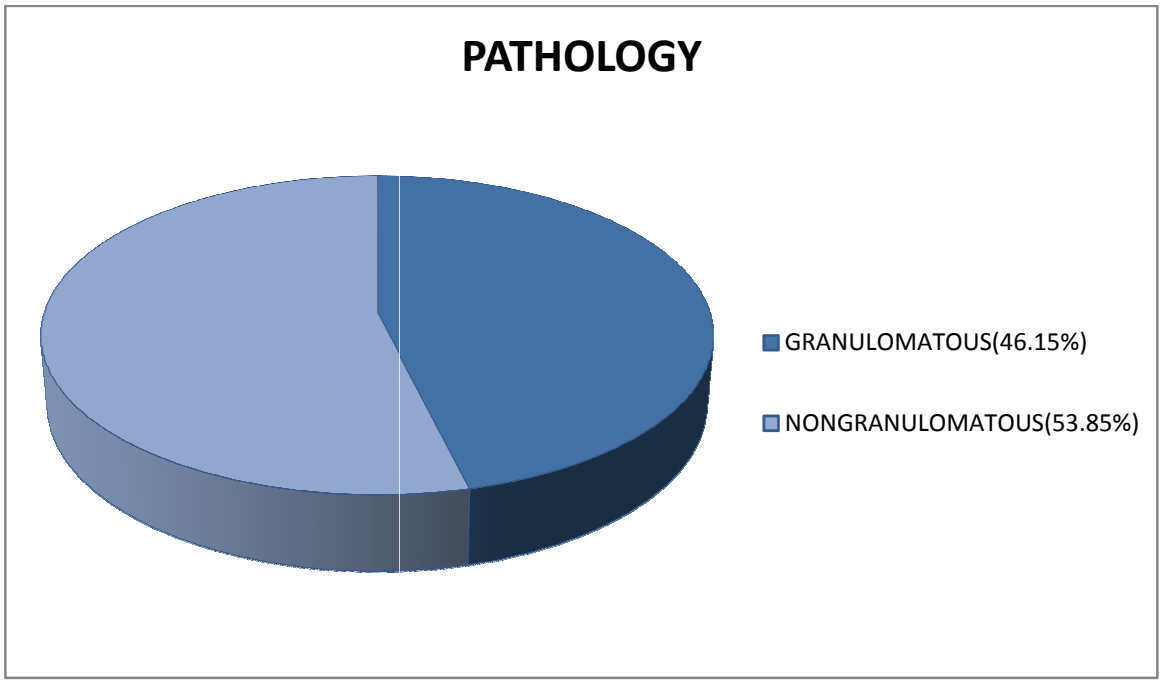


Most of the patients have an acute course (69.23%) this is in contrast to other studies [37,38] where chronic course of the disease were more common. This may partly be because they did the study in a tertiary referral hospital where chronic cases were common and the common cause of uveitis in our population is infectious which usually has an acute course in most conditions.

CLINICAL CHARACTERISTICS : TABLE 2

	ANTRIOR UVEITIS	INTERMEDIATE UVEITIS	POSTERIOR UVEITIS	PAN UVEITIS	TOTAL
PATHOLOGY					
GRANULOMATOUS	19(24.4%)	5(6.4%)	2(2.6%)	10(12.8%)	36(46.15)
NONGRANULOMATOUS	16(20.5%)	12(15.4%)	10(12.8%)	4(5.1%)	42(53.85)
IDIOPATHIC	4(5.1%)	11(14.1%)	5(6.4%)	3(3.8%)	23(29.5%)
INFECTIOUS	18(23%)	5(6.4%)	6(7.7%)	7(9%)	36(46.2%)
NONINFECTIOUS	13(16.7%)	1(1.3%)	1(1.3%)	4(5.1%)	19(24.4%)
SEVERITY					
MILD	7(9%)	1(1.3%)	1(1.3%)	3(3.8%)	12(15.4%)
MODERATE	19(24.4%)	13(16.7%)	7(9%)	10(12.8%)	49(62.9%)
SEVERE	9(11.5%)	3(3.8%)	4(5.1%)	1(1.3%)	17(21.8%)

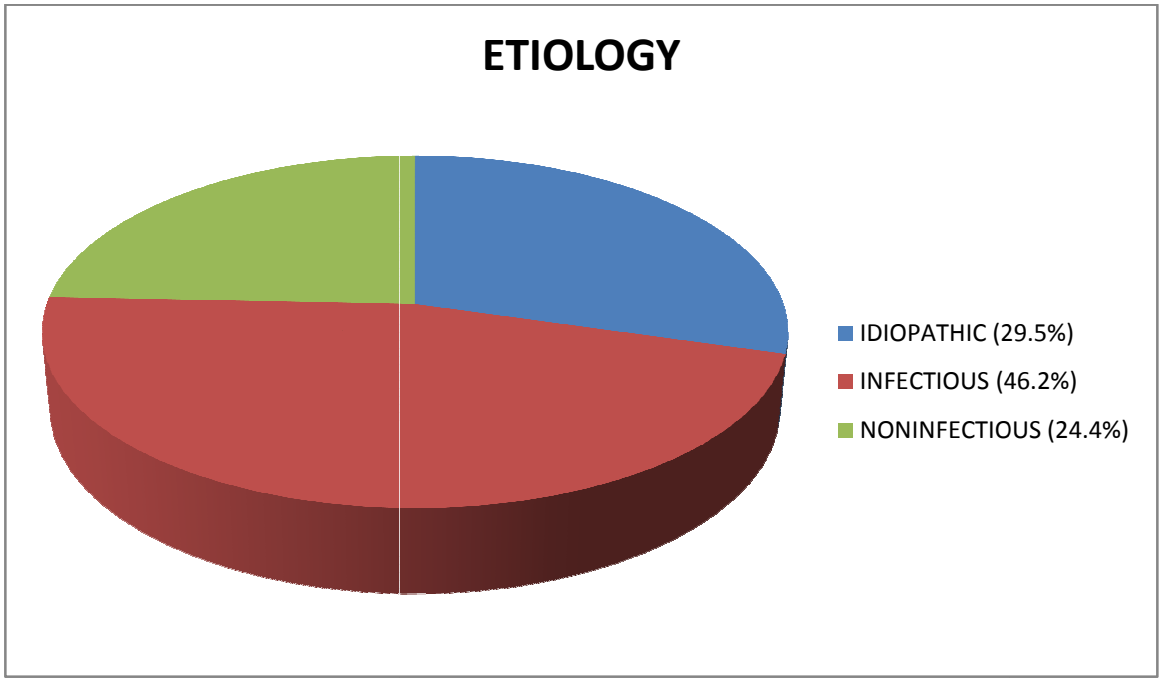
PATHOLOGY



PATHOLOGY :

46.15 % were granulomatous uveitis and 53.85% were nongranuomatous . the presence of tuberculosis and river water granuloma are the major reason for having more granulomatous uveitis compared to other studies [35, 37,38].

ETIOLOGY

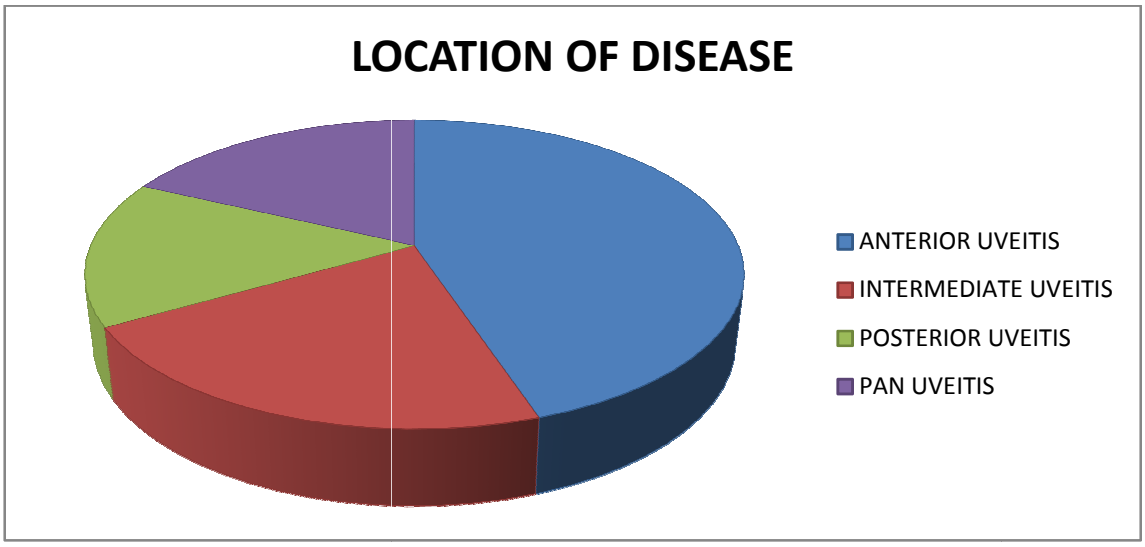


ETIOLOGY :

46.2 % of the total cases were of infective etiology and only 24.4 % of the cases were of non infective etiology .This is in accordance with studies in the developing world [3,36] as there is more prevalence of infective diseases compared to the developed world [35,37,38] where non-infective causes form the major etiology . In our study the higher incidence of tuberculosis , river water granuloma and viral uveitis contribute more to the infective etiology .

LOCATION OF THE DISEASE:

LOCATION OF THE DISEASE	NUMBER OF CASES
ANTERIOR UVEITIS	35(44.9%)
INTERMEDIATE UVEITIS	17(21.8%)
POSTERIOR UVEITIS	12(15.4%)
PAN UVEITIS	14(18%)
TOTAL	**78(100%)**



LOCATION OF THE DISEASE :

Anterior uveitis was the most common uveitis and constitutes 44.9 % of the total cases followed in turn by intermediate uveitis(21.8%) , panuveitis (18%) and finally posterior uveitis(15.4%). This finding is consistent with other reports of paediatric uveitis [33,34,35,36] who also found anterior uveitis to be more common cause of uveitis in children.

This may be because signs of anterior uveitis are easily noted by the parents and the children are brought immediately to the clinic.

ETIOLOICAL DIAGNOSIS :

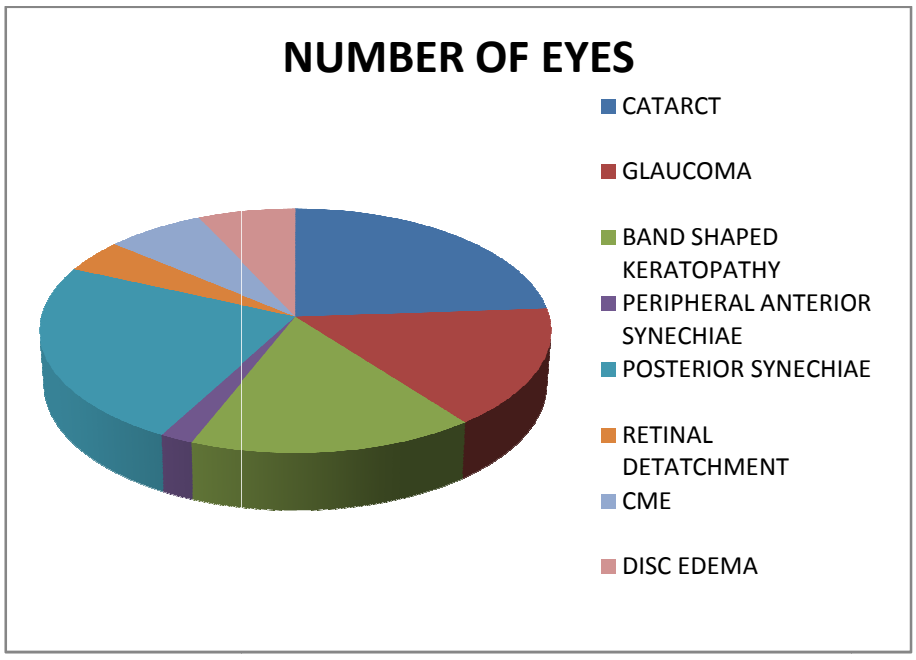
ETIOLOICAL DIAGNOSIS	NUMBER OF CASES	PERCENTAGE
TUBERCULOSIS	17	21.7%
RIVER WATER GRANULOMA	6	7.7%
JIA	6	7.7%
ENDOGENOUS ENDOPHTHALMITIS	5	6.4%
DUSN	4	5.13%
VIRAL	4	5.13%
APMPPE	2	2.6%
TOXOCARA	2	3.85%
TOXOPLASMA	1	1.28%
VKH	1	1.28%
SARCOID	1	1.28%
SYMPATHETIC OPHTHALMIA	1	1.28%
CYSTICERCOSIS	1	1.28%
ARN	1	1.28%
FUCH'S UVEITIS	1	1.28%
ULCERATIVE COLITIS	1	1.28%
HLA B27	3	3.85%
TRAUMATIC UVEITIS	2	2.6%
IDIOPATHIC	18	23.07%
TOTAL	**78**	**100%**

ETIOLOICAL DIAGNOSIS :

The most common cause of uveitis in our study was idiopathic (23.07%) this is consistent with other studies done both in the developing and developed countries . The second most common cause is tuberculosis (21.7 %) as opposed to other studies[37,38] which states that JIA being the most common cause in this age group. This is because in developing countries such as India infectious etiology is more common than auto-immune diseases. We should also note that river water granuloma was the next common cause 7.7 % which is endemic in this area[39] and has not been reported in any case reports in other areas. It causes an anterior chamber granuloma the histology of which showed a trematode . On treatment with steroids all the patients had a good prognosis. JIA accounts for 7.7% which is higher than the other studies done in the developing countries [3,36] .Endogenous endophthalmitis is responsible for 6.4 % of uveitis. The toxoplasma accounts for only 1.28% of uveitis which is in contrary to other studies[1,3,37,38] which shows a higher incidence of toxoplasma . Traumatic uveitis is also less 1.28% compared to the studies done by Rathinam et al .

COMPLICATIONS:

COMPLICATIONS	NUMBER OF EYES	PERCENTAGE %
CATARCT	38	23.9
GLAUCOMA	25	15.7
BAND SHAPED KERATOPATHY	26	16.4
PERIPHERAL ANTERIOR SYNECHIAE	3	1.9
POSTERIOR SYNECHIAE	38	23.9
RETINAL DETATCHMENT	7	4.4
CME	11	6.9
DISC EDEMA	11	6.9
TOTAL NUMBER OF COMPLICATIONS	**159**	**100%**



DISTRIBUTION OF COMPLICATIONS ACCORDING TO LOCATION OF DISEASE

	ANTRIOR UVEITIS	**INTERMEDIATE UVEITIS**	**POSTERIOR UVEITIS**	**PAN UVEITIS**	**TOTAL**
CATARACT	14(8.8%)	14(8.8%)	0	10(6.3%)	38(23.9%)
GLAUCOMA	6(3.7%)	2(1.2%)	13(8.1%)	4(2.5%)	25(15.7%)
BAND SHAPED KERATOPATHY	8(5.03%)	9(5.7%)	0	9(5.7%)	26(16.4%)
PERIPHERAL ANTERIOR SYNECHIAE	3(1.8%)	0	0	0	3(1.9%)
POSTERIOR SYNECHIAE	18(11.3%)	10(6.3%)	0	10(6.3%)	38(23.9%)
RETINAL DETATCHMENT	1(0.6%)	1(0.6%)	3(1.8%)	2(1.2%)	7(4.4%)
CME	2(1.2%)	3(1.8%)	5(%)	1(0.6%)	11(6.9%)
DISC EDEMA	0	4(2.5%)	4(2.5%)	3(1.8%)	11(6.9%)
TOTAL	52(32.7%)	43(26.4%)	25(15.7%)	39(24.5%)	159(100%)

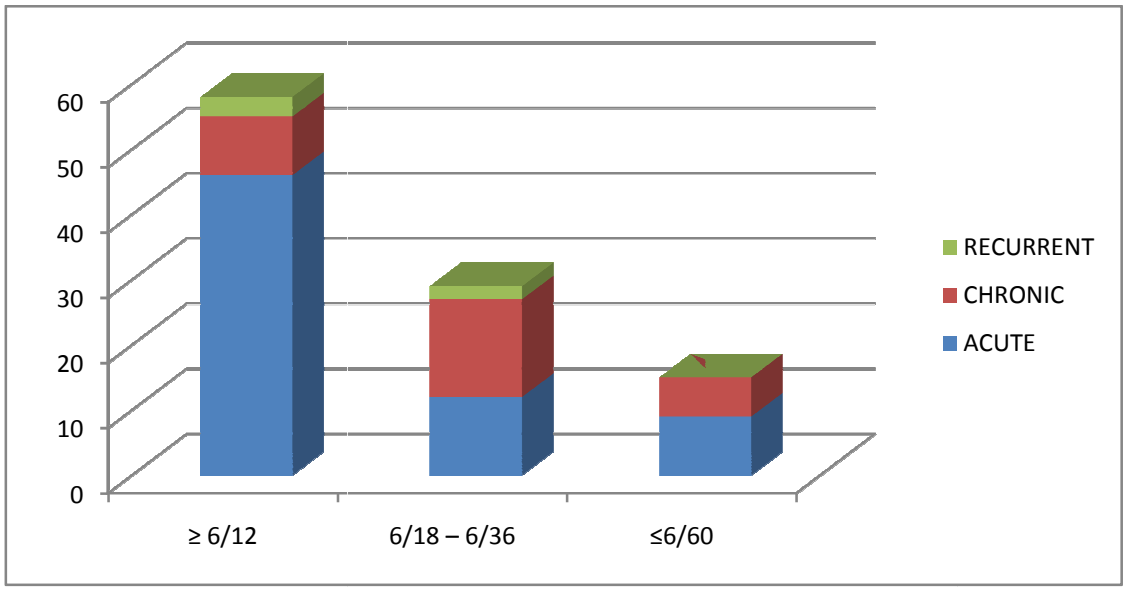
Most of the complication was seen in the anterior uveitis compared to the other location followed by intermediate pan and posterior uveitis respectively. The most common complication in the anterior segment was posterior synechiae , cataract and BSK which is similar to other studies [1,11,38] . The most common complication in the intermediate uveitis is also cataract followed by posterior synechiae and BSK. Glaucoma and CME constitute most of the complication in the posterior uveitis . While cataract , posterior synechiae and BSK constitute most of the complication in the panuveitis .

Out of the total complications cataract and posterior synechiae constitute the major portion followed by BSK , glaucoma , CME and disc edema .

DISTRIBUTION OF VISUAL ACQUITY ACCORDING TO COURSE

FINAL VISUAL ACQUITY	ACUTE	CHRONIC	RECURRENT	TOTAL
≥ 6/12	46	9	3	58
6/18 – 6/36	12	16	2	30
≤6/60	9	6	0	15
TOTAL	67	31	5	103*

(*1 patient was 1 year old and had a visual acquity of pick up cake in both eyes)

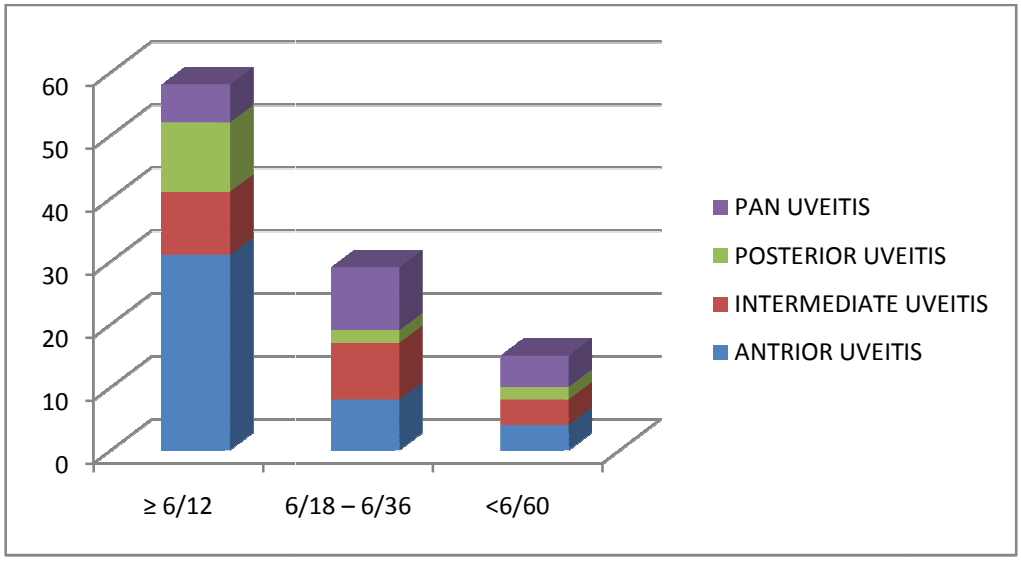


Patiens with chronic uveitis was associated with greater risk of vision loss compared to acute uveitis. This is because most of the acute cases of uveitis resolve early with treatment but the eyes of patients with chronic disease are exposed to more inflammation resulting in much higher incidence of complications and visual loss.

DISTRIBUTION OF VISUAL ACQUITY ACCORDING TO ANATOMICAL LOCATION OF DISEASE :

FINAL VISUAL ACQUITY	ANTRIOR UVEITIS	INTERMEDIATE UVEITIS	POSTERIOR UVEITIS	PAN UVEITIS	TOTAL
≥ 6/12	31	10	11	6	58
6/18 – 6/36	8	10	2	10	30
≤6/60	4	4	2	5	15
TOTAL	43	24	15	21	103 *

(*1 patient was 1 year old and had a visual acquity of pick up cake in both eyes)



Patients with pan uveitis are at higher risk of developing decreased visual acquity compared to other uveitis .

Clinical course of the diseases :

Out of the 17 patients with tuberculosis ,12 patients had an acute course and the disease was unilateral in 11 patients. 10 patients had anterior uveitis of which 2 patients developed secondary glaucoma and were treated with anti glaucoma medications . 10 eyes of 9 patients had a visual acuity of ≥ 6/12 and one eye of 1 patient had a visual acquity of 1/60 . She had a recurrence of infection with cataract so cataract surgery was planned after control of infection .Of the 2 patients with intermediate uveitis both the patients developed cataract , band shaped keratopathy and secondary glaucoma during the course of the disease. One patient underwent cataract surgery and had a final visual acquity of 6/36 , the other patient was treated with topical and oral steroids along with ATT and had a final visual acquity of 6/18 . One patient with posterior uveitis had a tuberculous granulomas with serous retinal detachment which resolved with oral steroids and ATT and had a final visual acquity of 6/12 . Of the 4 patients with pan uveitis 1 patient developed cataract for which cataract surgery was done but he had a recurrence of infection and had a final visual acuity of 6/36 . 1 patient developed Exudative retinal detachment due to choroidal granulomas and had no PL . 1 patient developed secondary glaucoma and had anti-glaucoma medication and

had a visual acuity of 6/36 . The last patient was treated with topical and oral steroids along with ATT and had a visual acuity of 6/12.

6 patients had river water granuloma. All patients gave history of contact with river water or pond water . 5 patients had an acute course. All the 6 patients had only anterior uveitis . Anterior chamber aspiration was done in 3 eyes of 3 patients and in 1 patient conjunctival excision of granuloma was done . Two patients developed cataract and in 1 patient cataract surgery was done . All the patients were treated with topical steroids and had a final visual acuity of 6/6 .

6 patients had juvenile idiopathic arthritis . All of them developed bilateral uveitis . 4 patients gave history of joint pain . 3 patients had anterior uveitis , 2 patients had intermediate and 1 patient had pan uveitis .8 eyes of 5 patients developed cataract during the course of the disease and 4 patients underwent cataract surgery in 4 eyes . 4 patients developed secondary glaucoma and were treated with anti glaucoma medications . 1 patient underwent trabeculectomy along with IOL surery as he had uncontrolled high intra ocular pressure along with cataract . 1 patient underwent pars plana lensectomy along with anterior viterectomy . 1 patient had bilateral CME and was treated with intra vitreal triamcinalone and oral methotrexate . 9 patients had band shaped keratopathy and 2 patients

underwent BSK scraping. 4 eyes of 3 patients had a final visual acquity of $\geq$6/12 . 6 eyes of 4 patients had a final visual acuity of 6/18-6/36 and 2 eyes of 1 patient had a final visual acuity of 6/60 .

5 patients had endogenous endophthalmitis . 3 patients gave history of fever before onset of defective vision . 3 patients had a chronic course and were treated with steroids and systemic antibiotic . 2 patients underwent viterectomy and had a final visual acquity of 6/9 and 6/18 (patient had CME) . The other patient had only mild inflammation and was treated conservatively. He had a final visual acuity of 6/6 . 2 patients had a chronic course of which 1 patient developed retinal detachment and had no PL . The other patient developed secondary glaucoma and was treated with topial steroids along with anti glaucoma medications and had a final visual acuity of 6/12.

4 patients had DUSN. All the patients had an acute course . 3 patients had a chorioretinitis and 1 patient also had a serous retinal detachment .They were treated with albendazole and systemic steroids and all these patients had a final visual acuityof 6/9 . 1 patient presented late when optic atrophy had already set in and had a final visual acquity of 1/60 .

5 paient had viral uveitis . 1 patient gave history of fever and chicken pox before the diminution of vision . Out of the 2 patients with anterior uveitis 1 patient developed cataract and underwent IOL surgery and the other patient was treated with topical antiviral and both had a final visual acuity of 6/6 an 6/9 respectively. 1 patient with posterior uveitis was diagnosed as ARN and was treated with intra vitreal gancyclovir . He developed retinal detachment and underwent a parsplana viterectomy with silicon oil injection and had a final visual acuity of 6/9 . Of the 2 patients with pan uveitis one had multifocal choroiditis and it resolved with systemic anti virals and steroids and had a final visual acuity of ≥ 6/12 . The other patient had severe vasculitis and CME and was treated with antivirals and intra vitreal steroids and had a final visual acquity of 6/36

2 patients had AMPPE and both had history of fever before the onset of defective vision . 1 patient developd CME . They were treated with steroids and had a final visual acquity of 6/6 .

3 patients had toxocara .1 patient had an acute course and it resolved with treatment causing cataract and BSK. He underwent IOL surgery and had a final visual acquity of 6/9 . The other 2 patient had a chronic course and both developed secondary glaucoma . one patient developed retinal detachment and the other patient developed hypotony and both had a final visual acquity of HM.

1 patient had toxoplasma . She had an acute course and presented with disseminated choroiditis with macular star and hard exudates . She was treated with oral steroids and antibiotics (azitromycin and cotrimazole) and she had a final visual acquity of 6/36.

1 patient had VKH . She presented with anterior uveitis with hypopyon . She had a recurrent course and developed cataract , posterior synechiae choroiditis and optic disc edema . She was treated with steroids and immunosupressives and had a final visual acuity of 6/36 in both eyes.

1 patient had sarcoid . She gave a history of fever and joint pain and cough . She presented with anterior uveitis and had posterior synechiae and busaca nodules . She was treated with steroids and immunosupressives . During the course of the disease she developed skin lesions. She developed an episode of recurrence and the dose of immunosuppressive was increased and the inflammation was controlled. She had a final visual acquity of 6/6 .

1 patient had sympathetic ophthalmia . He gave a history of blunt injury to left eye 1 year back . He developed diminution of vision 6 months after the injury . He presented with bilateral anterior uveitis with cataract and snow banking and parsplana exudates with visual acquity of RE-2/60 and LE-6/60 . He also had vitreous haemorrhage in right eye . He was treated with steroids and

immunosupressives . He underwent RE – parspana viterectomy with lens extraction and had a final visual acquity of 6/18 and 6/36 in the RE and LE respectively .

1 patient had cysticercosis . She presented with severe hypopyon uveitis . cysticercosis was confirmed by b-scan . She also underwent neuroimaging to rule out cerebral cysticercosis . she underwent parsplana viterectomy but her eye went for pthisis and had a final visual acuity of no PL .

1 patient had Fuchs heterochromic uveitis . He presented with anterior uveitis with koeppe's nodule and cataract in RE . He underwent IOL surgery and had a final visual acuity of 6/18 .

3 patients had HLA B27 uveitis. 2 patient had an acute course and anterior vitritis and was treated with oral steroids . 1 patient had a visual acuity of 6/12 and the other patient had a final visual acquity of 6/36 due to cataract . 1 patient had a recurrent course and intermediate uveitis . He developed cataract , secondary glaucoma and CME during the course of the disease and underwent parspanaviterectomy and IOL surgery and had a final visual acquity of 6/6 in both eyes.

Two patients had traumatic uveitis . They presented with history of trauma and anterior hypopyon uveitis . One patient was treated with topical steroids and had a final visual acquity of 6/6 . The other patient was treated with topical and oral steroids . He showed RCS thickening in B scan and had a final visual acquity of 6/24.

One patient had ulcerative colitis . She had a chronic course during which she developed cataract and secondary glaucoma and underwent pars plana viterectomy with cyclitic membrane removal and had a final visual acquity of 6/24 .

In 18 patients the probable cause of uveitis cannot be found and named as idiopathic . Of these 6 patients had anterior uveitis , 9 patients had intermediate uveitis , 2 patients had posterior uveitis and 1 patient had pan uveitis .

Of the 6 patients with anterior uveitis 4 patients had a acute course and all of them were treated with steroids and had a final visual acquity of 6/12 . of the 9 patients with idiopathic intermediate uveitis 4 patients had an acute course and all the patients were treated with steroids and immunosuppressive . 1 patient developed glaucoma and cataract and was treated with anti glaucoma medications and underwent LE cataract surgery and had a final visual acquity of 3/60 due to amblyopia . 1 patient developed cataract and had a final visual acquity of 6/24 .

the other patients had a final visual acquity of 6/12 . the remaining 5 patients of idiopathic intermediate uveitis had a chronic course and during the course of the disease 4 patients developed cataract and underwent cataract surery with IOL . 2 patient underwent membranectomy and had a visual acquity of 6/24 and 6/12 respectively . 1 patient had trabeculectomy done and had a final visual acquity of 6/12 . 1 patient developed vasculitis and had a final visual acquity of 6/24 . 1 patient had a vitreous haemorrhage and had a final visual acquity of 1/60 .

CLINICAL PICTURES

FIGURE 1: A CHILD WITH TUBERCULAR LYMPHADENOPATHY

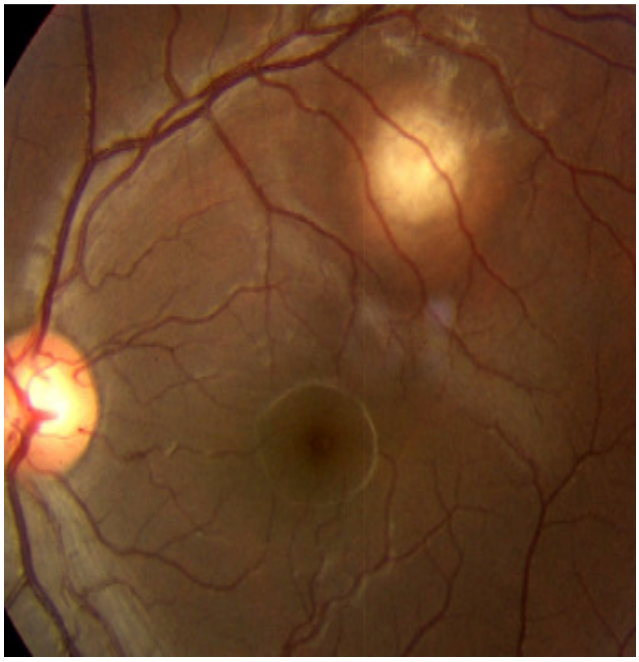


FIGURE 2 : TUBERCULAR CHOROIDAL GRANULOMA IN THE SAME PATIENT .

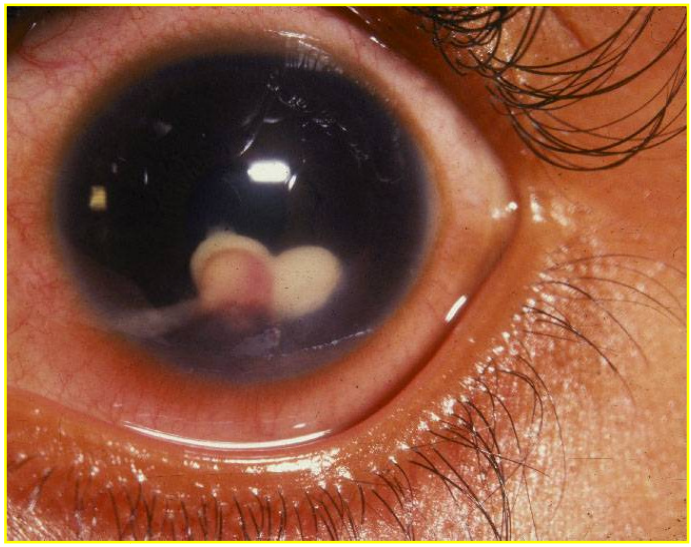


FIGURE 3 : PHOTO OF ANTERIOR CHAMBER SHOWING ANTERIOR GRANULOMA.

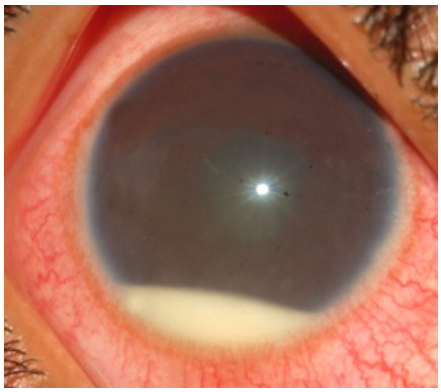


FIGURE 4 AND 5 – A CHILD WITH ENDOGENOUS ENDOPHTHALMITIS .

COMPLICATIONS:

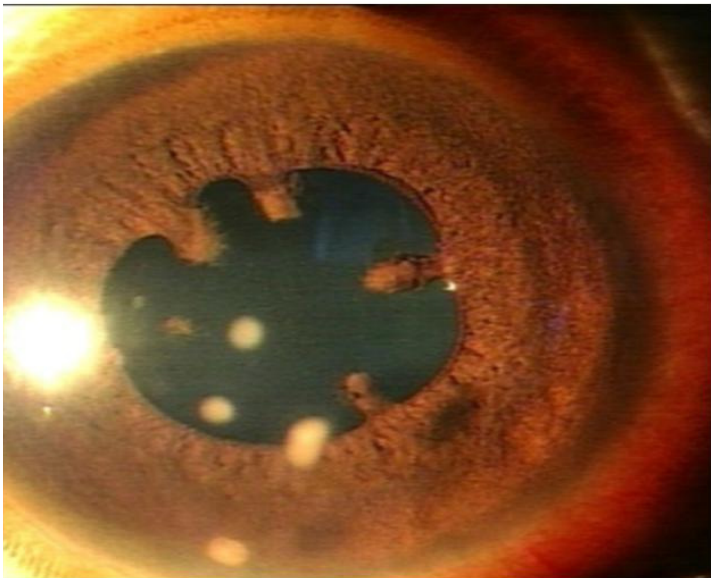


FIGURE 6 : POSTERIOR SYNECHIAE

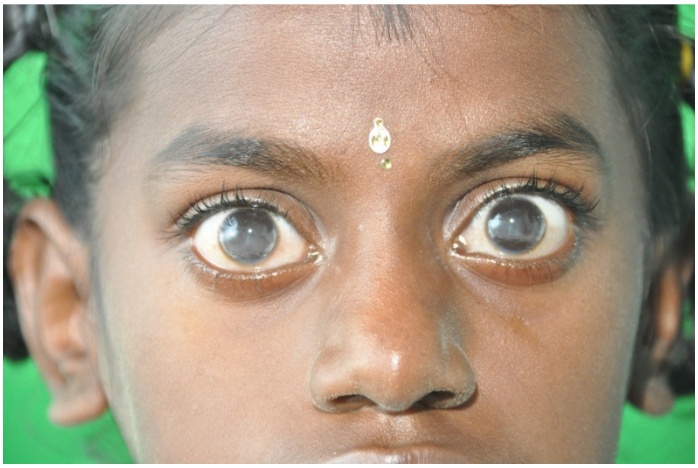


FIGURE 7 : BAND KERATOPATHY IN A CHILD OF JIA

CONCLUSION :

Delayed diagnosis, extended burden of disease and blindness over a lifetime, limited treatment options, complicated examinations, and the risk of amblyopia are special challenges unique to paediatric uveitis. Eventhough the incidence and prevalence of uveitis in children is low they are more prone to develop sight threatening complications of uveitis than adults. In addition, children are more vulnerable to various sides effects such as corticosteroid-induced growth retardation in prepubescent children and an increased tendency for corticosteroids to induce ocular hypertension and cataracts.

In our population, analysis of 105 eyes of 78 patients showed that anterior uveitis is the most common, followed by intermediate, panuveitis and posterior uveitis. The most common cause of anterior uveitis was tubercular etiology, that of intermediate uveitis was idiopathic. DUSN was common cause of posterior uveitis, while endogenous endophthalmitis is the most common cause of pan uveitis. River water granuloma, a cause of anterior uveitis has not been reported in other studies and seems to be endemic to this area. When a patient presents with an anterior chamber granuloma and gives history of contact with river or pond water, we have to suspect river water granuloma. It usually has a good prognosis.

Anterior uveitis caused more complications than other anatomical types, of which posterior synechiae and cataract are the most common.69% of the patients had an acute course of which tuberculosis and river water granuloma were the main etiologies. Tuberculosis followed by river water granuloma and JIA were the more common causes of uveitis.

Eyes with pan uveitis were at increased risk of poor visual prognosis compared to other types of uveitis though not statistically significant. Eyes with chronic course of uveitis had a poor visual prognosis compared to acute course. This is because eyes with chronic uveitis are prone for more complications.

Common complications included cataract, band keratopathy, glaucoma, and cystoid macular edema. Up to one-third of the children with uveitis are left with severely impaired vision as a result of these complications.

Children, if they lose vision, they have a lifetime of blindness ahead of them, the number of 'blind person years' resulting from blindness in a child is more than an elderly person losing vision. So early and correct diagnosis, efficient treatment and early complication management of uveitis in children is mandatory.

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Paediatric Uveitis study

Name : _____ **MR No.** | | | | | | | | **Date** | | | | | | | Uveitis **No.** | | | |

Age (yrs/mts): | | ***Sex : M/F Hospital : ~~Paying / Free~~ Ph No :*** | |

Residence *(Rural = 1, Urban = 2)*

Address :**.....** **.....**

..... **.....** **.....**

Door No & Street *village/Town* *Pincode* *District* *State*

Ocular Findings *: Laterality (Right eye = 1; Left eye = 2; Both ey 3)*

	OD	***OS***
Visual Acuity		
Pathology (Granulomatous = 1; Nongranulomatous = 2)		
Severity (Mild = 1; Moderate = 2; severe = 3)		
Chronicity (Acute = 1; Chronic = 2; Recurrent = 3)		
Age at onset (Years/months)		
Actual duration of symptoms (days)		

Location : (Anterior = 1; Intermediate = 2; Posterior = 3; Pan-4)

Anterior Segment (Yes = 1; No = 8; Not examined = 9) Scleritis		
Keratitis		
Cells (1+ to 5 +)		
Flare (1+ to 5 +)		

KPS (Inferior =1; Diffuse = 2) ☐

Synechiae (Anterior = 1; Posterior = 2) ☐

Iris nodules (Koeppes = 1; Busacca=2) ☐

Hypopyon ☐

Rubeosis ☐

Cataract ☐

Band keratopathy ☐

Posterior Segment Snow bank / balls (bank =1; balls = 2 ; both = 3) ☐ ☐

Retinitis(Focal =1; Multifocal = 2; Disseminated = 3) ☐ ☐

Choroiditis (Focal =1; Multifocal = 2; Disseminated = 3) ☐ ☐

Vitritis ☐ ☐

Parsplana Exudates ☐ ☐

Neovascularisation (Disc = 1 ; Elsewhere = 2) ☐ ☐

Optic nerve edema ☐ ☐

Cystoid Macular edema ☐ ☐

Vitreous haemorrhages ☐

Exudative Retinal detatchment ☐

Others Right eye ..... Left eye .....

Past treatment done outside : ☐

(Under treated=1 ; adequately treated=2 ; over treated = 3)

Medication (steroid = 1; Immuno suppression = 2 ; Both = 3) ☐

Systemic Findings : (Yes = 1, No = 8)

1. Fever ☐

2. Lymphopathy ☐

3. Joint Pain ☐

4. Hypopigmentation ☐

5.Cough ☐

6. Others, Specify _____ ☐

Glaucoma (Acute = 1; Angle Closure = 2; Steroid Induced = 3; Other = 4)

IOP (in mm Hg) RE…… LE……..

Lab Investigation: (1 – Positive, 2 – Negative, 9- Not done)

Total Count	Poly	Lymp	ESR	TOXO	PCR	ACE	HIV	ANA
☐☐☐☐☐	☐☐	☐☐	☐☐☐	☐	☐	☐	☐	☐

HLA_____ ELISA ☐ TPHA ☐ RHEUMAIC FACTOR ☐

CXR_____

Skin test (PPd with controls)…….

Fluorescein ……

USG : ……

Others : …….

Diagnosis (Known = 1 ; Presumed = 2 ; Unknown = 3) ☐

Specify : ……

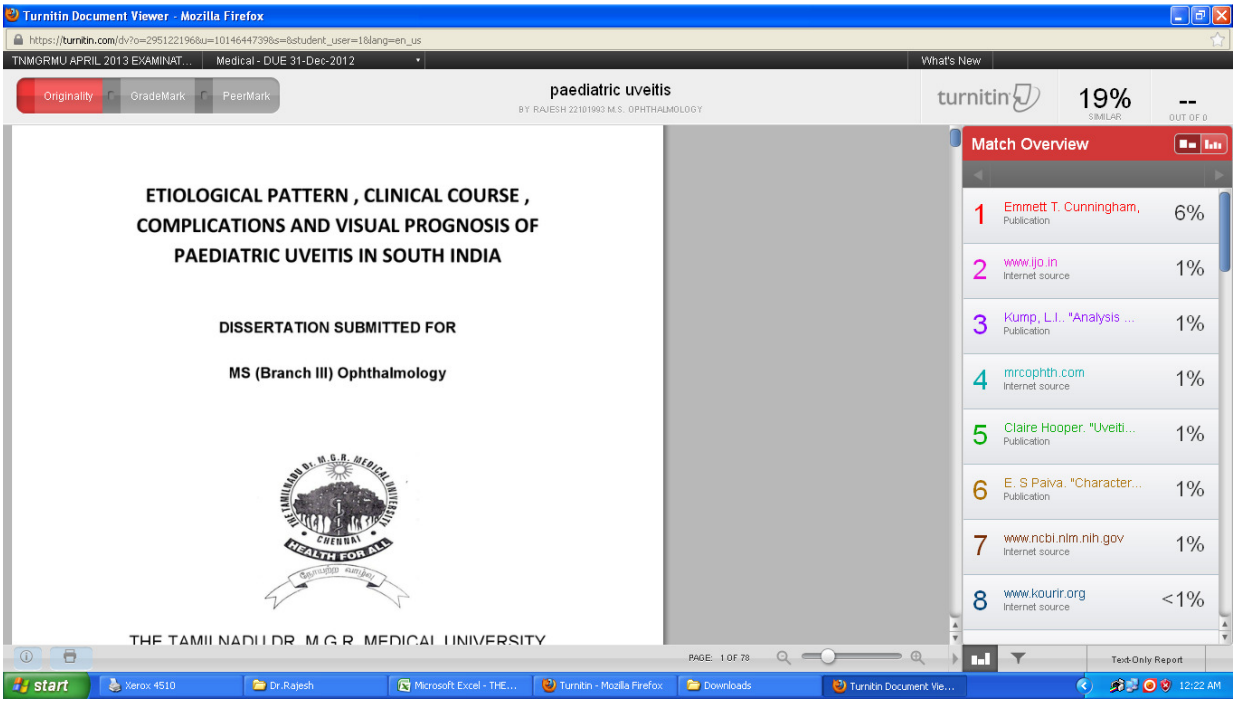
Treatment :	Topical Steroid	Oral Steroid	Periocular Steroid	Immuno Suppressive	Systematic Antibiotics	Specific

Follow up : Use the columns below if the patient's previous visit is within 15 days of current visit. Use a new proforma otherwise.

Date	RE Visual acuity LE		Comments

Filled in by: **Data Entry by:**

Uvea Clinic, Aravind Eye Hospital and Postgraduate Institute of Ophthalmology, Madurai – 625 020.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MS (Branch III) Ophthalmology
THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY
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UVEITIS NO	MR NO	NAME	AGE(yrs)	SEX	LATERALITY	VISUAL ACQUITY (RE)	VISUAL ACQITY (LE)	PATHOLOGY	SEVERITY	CHRONICITY	ETIOLOGY	AGE AT ONSET(yrs)	DURATION OF SYMPTOMS(days)	LOCATION	TREATMENT	COMPICATIONS(RE)	COMPICATIONS(LE)	PAS/PS	FINAL VISUAL ACQUITY (RE)	FINAL VISUAL ACQUITY (LE)
36	3088436	ARUN	13	M	2	6/6	6/36	2	2	1	1	13	60	3	2,9-ALBENDAZOLE	8	8	8	6/6	6/12
42	2196406	ALAGU	9	F	3	6/24	6/36	1	2	1	1	9	120	4	2,4	1,3	3,VIT HAEM	2,2	6/36	6/18
76	3108518	TAMIL SELVAM	3	M	1	6/6	6/6	1	1	3	2	3	2	1	1	8	8	8	6/6	6/6
43	3102645	KARTHIGA	10	F	3	6/60	6/60	2	3	1	3	10	10	3	2	5	8	8	6/6	6/6
1	2951143	JASSENA	14	F	1	6/6	6/6	2	2	1	3	14	5	3	2	8	8	8	6/6	6/6
2	3131931	AGANIYA	7	F	1	6/12	6/6	2	2	1	1	7	10	3	1,2,9-ANTIVIRAL	5,6	8	8	6/9	6/6
64	2316974	ESAKIAPPAN	10	M	3	2/60	2/60	1	2	2	3	10	180	4	2,4	1,2	1,2	8,2	6/18	6/36
65	2244646	AHAMED	9	M	3	6/18	1/2/60	2	3	2	3	5	10	2	2,4	2,4	2,4	2,2	6/60	6/24
44	2491307	RANGELA	7	F	3	6/36	6/60	2	2	1	2	7	180	3	2,9-ANTIVIRAL	4,6	4,6	8	6/9	6/12
66	1867710	LAKSHMI . G	8	F	3	6/36	6/36	1	2	2	3	8	120	4	1,2,4	1,2,3	1,2,3,4,5	2,2	1/60	6/36
67	2651418	NEWFIN	11	M	3	6/6	6/36	2	2	2	3	9	820	2	1,2,3,4	8	6	8	6/6	6/24
45	2601592	SRIAGASYA	5	F	3	6/60	5/60	2	2	1	3	5	90	2	4	2,3	1,2,3	2,2	6/9	3/60
68	3019458	NAVANEET RAJ	9	M	3	6/6	6/6	2	2	2	3	9	270	2	2,4	1,2	1,2	8	6/6	6/6
77	1939810	AKSHAY	4	M	3	6/60	6/12	2	2	3	3	4	200	2	2,4	1,4	1,4	2,8	6/36	6/24
78	2693392	PRASANA	9	M	3	6/12	6/12	2	2	3	2	9	7	1	2	8	8	2,2	6/12	6/9
46	2344042	PAVITHRA	6	F	3	6/6	6/6	2	3	1	2	6	30	1	1,2,4	8	8	2,2	6/6	6/6
47	2634257	MARIMUTHU	14	M	3	6/24	6/24	1	1	1	2	14	7	1	1,2	8	8	1,8	6/6	6/6
48	3087810	JOTHIR	4	F	3	6/6/	6/6	2	2	1	3	4	10	1	1,2	8	8	8	6/6	6/6
3	2661235	GOWTHAM	9	M	1	2/60	6/6	2	2	1	3	9	60	2	1,2,4	1,2,3	8	2,8	6/18	6/6
69	2305269	BABINA	8	F	3	6/24	6/24	1	2	2	1	8	30	1	1,2,4,9-ATT	1,2,3	1,2,3	8	6/12	1/60
70	3096641	AKASH KANNAN	14	M	3	3/60	4/60	1	2	2	1	14	30	3	9 - ATT	4,5	8	8	6/12	6/9
4	3098049	POORNIMA	10	F	1	6/60	6/6	2	3	1	1	9	180	3	2,9-ALBENDAZOLE	8	8	8	6/60	6/6
5	3106176	VIJAY	15	M	1	6/24	6/36	2	2	1	1	15	30	3	1,2	8	8	8	6/6	6/6
6	3117693	SANGEETH	13	F	1	6/6	6/6	2	1	1	1	13	4	3	2	8	8	8	6/6	6/6
7	2839805	ABINASH	7	M	1	HM	6/6	1	2	1	1	7	7	4	2	1	8	8	6/9	6/6
8	2635162	SATISH	15	M	1	HM	6/6	1	3	1	1	15	11	4	2,5	6	8	8	6/18	6/6
28	3115016	THAMES	4	M	2	6/6	6/6	1	1	1	1	4	12	4	1,5	8	8	8	6/6	6/6
56	3106360	VAMSI	12	M	1	FCF	6/6	2	1	2	2	10	1	1	1,2	1	8	8	6/18	6/6
49	3047157	MUBARAK	15	M	3	6/6	6/9	1	1	1	3	15	14	4	1,2,5	8	8	8	6/6	6/6
29	3062496	VEERASELVAM	15	M	2	6/9	2/60	2	3	1	2	15	5	1	2	8	8	8,2	6/6	6/12
30	3106813	SARVANAN	8	M	2	6/6	6/6	2	3	1	3	8	2	1	1,2	8	8	8,2	6/6	6/6
9	1098057	ABISHEK SHAM	8	M	1	1/60	6/6	2	3	1	1	8	15	2	1,2	1,2,3	8	8	HM	6/6
72	2498485	ARUN PRASAD	12	M	3	HM	6/36	2	2	2	2	10 YRS	60	4	1,2,4	1,3	3	8,2	4/60	3/60
50	2900007	AMRITHA	12	F	3	6/9	6/12	2	2	1	2	12	150	2	2,4	2,3,6	2,3,6	8	6/12	6/12
73	2422827	SRIDEVI	6	F	3	HM	1/60	2	2	2	2	6	240	1	2,4,5	1,2,3	1,2,3	2,2	6/24	6/18
71	3118407	backia LAKSHMI	13	F	3	6/36	6/24	2	2	2	2	10YRS	820	1	1,2,4	1,3	1,3	2,2	6/12	6/18
51	2949287	GAYATHRI	8	F	3	HM	6/6	2	3	1	2	8	30	1	1,2,4	1,3	8	2,2	6/12	6/36
31	3018439	MOHAMED ASHIK	12	M	2	6/6	3/60	2	2	1	3	12	7	2	2,4	8	2	8	6/6	6/12
62	2422377	KALAIARASI	14	F	2	6/6	6/24	2	2	2	3	11	180	2	2	8	1	8,2	FCF	6/24
32	2930295	LAKSHMI PARVATHY	15	F	2	6/6	1/2/60	2	2	1	3	15	15	1	1,2,4,9-antiviral	8	6	8,2	6/6	6/36

33	3152083	ANJANA	14	F	2	6/6	2/60	1	3	1	3	14	30	3	2,5	8	6	8	6/6	6/36
57	2471243	NITHYA	3	F	1	HM	6/6	2	2	2	2	3	10	4	1	1,3,5	8	2,8	NO PL	6/6
52	3131758	UMARANI	11	F	3	1/2/60	6/6	2	3	1	2	11	30	1	1,2	1	8	8	HM	6/12
10	2690826	NIKEL GUPTA	13	M	1	6/6	6/6	1	2	1	1	13	10	1	1	8	8	8	6/6	6/6
53	2017578	CHAITHAIYNA	7	F	3	6/60	6/24	2	3	1	3	7	10	2	2,4	1	8	8	6/18	6/24
11	3071898	PRASANTH	15	M	1	2/60	2/60	1	2	1	2	15	10	1	2	1	8	2,8	6/36	6/6
58	2961282	GRESHMA	14	F	1	FCF	6/6	2	2	2	3	14	360	1	1,2	1	8	8	6/36	6/6
59	2960640	SIVAKUMAR	9	M	1	6/60	6/9	1	2	2	1	9	30	2	2	1,3	8	8	6/12	6/6
12	3145308	GOKILA	15	F	1	HM	6/6	1	3	1	1	9	30	1	1,2	5	8	8	NO PL	6/6
13	2451083	BOOMINATHAN	12	M	1	6/6	6/6	1	1	1	3	12	3	2	1,2	8	8	8	6/6	6/6
14	2414655	KARTHIGA	7	F	1	PL	6/6	2	2	1	1	7	7	4	2	8	8	2,8	NO PL	6/6
15	2765613	SARAVANAKUMAR	10	M	1	6/60	NO PL	2	2	1	3	10	7	3	2	8	8	8	6/24	NO PL
16	2860701	MUTHUPANDI	14	M	1	6/6	6/6	1	3	1	1	14	10	1	1,9-ATT	8	8	8	6/6	6/6
17	2820800	ALPHYROY	11	F	1	1/2/60	6/6	2	3	1	3	11	14	3	2	4,6	8	8	1/60	6/6
18	2996180	SHANKARANARAYANAN	14	M	1	1/60	6/6	1	3	1	2	14	4	1	2	8	8	8	2/60	6/6
19	2989926	DHNALAKSHMI	13	F	1	6/9	6/6	1	1	1	1	13	7	1	1,9-ATT	8	8	8	6/6	6/6
60	2377064	ASHWATHY	10	F	1	6/24	6/6	2	2	2	3	10	240	2	2,4	1,2,3	8	8	6/12	6/12
21	3093445	KALIDAS	8	M	1	6/12	6/6	1	2	1	1	8	15	1	2,5	1	8	1,8	6/6	6/6
20	3087516	AZHARUDIN	13	M	1	6/6	6/6	1	1	1	1	13	45	1	1	8	8	2,8	6/6	6/6
34	3146104	HARIHARAN	7	M	2	6/6	6/6	1	2	1	1	7	3	1	1	8	8	8,1	6/6	6/6
54	3061743	NETHRA	1	F	3	PICK UP CAKE	PICK UP CAKE	1	2	1	1	1	30	1	1,9-ATT	2	8	8	PICK UP CAKE	PICK UP CAKE
35	3025942	HARIHARASUDAN	12	M	2	6/6	6/18	1	1	1	1	12	30	4	1,2,9-ATT	8	8	8	6/6	6/12
55	2561785	SARANRAM	7	M	1	6/12	6/6	1	2	2	1	7	1	2	1,2,4,9-ATT	1,2,3	8	2,8	6/36	6/6
74	1745520	MOHANASUNDARAM	5	M	3	6/24	6/12	1	2	2	1	5	60	4	2,4,9-ATT	2,3	2, 3	8	6/36	6/12
61	2925309	AJAYRAJ	13	M	1	6/12	6/6	1	2	2	1	13	180	2	2,	1,2,5	8	2,8	HM	6/6
37	3080384	GUNASANKAR	10	M	2	6/6	1/60	1	1	1	1	10	7	1	8	8	1,3	8,2	6/6	6/9
22	3111167	MANIKANDAN	15	M	1	6/6/	6/6	2	2	1	2	15	1	1	1	6	8	8	6/6	6/6
23	3111400	JANANI	5	F	1	6/9	6/9	2	2	1	2	5	2	4	1,5	8	8	8	6/24	6/6
38	2996653	VETRIVENDAN	14	M	2	6/36	6/24	1	2	1	1	14	7	1	1,2	8	1,2	8	6/6	6/6
24	3086465	MARIKANNU	16	M	1	6/6	6/6	1	2	1	1	16	15	1	1,2	8	8	2,8	6/6	6/6
63	3086941	SELVADELIP	15	M	2	6/6	6/6	1	3	2	1	15	15	1	8	8	8	8	6/6	6/6
25	2060957	RAJADURAI	15	M	1	6/9	6/6	2	2	1	1	15	3	1	1	8	8	8	6/6	6/6
39	2888406	HEMA	10	F	2	6/18	6/18	1	2	1	1	10	7	1	1,6	8	8	8	6/6	6/6
26	3005473	TAMIL SELVI	14	F	1	6/6	6/6	1	2	1	1	14	7	1	5,9-ATT	8	8	8	6/6	6/6
40	3125312	RAMYA	15	F	2	6/6	6/6	1	1	1	1	15	14	1	1,9-ATT	8	8	8	6/6	6/6
27	2965964	PRADEEPA	7	F	1	6/18	6/6	1	2	1	1	7	2	2	1,9-ANTIVIRAL	1	8	2,8	6/6	6/6
41	3150481	BHUVNESWARAN	9	M	2	6/6	6/18	2	2	1	1	9	10	1	1 ,9-ANTIVIRAL	8	8	8,2	6/6	6/6
75	2612940	THIRUMAGAL	12	F	3	6/6	6/12	1	2	2	2	12	30	4	1,2,4	1,4	1,4	2,2	6/36	6/36

SPECIAL PROCEDURES	DIAGNOSIS
8	DUSN
RE PCIOL	TB
8	TUBERCULAR SCLRITIS
8	AMPPE
8	APMPPE
RE - SILICON OIL INJECTION	ARN
RE PPV+LENSECTOMY	B/L CHRONIC GRANUOMATOUS PANUVEITIS
LE-PPV+IOL SURGERY+MEMBRANECTOMY	B/L CHRONIC NON GRANULOMATOUS INTERMEDIATE UVEITIS
8	B/L MULTIFOCAL CHOROIDITIS
RE IOL SURERY + PPV	B/L PANUVEITIS
8	B/L PARS PLANITIS
LE IOL SURGERY + PPV	B/L PARS PLANITIS
PPV	B/L PARS PLANITIS
RE IOL SURGERY +ANT VITRECTOMY	B/L PARS PLANITIS
8	B/L RECURRENT NON GRANULOMAOUS ANT UVEITIS
CONJ MASS EXCITION	B/L SARCOID
ATT	B/L TB SCLERO KERATO UVEITIS
8	BILATERAL GRANULOMATOUS ANT UVEITIS
8	BILATERAL PARS PLANITIS
8	BILATERAL RAN ANT UVEITIS
8	bilateral tubercular choroidal granuloma
8	DUSN
8	DUSN
8	TOXOPLASMA
RE IOL SURGERY + VIT BIOPSY	ENDOGENOUS ENOPHTHAL
RE-VITRECTOMY	ENDOGENOUS ENOPHTHAL
8	ENDOGENOUS ENOPHTHAL
RE IOL SRGERY	FUCH'S
8	GRANULOMATOUS PAN UVITIS
8	HLA B 27
8	IDIOPTHIC
8	INTERMEDIATE UVEITIS - TOXOCARA
BSK scraping, RE PCIOL + VITRECTOMY	JIA
BE I/VIT TRICORT	JIA
LE - BSK SCRAPING, RE TRAB+IOL	JIA
8	JIA
RE IOL SRGERY , LE IOL SURGERY + VITRECTOMY	JIA
8	LE - INTERMEDIATE UVEITIS
8	LE - CHRONIC INTERMEDIATE UVEITIS, RE VIT HAEM
i/vit tricort + avastin	LE GRANULOMATOUS PAN UVEITIS

8	LE-NEURORETINITIS
8	MASQURADE SYN
8	NECROTISING SCLERITIS
8	NODULAR EPISCLERITIS
TRICORT INJ RE	PARS PLANITIS
8	RE - HLAB 27
RE-VITRECTOMY	RE CHRONIC ANT UVEITIS
8	RE ENDOGENOUS ENDOPTH
VIT TAP , ATT	RE EXUDATIVE RD WITH CHOROIDAL GRANULOMA
8	RE GRANULOMATOUS UVEITIS
RE PPV	RE HYPOPYON UVEITIS WITH CYSTECERCOSIS
8	RE MULTIFOCAL CHOROIDITIS
8	RE PHLECNULAR EPISCLERITIS
8	RE RETINO CHOROIDITIS
8	RE SCLEROKERATO UVEITIS
8	RE TUBRCULAR EPISCLERITIS
RE-PHACO +TRAB	RE-PARS PLANITIS WITH CHORIORETINITIS
AC ASPIRATION	RIVER WATER GRANULOMA
8	RIVER WATER GRANULOMA
8	RIVER WATER GRANULOMA
BE-PPV + PPL	TB
8	TB
RE IOL SRGERY	TB
8	TB GRANLOMA
8	TOXOARA GRANULOMA
IOL SRGERY	TOXOCARA
8	TRAUMATIC IRIDOCYCLITIS
8	TRAUMATIC UVEITIS
LE-AC ASPIRATION , LE IOL SURGERY	TREMATODE GRANULOMA
RE-AC ASPIRATION	TREMATODE GRANULOMA
EXCISION	TREMATODE GRANULOMA / FB GRANULOMA
ATT	TUBERCULAR ANT UVEITIS
8	TUBERCULAR ODULAR EPISCLERITIS
8	TUBERCULAR PHLECTENULOSIS
8	TUBERCULAR SCLRITIS
RE IOL SURGERY	VIRAL KERATOUVEITIS
8	VIRAL UVEITIS
8	VKH SYNDROME