STUDY OF UVEITIS IN CHILDREN AND FACTORS AFFECTING VISUAL OUTCOME

M.S. DEGREE EXAMINATION

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CERTIFICATE

This is to certify that Dr. A. Nandhini, MS. Post Graduate Student in Ophthalmology, Regional Institute of Ophthalmology, Government Ophthalmic Hospital, Madras Medical College, carried out this dissertation titled **Study of Uveitis in Children and Factors Affecting Visual Outcome** by herself under my guidance and direct supervision during the period of May 2004 to March 2007. This dissertation is submitted to Tamil Nadu Dr. MGR Medical University, Chennai in partial fulfillment of the award of MS Degree (Ophthalmology).

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CONTENTS

PART I

INTRODUCTION

The disease in children mainly go unnoted and lead to catastrophe when noticed. Uveitis is one such entity. Prompt diagnosis and treatment make uveitis to be treated and to control the complications and lead to a better visual status.

Emphasis should be that **"all red eyes are not conjuctivitis and all white eyes with diminished vision are not refractive errors".**

Hence proper history, investigation, thorough fundus examination and management is needed for good visual outcomes.

Uveitis refer to the inflammation of iris, ciliary body and choroid, all as a whole or separate.

Uveitis in children is relatively low with incidence of 8% when compared to adults.

HISTORICAL REVIEW

1500 BC	-	Von Hippocrates mentioned the typical findings of uveitis.
1650 - 1730	-	Antoine Maitre Jan described choroiditis for the first time.
1667 - 1736	-	Charles Saint Yves gave the clinical symptoms of uveitis.
1801	-	The name Iritis was introduced by Johann Adam Schmidt.
1802-46	-	August Berard coined the term cyclitis.
1853	-	Von Arlt classified uveitis aetiologically as Scrofula 30%, Rheumatism 21.5%, Syphilis 23% and Idiopathic 25.5%
1881	-	Von Michael emphasized the importance of Tuberculosis in uveitis.
1900	-	Neetleship considered a case of exudative choroiditis to be due to dental infection.
1911	-	Butler considered 12% of cases to be due to oral, nasal and other sepsis.
1931	-	Kolmer in philadelphia put forward the view that inflammation of uveal tissue was due to bacterial toxins. The place of allergy as potent aetiological factor thus became firmly established.
1940	-	Brucellosis and Sarcoidosis were recognized as clinical entities.
1946	-	Allan `C' Wood considered that 75% of granulomotous uveitis was due to TB.
1950	-	Toxoplasmic uveitis became a proven infection, and thus parasistic infection played a considerable role in the aetiology particularly of posterior uveitis.

1961 - Again Wood considered Histoplasmosis to be the cause of 13% of uveitis cases.

ANATOMY OF THE UVEAL TRACT

The Uvea - Means - Bunch of grapes - It comprises of Iris, ciliary body and the choroid.

IRIS

The iris is the most anterior component of the uvea and forms the pupillary diaphragm of the eye. The collarette forms minor arterial circle of the iris, divides the iris into two portions : a small, pupillary zone and a larger, more peripheral ciliary zone. The most peripheral portion of the iris, the iris root, is the thinnest part of the iris and inserts into the ciliary body.

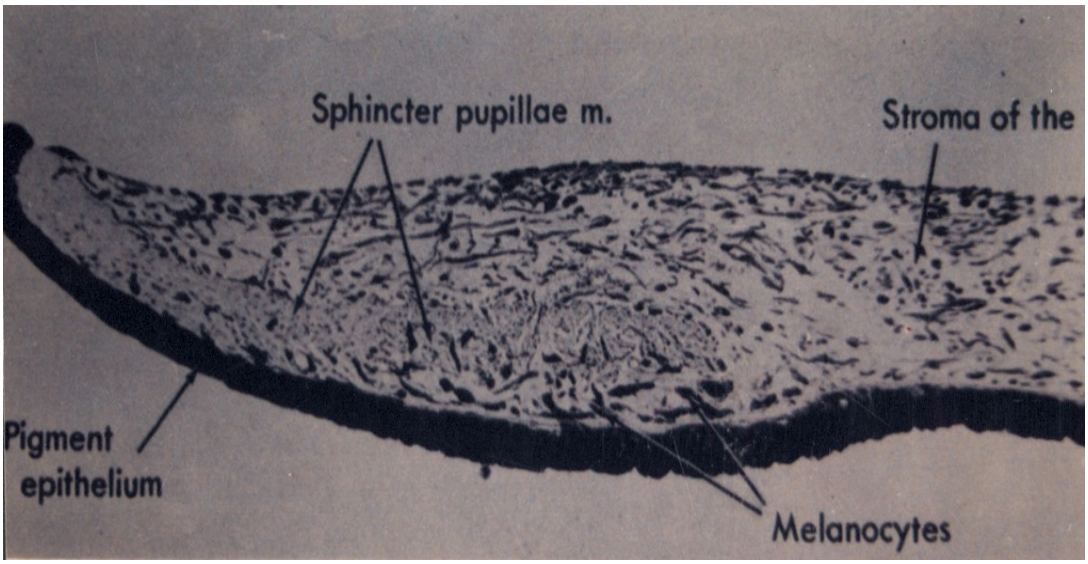
The sphincter muscle is a 1 mm wide, smooth muscle lying in the central iris. The dilator muscle extends from the peripheral limit of the sphincter muscle to the outer edge of the iris.

CILIARY BODY

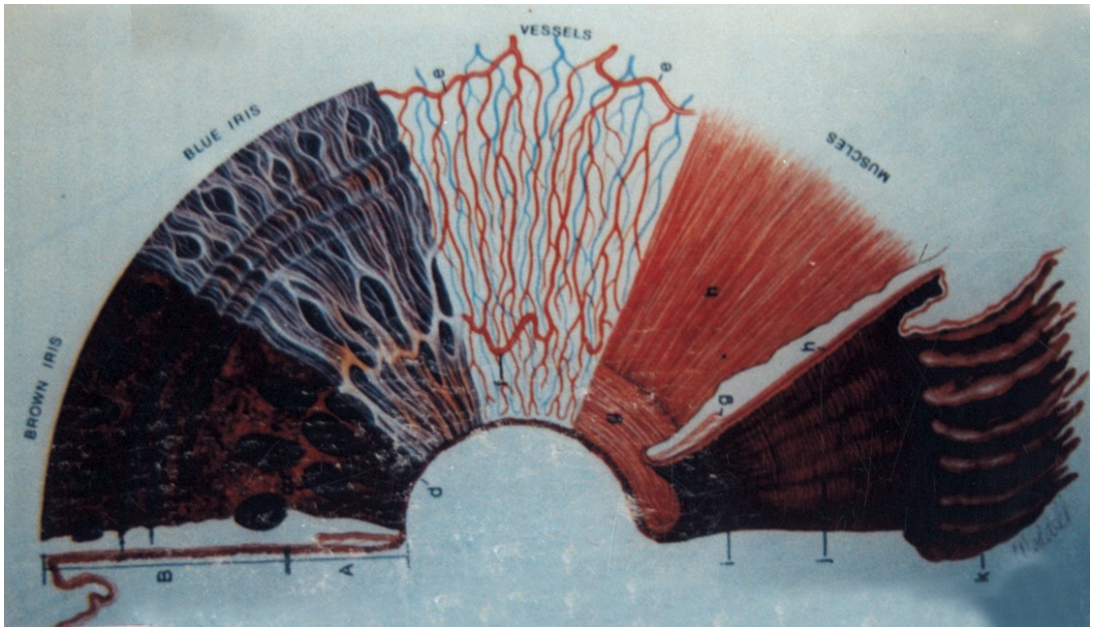
The ciliary body is located between the iris and choroid. Pars plicata (corona ciliaris) is anterior one third of ciliary body with 70 to 75 undulations that are the ciliary processes. Pars plana (orbicularis ciliaris) is smooth posterior region and constitutes the posterior two thirds of the ciliary body. Ciliary muscle is a smooth muscle. The stroma is most prominent in the pars plicata and thinnest in the pars plana.

The major arterial circle is located in the anterior ciliary body and serves as the arterial supply for the iris, ciliary body and anterior choroid.

HISTOLOGY OF IRIS



STRUCTURE OF THE IRIS



CHOROID

The choroid is a thin layer of vascular tissue that lies between the RPE and the sclera. The choroid can be anatomically subdivided into Bruch's membrane, choroicapillaries and stroma.

The choriocapillaries is a vascular network that extends from the peripapillary area to the ora serrata region. Endothelial cells of the choriocapillaries contain multiple fenestrations that allow passage of nutrients out of the vessel to the external half of the retina.

The stroma consists of collagen, melanocytes, fibroblasts and a few scattered lymphocytes, together with the arteries and veins that supply and drain the choroid. The vortex system drains not only the choroid but also the anterior ciliary body and iris.

PATHOGENESIS OF UVEITIS

Inflammation of uveal issue is similar to any other tissue response, that is vascular and cellular response. But due to its extreme vascularity and looseness of uveal tissue the inflammatory response is exaggerated.

Pathogenesis varies with suppurate and nonsuppurate uveitis.

Suppurative uveitis :

This is due to exogenous infection leading to endophthalmitis or Panophthalmitis due to Pyogenic organisms like staphylococcus streptococcus, pseudomonas, pneumococcus and gonococcus.

The reaction is characterised by an outpouring of purulent exudate and infiltration by polymorphonuclear cells in uveal tissue, Anterior and posterior chamber, vitreous cavity.

Non Suppurative uveitis :

1. Non granulomatous uveitis

   - Acute or chronic exudative inflammation, mostly the anterior uveal tissue structures are involved.

   - Can be a physical or toxic insult to the tissues.

   - Due to different hypersensitivity reactions.

Pathology shows marked dilatation and increased permeability of vessels, breakdown of blood aqueous barrier with an outpouring of fibrinous exudate with lymphocytes, plasma cells and macrophage in the uveal tissue, Anterior chamber, posterior chamber and Vitreous cavity.

Granulomatous uveitis

This is a chronic inflammation of proliferative nature which is a response to an irritant foreign body which is inorganic or organic or haemmorhage, necrotic tissue within the eye or a non pyogenic or less virulent organism. Commonest chronic disease associated are Tuberculosis, Leprosy, Syphilis, Brucellosis, Leptospiroses as well as mycotic, protozoal and helminthic infection. It can also be associated with sarcoidosis, sympathetic Ophthalmia, VKH syndrome.

Pathological reactions consist of infiltration with lymphocytes, plasma cells and mobilisation and proliferation of large mononuclear cells which are giant cells and epitheloid cells which leads to formation of mutton fat KPs and Koeppe's and Busacca nodules.

Other factors involved in pathogenesis

1. Prostaglandin, chemical mediator, synthesized by prostaglandin synthetase causes dramatic increase in protein content and flare in aqueous humor and mild smooth muscle contraction (miosis).

2. Vitreous acts as antigen depot as the accessed antigen stays in the vitreous and hyalocytes have macrophagic nature incite uveitis by processing antigen + modulating immune response.

3. Focal sepsis mainly dental sepsis and others like paranasal sinusitis, gynaecological, respiratory tract, GIT, urinary tract can incite inflammation.

4. Immune response produces three type of reactions

   a. Immediate hypersensitivity (Anaphylaxis)

      The contact of uveal tisse to some foreigh protein.

   b. Delayed hypersensitivity (Bacterial Allergy)

      This is due to sensitisation of an organism so that antibodies formed on or within the cells and further contact with same antigen evokes an inflammatory reaction.

   c. Immune complex mediated disease

      These are demonstrated in aqueous of patients with uveitis (e.g.) Behcet's disease.

5. Autoimmunity - this is an unique immune response directed against the host by its own tissues. (e.g) - Phacogenic uveitis

6. Histocompatible Antigens of uveitis - HLA antigens have been associated with VKH syndrome, Behcet's syndrome, Ankylosing spondylitis etc.

CLASSIFICATIONS :

Uveitis can be classified in Various methods.

I. Anatomical classifications (IUSG)

1. Anterior

Iritis :	-	Iris Inflammed
Anterior cyclitis	-	Predominantly ciliarybody involvement
Irido cyclitis	-	Both iris and ciliary body involved.

2. Intermediate uveitis (Pars planitis)

Hyalitis - Anterior hyaloid involved

Posterior cyclitis

Basal Retino choroiditis.

3. Posterior Uveitis

   Chorioretinitis

   Retino choroiditis

   Neuro Retinitis

   Choroidits
   - Focal
   - Multi focal
   - diffuse

4. Panuveitis.

II. Clinical classification

Acute	-	Sudden symptomatic, onset within 6 weeks duration
Acute recurrent	-	Acute attacks, which are recurrent and responds to treatment.
Chronic uveitis	:	insidiuous, asymptomatic onset for more than 6 weeks; diagnosed mostly if it causes defective vision.

III. Pathological classification

Suppurative Uveitis

Nonsuppurative Uveitis (Wood's classification)

(i) Non granulomatous Uveitis

(ii) Granulomatous Uveitis

IV. Etiological classification (Duke Elder's)

1. Infective Uveitis
2. Allergic Uveitis
3. Toxic Uveitis
4. Traumatic Uveitis
5. Uveitis associated with non infective systemic diseases

   Juvenile Rheumatoid Arthritis — Seropositive / Sero negative

   Behcet's Syndrome

   Reiter's Syndrome

   Ankylosing spondylitis

   Sarcoidosis
6. Idiopathic Uveitis.
7. Secondary Uveitis due to lens pathology
8. Secondary Uveitis due to tumours - Masquerade Syndrome (e.g.) Retinoblastoma , Leukemia

CLINICAL FEATURES

The signs and symptoms of uveitis vary with the type, anatomical location, chronicity, severity and treatment adopted.

Anterior uveitis presents with noticing symptoms such as pain watering, photophobia, redness alerting the patient but intermediate and posterior uveitis makes the patients to ignore the symptoms due to absence of pain in the affected eye and good vision in the other eye.

Symptoms

1. Pain is periorbital due to the involvement of trigeminal nerve by irritation of the inflammatory mediators.

2. Photophobia

3. Excessive tearing due to Ciliary Body involvement

4. Redness - hyperemia and dilatation of the ciliary vasculature near the limbus. (ciliary injection).

5. Blurred vision and floaters are due to clouding of the ocular media by keratic ppts, flare and cells in the anterior chamber.

6. Severe decrease in vision is due to cystoid macular oedema or complicated cataract or optic nerve inflammation or secondary glaucoma with optic nerve involvement.

SIGNS

1. Ciliary injection - due to engorgment of the radial episcleral vessel and is seen as violaceous hue around the limbus, even conjunctiva vessel can be involved.

2. Cornea - Keratic ppts, edema and in long standing cases band shaped keratopathy and vascularisation can be present.

   Keratic ppts are cellular excrescenes on the endothelium seen in uveitis. They are due to adhesion and conglomeration of inflammed cells in the aqueous due to endothelial alteration and centrifugal force of convection currents and due to gravity they are found in the inferior aspect of cornea with an inverted triangle shape - Arlts triangle.

   KPs classified I Size

   1. fine 2. medium 3. large
   4. mutton fat

   II Nature

   1. fresh 2. old

   III. Colour

   1. non pigmented 2. pigmented

- Mutton fat, pigmented, greasy, large KPS are found in Granulomatous uveitis.

- Fresh, non pigmented, small, endothelial dusting are seen in non granulomatous uveitis.

- Hyalinised, glassy KPs- Resolved uveitis.

Stellate, with central location - Fuch's heterochromic uveitis.

KPs are cytologicaly aggregates of polymorphonuclear leucocytes lymphocytes, epitheloid cells and macrophages.

The cellular aggregates also forms - Koeppe's nodules in pupillary border and Busaca's nodules in the iris surface.

3. Anterior Chamber

Flare and cells are present. Hypopyon may be associated.

Flare is turbidity of media that is in aqueous or vitreous due to the transudation of protein from the blood vessels due to breakdown in the blood aqueous barrier:

Grades	0	-	Complete absence
	1	-	very slight
	2	-	moderate (iris + lens seen)
	3	-	marked (iris + lens hazily seen)
	4	-	Intense - fibrinous reaction

Flare appreciated with SLE examn, maximum magnification maximum illumination, 3 x 1 mm beam. Cells are Polymorphonuclear leucocytes in acute condition and Lymphocytes, plasma cells - monocytes and macrophages in chronic condition. Cells may appear pigmented if they carry uveal pigments

Grades		Hogan's classification
0	-	None
1 +	-	5 - 10 cells / field
2 +	-	10 - 20 cells / field
3 +	-	20 - 50 cells / field
4 +	-	more than 50 cells / field

Cells may adhere and forms Keratic Precipitates or gravitate down and form hypopyon.

They may form a membrane and occlude the pupil - occlusio pupillae

4. Iris and Pupil

Apparent loss of colour and pattern of iris is due to inflammation and edema of the iris.

Pupil is miosed due to inflammation and sluggishly reacting due to edema and ischemia. Inflammation leading to adherence of the

pupil to the lens is found (i.e.) posterior synechia which leads to festooned pupil on dilatation. Later going in for ring synechia and increase in introcular pressure due to iris bombe formation and secondary angle closure glaucoma.

5. Lens

The posterior capsule is thin and the toxin enters through this and cause early complicated cataract. The nutrition of the lens is deficient due to repeated inflammation of the aqueous and increase in IOP leading to cataract formation. Steroids used for management of uveitis can also cause cataract and glaucoma.

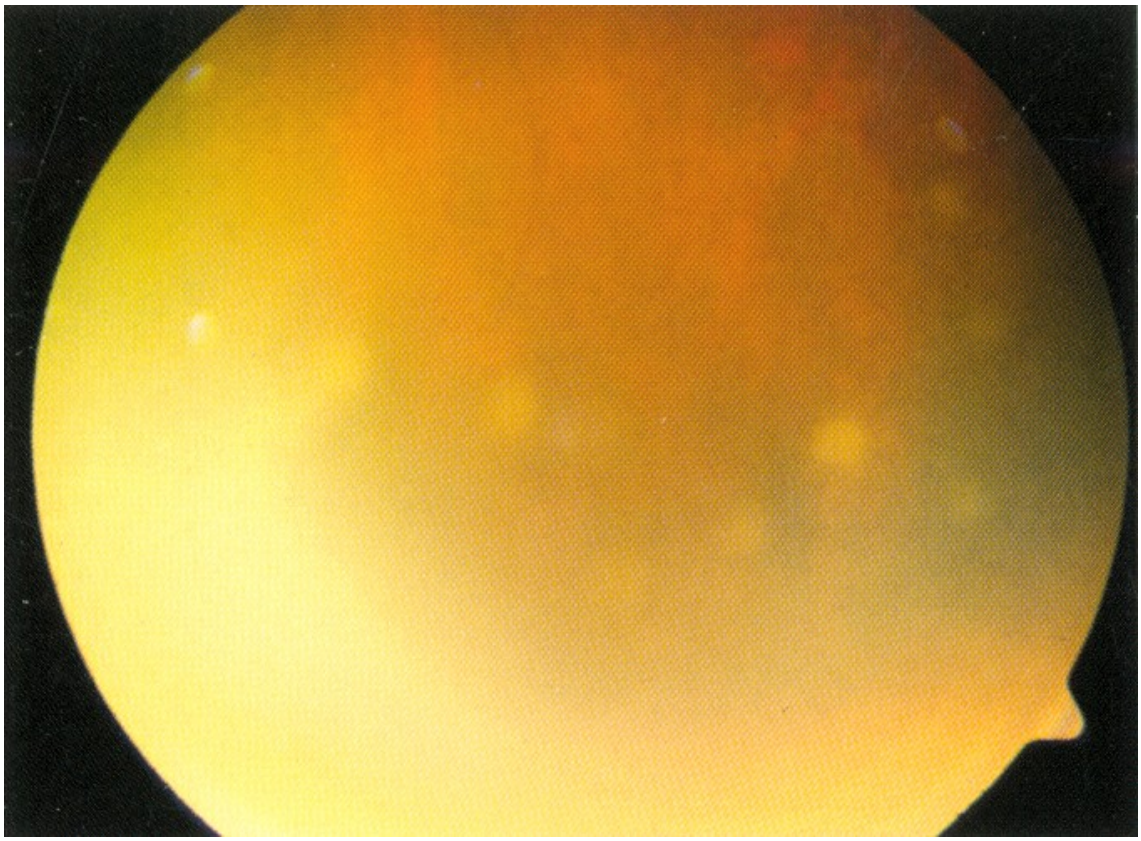
6. Vitreous

This is mostly involve when ciliary body or choroid is involved due to its proximity. Vitreous floaters, snow banking are seen in intermediate uveitis

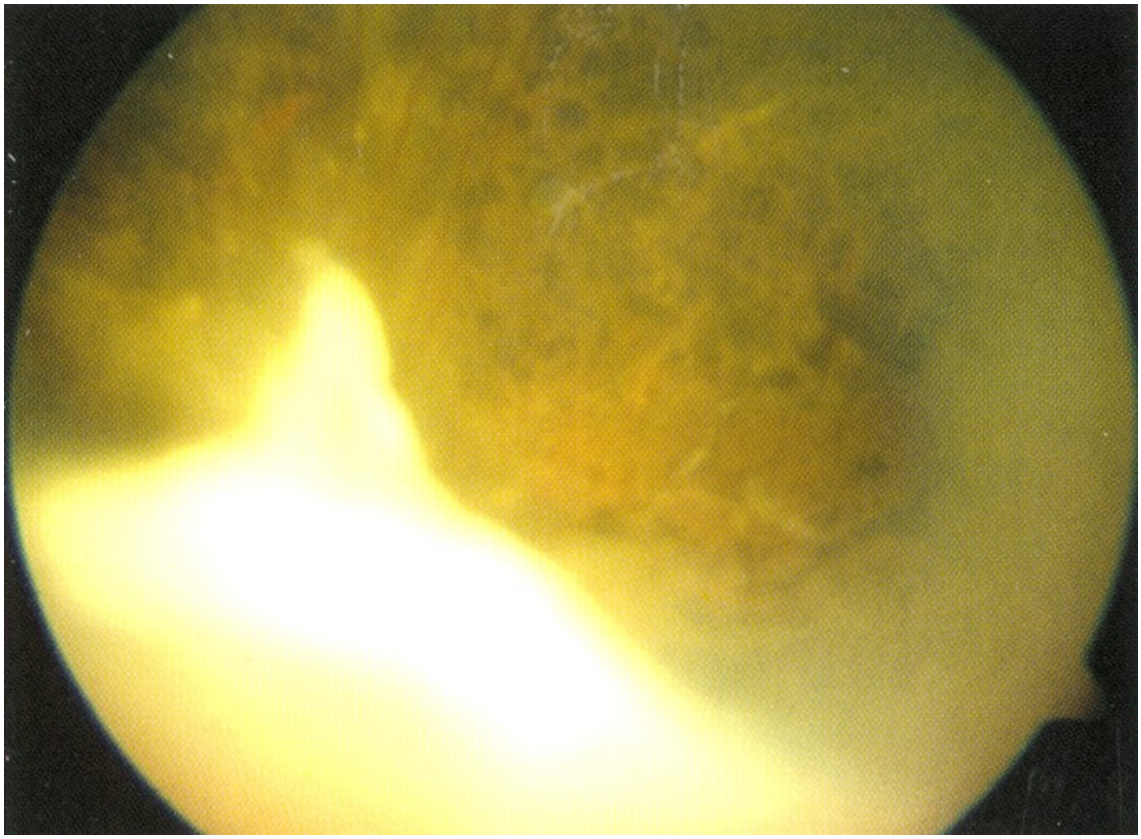
Diffuse vitreous opacities grading : (Hruby lens)

O	-	No opacities
1 +	-	Few scattered fine and coarse opacities; clear fundus details
2 +	-	Scattered fine and coarse opacities; obscured fundus details

INTERMEDIATE UVEITIS SHOWING VITREOUS OPACITIES



SNOW BANKING IN CHRONIC INTERMEDIATE UVEITIS



3 + - Many opacities; marked blurring of fundus details

4 + - Dense opacities; No view of fundus

7. Fundus examination

Choroiditis patch are seen in toxocara / toxoplasma infections. Active patches are yellowish, fluffy, raised from the surface of Retina Old patches are flushed, pigmented, irregular in nature. Choroidal effusion leading to exudative retinal detachment are seen. Old and recurrent inflammations lead to total detachment. Periphlebitis are associated with intermediate uveitis (pars - planitis) Optic nerve involvement seen due to inflammation of vitreous or choroid or due to post inflammatory glaucoma.

SYSTEMIC FEATURES IN UVEITIS

MUCOCUTANEOUS SYSTEM

Erythema Nodosum seen in - Sarcoid, Behcet's disease, Tuberculosis, Leprosy. **Oral ulcers** - Behcet's disease (painful), Reiter's (painless). **Kaposi's Sarcoma** - HIV patients. **Keratoderma Blenorrhagica** - Reiter's, HIV patients. **Circinate Balinitis** - Reiter's. **Vitiligo** - Vogt Koyonagi Harada disease. **Granuloma** - Sarcoid.

MUSCULO SKELETAL SYSTEM

Arthritis involving sacroiliac joints and small joints are seen in Ankylosing Spondylitis and Juvenile Rheumatoid Arthritis. Other conditions are Reiter's Psoriasis, Behcet's and Sarcoid.

GASTROINTESTINAL SYSTEM

This is involved in **Inflammatory Bowel Disease** and Crohn's disease

NEUROLOGICAL SYSTEM

This is involved in Tuberculosis, Syphilis, Behcet's, VKH Syndrome

PULMONARY SYSTEM

This is involved in Tuberculosis and Sarcoidosis, Interstitial fibrosis is associated with Sarcoidosis

CARDIOVASCULAR SYSTEM

Syphilitic lesions like Aortitis, Aneurysms can be present.

DIAGNOSIS OF UVEITIS IN CHILDREN

HISTORY

Present History

In the case of uveitis, the chief complaint is usually, unilateral or bilateral pain, photophobia, redness, floaters, or blurred or decreased vision, either alone or in combination.

Although blurred or diminished vision is the most common and unfortunately least localizing symptom, other symptoms can suggest a primary site of intraocular inflammation. One notable exception is JRA, or so called white iritis, in which pain, photophbia and redness are frequently absent in the setting of significant, ongoing iridocycitis.

The history of present illness should address the severity, time of onset and course of the patient's ocular complaints.

Past History

Pertinent past ocular history should be noted in all patients with uveitis including refractive errors, past or present ocular diseases and any history of ocular trauma or surgery.

A history of Herpes simplex Keratitis or Herpes zoster ophthalmicus, might suggest the diagnosis in a patient with anterior uveitis and elevated IOP, whereas history of amblyopia or strabismus might represent monocular

vision loss during early childhood, as can occur with Toxoplasmosis or toxocarasis involving the macula.

Personal History

A thorough dietary, drug use, pet and contagion exposure history should be elicited from every patient with uveitis. Pica a practice common among children, increase the risk for both toxocarasis and toxoplasmosis. Cats can transmit Toxoplasma gondii and Dogs, especially puppies can shed Toxocara canis.

Family History

Genetics does appear to play a role in some forms of uveitis, and evidenced by their increased association with HLA. HLAB27 with anterior uveitis often occur together with Ankylosing spondylitis, Reiter's syndrome or Inflammatory Bowel Disease. Other HLA association include HLAB51 and HLAB12 with Behects syndrome and HLAB53 and HLADR4 and HLADRW53 with VKH syndrome.

SYSTEMIC EXAMINATION

Special attention should be paid to examination of the mucocutaneous, musculoskeletal, cardiopulmonary, gastrointestinal and neurologic systems.

OCULAR EXAMINATION

Patients with uveitis require a complete eye examination with special attention to the following :

Refraction

A careful refraction is required to provide an accurate assessment of the patients best corrected visual acuity.

IOP

Any form of uveitis can be complicated by glaucoma if its course is chronic or recurrent. In contrast, acute uveitis is typically associated with a lowered IOP except in Herpes simplex keratouveitis, Herpes zoster keratouveitis and Posner - Schlossman syndrome, all of which may be accompanied by acutely elevated IOP.

Lids, Conjunctiva and Sclera

Examine carefully for lid edema, Blepharospasm, nodules, in Conjunctiva, circumciliary congestion.

Cornea

- Keratic ppts - nature, type, size, endothelial dusting to be noted.
- Band keratopathy
- Corneal Edema

- Vascularisation
- Secondary degeneration
- Mutton fat greasy KPs indicate granulomatous.

Angle Study

Neo vascularisation in chronic uveitis

Anterior Chamber

Depth - Central & peripheral

Flare

Cells

Pigments

Iris

Edema, Colour Pattern alteration, atrophic patches, laser marks, Busacca & Koeppe nodules.

Pupil

- Reaction
- State of Pupils – miosis or mydriasis
- Posterior synechia
- Festooned pupil
- occlusio pupillae
- Seclusio pupillae

Lens

Broken synechial Iris pigments on anterior capsule

Posterior subcapsular opacification

Vitreous

Cells in anterior, posterior vitreous

By IDO with scleral indentation snow banking seen

Tractional bands in long standing uveal inflammation

Retina

Arteriolitis

Periphlebitis

Cystoid macular edema

Optic Nerve head

Papillopathy

Choroid

Old and new Choroiditis patches in fundus examination.

LABORATORY TESTS

INVESTIGATIONS IN UVEITIS

Indications - to ruleout infection, to assess risk of treatment, to ruleout systemic disease, to come to specific diagnosis, to ruleout Masquerade syndrome and for Academic and research purpose.

Types of Investigations

Haematological - Before commencing antimetabolite and immuno suppressive therapy, Suspicion of parasitic infection, Leukemina, Sarcoid.

Immunological - For toxoplasma, HIV infection, collagen vascular disease.

Microbiological

Cytological

Histopathological

Radiological

HLA typing

Skin test

Ultra sonogram

Fundus Flouerscein Angiography

Complete Blood Cell Count with Differential Count

Can determine whether an elevated WBC count is due to systemic infection or leukemia. In addition, systemic eosinophilia can be found in systemic toxocara infection. Also it is good practice to obtain a complete

blood cell count before initiating systemic therapy with either corticosteriod or other immunosuppressive agents.

Erythrocyte Sedimentation rate

ESR is a non-specific indicator of plasma fibrinogen and globulin levels and may be elevated in systemic infection or inflammation or malignancy. Using the Westergren method, a normal ESR should be less than 10 mm/hour for children.

Syphilis serologies

Antitreponemal antibody tests such as FTA ABS and MHATP has 100% sensitivity and specificity for syphilis regardless of the stage. Unfortunately, these tests remain positive for life and therefore do not reflect ongoing disease activity or the adequacy of prior treatment.

The RPR and VDRL titres, in contrast, do reflect disease activity and are therefore used primarily to gauge disease activity and response to the treatment.

Rheumatoid factor (RF) test

Rheumatoid factor is an autoantibody directed against the Fc fragment of human IgG. About 80% of patients with Rheumatoid Arthritis are RF seropositive, defined as a titre of more than 1:80 RF seropositivity is non specific and best used to support a clinical diagnosis of rheumatoid arthritis.

Antinuclear Antibodies (ANA)

The ANA test is typically performed by applying serial dilutions of the patients serum to cultured turmor cells and then titrating for the presence and pattern of nuclear autoantibody staining. The ANA test is generally used to confirm collagen vascular diseases particularly systemic lupus erythematosus or Juvenile Rheumatoid arthritis.

Herpes Virus Antibodies

The prevalence of Herpes virus antibodies is so high in the general population that a positive antibody titre is virtually meaningless. A negative test, however eliminates herpes virus infection and therefore can be useful in select instances. Herpes virus serology should remain positive for life.

HIV antibodies

Most commonly detected by using an Enzyme Linked Immuno Sorbant Assay (ELISA), positive results are confirmed by a western blot test. HIV testing in uveitis usually ordered in patients with known HIV risk factors, severe or bilateral retinitis or choroiditis and suspected Herpes Zoster uveitis in children. HIV testing requires patient consent.

Toxoplasma antibodies

Tests available to detect and quantify antitoxoplasma gondii antibodies are Sabin Feldman (SF) dye test, Immuno Fluorescence Antibody (IFA) test and ELISA. Of these SF dye test remains the most sensitive and specific but it is technically difficult and of limited availability, where as IFA and ELISA are relatively easy and economical and can be used to distinguish IgG and

IgM anti Toxoplasma gondii antibodies. When interpreting positive titres, it is important to remember that IgM anti Toxoplasma antibodies may be elevated for upto 1 year after infection, limiting the accuracy with which they can date acute infection and that antibody titres are generally less reliable in patients with AIDS.

Toxocara Antibodies

Detected by Haemagglutination, complement fixation and Immunofluorescent Antibody test. But the ELISA has the sensitivity and specificity of 90%. Although a titre of more than 1: 8 is considered diagnostic for ocular toxocariasis, it is important to remember that ocular toxocariasis is primarily a clinical diagnosis and that a negative titre does not rule out the disease.

Angiotensin Converting Enzyme (ACE) Level

ACE is produced primarily by capillary endothelial cells, abundant in both lungs and liver, and by macrophages. Clinically, ACE levels are elevated in more than two thirds of patients with a active disease of sarcoidosis.

Uveitis and a negative PPD with increased ACE is fairly specific for sarcoidosis. Normal serum ACE level is 12-55 mol/min/ml. in men and 11-19 mol/min/ml in women.

Human Leucocyte Antigen (HLA) Study

The surface membrane of human leucocyte contain HLA. These are regulated by gene loci on chromosome 6. The reaction of these antigens with specific antisera cause lysis of the cell membrane and this is the basis of cell typing. HLAB27 has been associated with Ankylosing spondylitis and Reiter's syndrome and HLAB5 with Behcet's syndrome.

Diagnostic paracentesis

Aqueous and vitreous samples are useful for Polymerase Chain Reaction (PCR) testing for toxoplasmosis and Herpes virus particularly in AIDS patients in whom diagnosis can be difficult.

Conjunctival and Lacrimal gland biopsy

Reserved for those patients with visible conjuctival masses or lacrimal gland enlargement as can occur with sarcoidosis, tuberculosis or coccidioidomycosis.

Mucosal Biopsy

The greatest use of oral mucosal biospy is for the diagnosis of Behect's syndrome, evidence of an occulusive vasculitis can greatly support the diagnosis.

Schlaegel Test (INH Test)

Three weeks therapeutic trial of oral Isoniazid to treat presumed tuberculous uveitis. Improvement during or after treatment was viewed as a positive outocme.

Kveim's test

Suspension of antigenic preparation from human sarcoid tissue is injected intradermally and read at the end of 6 weeks when a papule develops. The papule is biopsied for evidence of granuloma and giant cells and epitheloid cells, with no caseation. This test is not easily available.

Mantoux test

Purified protein derivative of tuberculin is injected intradermally. It is a non-specific test. Because of prior exposure to tuberculosis, a large number (8 to 30%) of healthy adults have positive PPD skin test representing inactive infection. Therefore it is disadvantageous as it yields more false positive than true positive results.

Xray chest and Xray sacroiliac joints & skull Xray and Xray PNS

- Chest xray taken in patients suspected of having sarcoidosis or tuberculosis.

- Skull xray to evaluate patients with suspected congenital toxoplasmosis for calcification.

- Xray sacroiliac joints taken in patients also complaint of joint pains or hip pains.

- Xray PNS to rule out sinusitis

AETIOLOGY OF UVEITIS IN CHILDREN

Anterior Uveitis

- Juvenile undetermined / Idiopathic Rheumatoid Arthritis.
- Fuch's Heterochromic Iriodcyclitis
- Sarcoid
- Tuberculosis
- Syphilis
- Trauma
- Ankylosing Spondylitis
- Ulcerative Colitis
- Reiter Syndrome
- Sympathetic Ophthalmia
- Keratouveitis
    - Herpes simplex
    - Herpes Zoster
- Recurrent lesions of Toxoplasmosis.

Intermediate Uveitis

- Idiopathic
- Sarcoid
- Tuberculosis
- Toxocariasis
- Toxoplasmosis

Posterior Uveitis

- Toxoplasmosis
- Nematodiasis
- Cytomegalovirus
- Tuberculosis
- Sarcoid
- Syphilis
- Rubella
- Herpes Simplex
- AIDS
- Subacute Sclerosing Panencephalitis.

Pan Uveitis

- Sympathetic Ophthalmia
- VKH Syndrome, JRA Sarcoidosis, Borreliosis

AETIOLOGY OF UVEITIS IN CHILDREN

ANTERIOR UVEITIS

Juvenile Rheumatoid Arthritis (JRA)

JRA is the most frequently identifiable etiology of pediatric anterior uveitis. Usually divided into systemic, polyarticular and pauciarticular. Pauciarticular arthritis is defined as the involvement of four or fewer joints in the first 6 months after the onset of the disease. Uveitis is more common in pauciarticular type of JRA.

JRA uveitis is most frequently a chronic, non granulomatous iridocyclitis, bilateral in 71% of patients, common in female children. Ocular inflammation is usually asymptomatic and eyes are nonerythematous. Complications include cataract, glaucoma, bandkeratopathy, posterior synechiae and phthisis bulbi.

- American college of Rheumatology (ACR) proposes the term Juvenile Rheumatoid Arthritis which includes Rheumatoid factor positive + negative Arthritis but excludes the spondyloarthopathies.

- European league Against Rheumatism (EU LAR) proposes the term Juvenile chronic Arthritis which excludes Rhematoid factor positive arthritis but includes all other juvenile arthritis.

- Whatever the classification is, whether JRA/JCA, both diseases have the risk of developing uveitis in children.

Factor	Low Risk	High Risk
Sex	Male	Female
Age at onset of arthritis	> 6 years	< 6 years
Type of onset	Systemic	Pauciarticular
Duration of arthritis	> 4 years	< 4 years
ANA	Absent	Present
Rheumatoid factor	Present	Absent
HLA DR4	Present	Absent
HLA DR5	Absent	Present
HLA DP 2.1	Absent	Present

The arthritis usually precedes the uveitis. Iridocyclitis occur in approximately half of the affected patients within 2 years of the onset of the arthritis. There is no correlation between the degree of arthritis activity and the ocular inflammation.

Pauciarticular individuals should be checked every 3 months. Polyarticular patients may be evaluated at 6 months intervals for the development of uveitis, while children with systemic onset JRA are examined annually.

Ankylosing spondylitis

The onset of juvenile ankylosing spondylitis is usually at 8-10 years of age and males are more affected, 95% associated with HLAB27. Frequently presents as a peripheral arthropathy before physical or radiographic findings of sacroiliac joint involvement.

An acute, recurrent nongranulomatous iridocyclitis affects 10 to 20% of patients with juvenile ankylosing spondylitis. Typically unilateral and may precede or follow the arthritis.

Reiter's syndrome

Triad of Reiter's syndrome is noninfectious urethritis, arthritis, and conjunctivitis. Infrequent in children. Males are more often affected. Although patients with Reiter's syndrome may have sacroilitis and HLAB27 positivity, the presence of uveitis, Keratoderma blenorrhagica of palms and soles and ulcerations of the mouth and genitals differentiates this disorder from ankylosing spondylitis. Unlike Behcet's disease, have mucosal lesions are usually not painful. A nongranulomatous anterior uveitis affects 3 to 12% of patients past h/o gastorintestral infection / Ulinary tract infection may be seen.

Fuch's Heterochromic iridocyclitis

Frequently asymptomatic with a chronic low grade iridocyclitis which is almost always unilateral. Hypochromia as a result of iris atrophy is typical but not invariable. The keratic precipitates have a characteristic small, stellate appearance.

Treatment with topical corticosteroid is usually ineffective. Mydriatics are often not required because posterior synechiae are uncommon.

Lens induced uveitis

The phacotoxic reaction usually occurs in the presence of a hypermature cataract. The lens material acts as a chemical irritant, probably acting directly on the iris and ciliary body. Macrophages enter to engulf the liberated material. No polymorphonuclear cells are seen.

In phacoanaphylactic uveitis, typically a break in the lens capsule occurs in one eye as a result of surgery or injury. After inflammation has subsided in the first eye, the second eye develops a severe anterior granulomatous uveitis after surgery or trauma. PMN cells and macrophages are found in the aqueous, iris and lens. Treatment involves the removal of lens, in addition to general therapy for uveitis.

Acute interstitial nephritis

It is an uncommon renal disorder, as a result of an immune reaction to antibiotics, NSAID or infection. It is characterized by nonspecific systemic complaints of low grade fever, pallor, fatigue and weight loss and may be associated with increased ESR, increased serum creatinine level, proteinuria, glycosuria, microhematuria, leukocyturia, and excretion of casts. A bilateral anterior uveitis may precede, follow or occur concomitantly with this renal disorder. The diagnosis is established by renal biopsy. The prognosis in childhood is good.

Inflammatory bowel disease (Crohn's + Ulcerative colitis).

In children acute transient peripheral arthritis with chronic anterior segment uveitis may be associated.

- associated with HLA - B 27
- It is mostly unilateral
- Sacroilitis is less common.

Juvenile psoriatic arthritis

It usually presents as a assertive different articular arthritis affecting both large and small joints. This is chronic but asymptomatic. Uveitis occurs in 10 - 15% patients.

INTERMEDIATE UVEITIS

The incidence of this entity is less in children. It is mostly associated with Idiopathic, Tuberculous, Sarcoid aetiology. There is vitreous cells, flare and snowbanking in the peripherial vitreous. In chronic cases cystoid macular edema can be associated. We have to treat the basic cause with treatment of local condition with topical steroids. Periocular steriods are used only in poor vision associated cases. Cryopexy can be used in resistant cases.

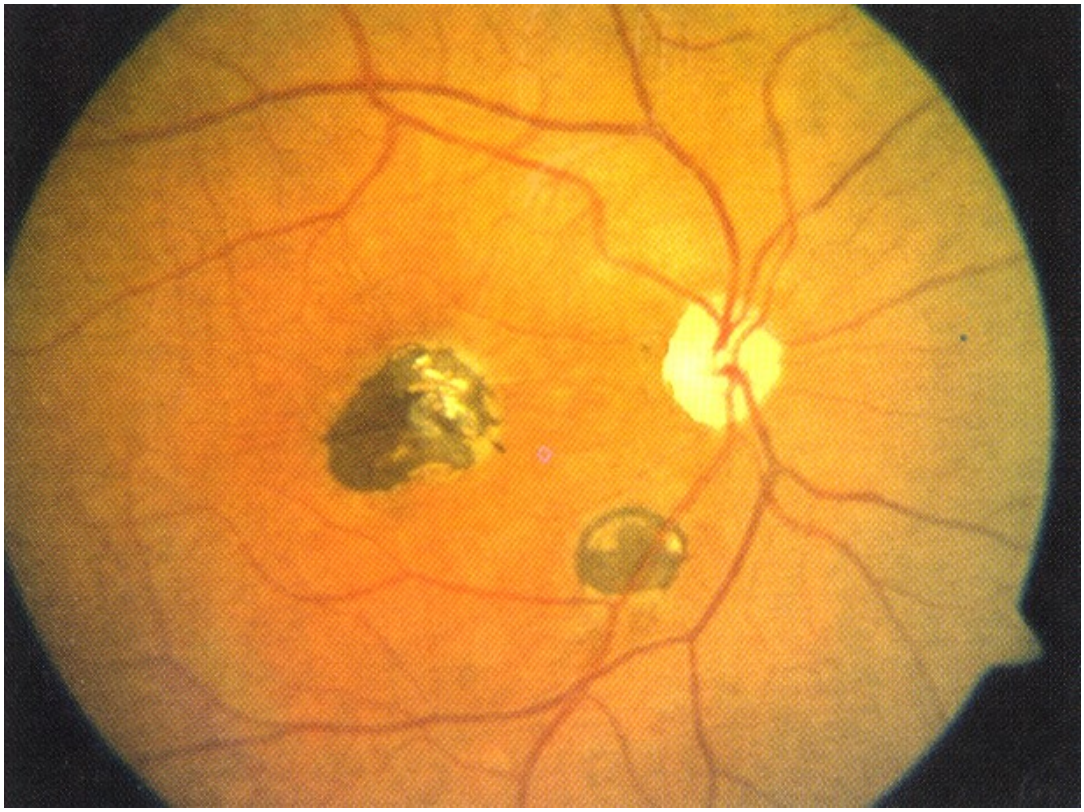
POSTERIOR UVEITIS

Toxoplasmosis

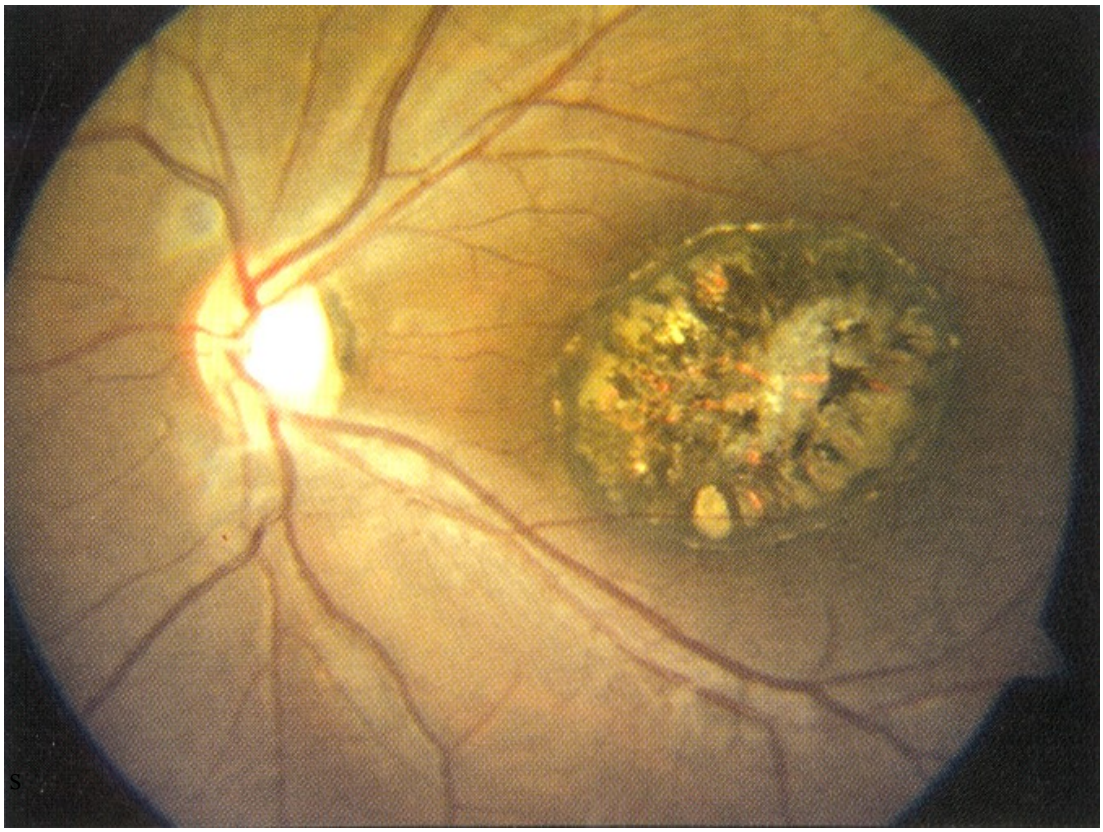
Is the most common identifiable cause of pediatric uveitis. Infection during the first trimester is associated with neonatal convulsions, intracranial calcifications and chorioretinitis. Infants infected in the later trimester often develop the chorioretinitis only.

Inactive atrophic scars, usually affecting the posterior pole, occur in approximately 80% of infected new borns. Ocular toxoplasmosis in older

CHOROIDITIS PATCH IN TOXOPLASMOSIS



CONGENITAL TOXOPLASMOSIS



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children and adults represents a reactivation of a subclinical congenital infection of the retina. The posterior uveitis may be associated with a granulomatous or nongranulomatous iridocyclitis.

Treatment consists of the combined use of pyrimethamine, folinic acid supplement and sulfadiazine; clindamycin may be used in addition to these medications or in substitution for pyrimethamine. The ELISA is the most sensitive and specific test. Any positive titer is significant in evaluating the diagnosis of Toxoplasmosis. Systemic corticosteroid used under antimicrobial coverage.

Toxocariasis

Is primarily a disease of children, acquired by the ingestion of soil containing the eggs of the canine intestinal round worm Toxocara canis. It is unusual for visceral larva migrans and ocular toxocariasis to affect the same person.

Ocular form is typically found in patients approximately 7 years old. Usually unilateral and presents as strabismus, leukocoria or decreased vision. May be present as a chronic endophthalmitis, periheral chorioretinal granuloma or posterior pole chorioretinal granuloma.

Lab diagnosis is by the high sensitivity and specificity (90%) of an ELISA titre for Toxocara. Oral or periocular corticosteroid are used to treat

toxocara endophthalmitis. Antihelminthics are not effective for ocular Toxocariasis.

Congenital Syphilis

Infants with congenital syphilis have been born with activity disease. In some, active choroiditis may be seen, but in most the only evidence of choroiditis, is the presence of segmental pigmentation in the periphery. Cataract may begin earlier, than would be expected. Glaucoma is a late sequelae. Decades later, recurrences of iritis and interstitial keratistis are puzzling but they respond to topical corticosteroid and cycloplegia.

Fungal Disease

Candidiasis and other fungal entities are rare causes of posterior uveitis in children. Vitrectomy and systemic and intravitreal antifungal agents are used for treatment.

Viral Disease

Rubella retinitis is the most common ocular feature of the maternal rubella syndrome. Unilateral or bilateral pigment deposits, usually limited to the posterior pole, vary from fine, powdery or granular to more discrete shapes.

PAN UVEITIS

Pan uveitis is reserved for diseases that involve all segments of the eye, typically with severe sight reducing inflamatory response.

Exudative Retinal detachment can be present with a choroidal tumour or long standing intermediate uveitis. With chronic inflammation patients go in for peripheral neovasculurasation and cause vitreous haemorrhage and lead to tractional RD. In this form anterior to posterior all the structure are involved.

Sarcoidosis

Sarcoidosis is a chronic multisystemic disorder of unknown etiology. Pediatric sarcoidosis has two peaks of incidence, occurring between ages 8 and 15 and in children younger than 5 years old.

Most common ocular problem is anterior uveitis which occurs in approximately one third of older children and 3/4 of younger group. The iridocyclitis, which may be either granulomatous or non granulomatous, is often not accompanied by complaints of pain or photophobia. Complications include Band keratopathy, glaucoma, cataract and posterior synechae. Other manifestations of peadiatric sarcoidosis are conjunctival nodules, vitritis, and chorioretinal granulomas.

Sympathetic Ophthalmia

Is a bilateral granulomatous panuveitis that develops in the other eye after a penetrating injury to one eye. A gradual onset of inflammation will develop within 3 months after trauma in 70% of the cases and within one year in 90% of the cases.

Initially, photophobia and blurred vision secondary to loss of accommodation, later a bilateral granulomatous uveitis develops, Multiple signs of posterior segment inflammation including cells and haze in the vitreous, choroidal thickening and optic nerve edema also develops.

Dalen-Fuchs nodules which are small yellow-white infiltrates in the retinal periphery at the level of RPE, are characteristic, but not pathognomonic for sympathetic ophthalmia.

Vogt-Koyanagi - Harada Syndrome

Vogt-Koyanagi-Harada Syndrome is a multisystemic disorder of unknown etiology. Although it usually affects young and middle aged adults there have been occasional reports in pediatric patients. Asian and heavily pigmented persons are more often affected than whites.

TREATMENT

Mydriatics and cycloplegics

Topical cycloplegics are beneficial for breaking or preventing the formation of posterior synechiae and for providing relief of photophobia secondary to ciliary spasm. The stronger the inflammatory reaction, the stronger or more frequent is the dosage of cycloplegics. Short acting drops such as cyclopentolate hydrochloride or long acting drops such as atropine may be used.

Corticosteroid

Corticosteroid are the mainstay of uveitis therapy. The amount and duration of corticosteroid therapy must be determined on an individual basis. The minimum amount needed to control inflammation should be prescribed to reduce complications of the treatment. If steroid therapy is needed longer than 2-3 weeks, the dosage should be tapered before discontinuation. The dosage may need to be increased when surgical intervention is required to prevent exacerbation of the uveitis postoperatively.

Topical steroids are used only for anterior uveitis because they do not reach a therapeutic level in tissues behind the lens. Strong steroids such as dexamethasone betamethasone and prednisolone must be used.

Periocular steroids are able to reach a therapeutic concentration behind thelens. A long-lasting effect can be achieved if a depot preparation such as triamcinolone acetonide or methylprednisolone acetate is used.

Periocular sub-tenon injections can be given either anteriorly or posteriorly. Anterior subtenon injections are usually given for severe anterior uveitis, whereas the main indication for posterior subtenon injections is intermediate uveitis.

Indications for systemic corticosteroid are intractable anterior uveitis which has failed to respond to both topical therapy and anterior subtenon injection, intermediate uveitis which has failed to respond to posterior subtenon injections, and in certain types of posterior or panuveitis with severe bilateral involvement.

Start with a large doses and then reduce. The initial dose of prednisolone is 1-1.5 mg/kg weight. The total dose should be taken before eating breakfast. Once the inflammation is brought under control, reduce the dose gradually over several weeks. If steroids are given for less than 2 weeks there is no need for gradual reduction of the dose.

Ocular complications of prolonged corticosteroid therapy are cataract formation, glaucoma, corneal / scleral thinning or perforation, ptosis, scarring of conjunctiva / Tenon's capsule.

Systemic complications of prolonged corticosteroid therapy are weight gain, sodium and fluid retention, peptic ulcers, diabetes mellitus, hypertension, osteoporosis, mental status changes, acne and exacerbation of systemic infections.

Immunosuppressive agents

Indications for immunosuppressive agents in uveitis are

- Vision - threatening intraocular inflammation
- Reversibility of the disease process
- Lack of response to corticosteroid treatment
- Contraindication to corticosteroid treatment because of systemic problems or intolerable side effects.

Cyclophosphamide treatment is begun at 1-2 mg/kg/day, while chlorambucil is started at 2 mg/day and slowly increased to a dosage of 8-12 mg/day. The patient's blood count must be monitored closely; the goal is a reduction in white blood cell count to no lower than 3000 cells / mm.

Azathioprine is usually given in a dose of 50-150 mg/day, while methotrexate can be given as a weekly oral or intramuscular dose of 7.5 - 25 mg. Methotrexate at a dose of 12.5 mg/week has been shown to be effective therapy for corticosteroid -resistant uveitis.

Cyclosporine therapy is usually begun at a dose of 2.5 - 5 mg/kg/day and it may be combined with 20-40 mg of prednisone for a more potent antiinflammatory effect. Another promising approach to the treatment of chronic uveitis is the implantation of a sustained release device containing cyclosporine through the pars plana.

PART II

AIM

To study about the incidence of age, sex, aetiology, and clinical presentation, chronicity, complication, and treatment modalities affecting visual outcome of uveitis in 50 children below 15 years of age at Regional Institute of Ophthalmology and Government Ophthalmic Hospital.

MATERIALS AND METHODS

This study was a prospective study of 50 children with uveitis below 15 years of age conducted at Regional Institute of Ophthalmology and Government Ophthalmic Hospital during August 2004 to August 2006 for a period 2 years. Children with penetrating trauma to the globe and endophthalmitis were excluded from this study.

All the patients were questioned with present complaints, past history of previous similar complaints, history of systemic disease such as tuberculosis, leprosy, history suggestive of Rheumatoid disease history of trauma, focal sepsis and exposure to pets.

Parents guidance was taken for history taking in small and uncooperative children.

Special attention was given to other systems such as mucocutaneous, musculoskeletal, gastro intentinal, cardio pulmonary and neurological system.

Thorough ocular examination with special attention to visual acuity, intraocular pressure, slitlamp biomicroscopy, direct and indirect of ophthalmoscopy, posterior pole examination with + 78D lenses, Ultra Sono Graphy - B scan was done.

All patients were investigated for complete blood count, differential count, erythrocyte sedimentation rate, serological test for syphilis, blood sugar, mantoux test, motion for ova and cyst and TORCH screening for posterior uveitis.

Special reference clinic opinion from ENT, Dental, Rheumatology department from Government General Hospital, Chennai was obtained.

Tuberculosis Patients were obtained opinion from chest clinic, Institute of Chest Disorders, Chetpet, Chennai.

Specific Patients were subjected to special investigations such as x-ray (- paranasal sinus, chest, sacroiliac joints,) Rheuamatoid factor and antinuclear antibody factor at Government General Hospital.

Eyes were graded as follows

Quiet - flare + / -, cells absent

Mild - KP +, flare +, cells +,

Moderate - KP +, Flare + +, Cells + +,

Severe - KP +, Flare + + +, Cells + + +, Posterior synechia, anterior vitreous cells.

Complicated - Band shaped keratopathy, complicated cataract, retinal detachment

The patients with mild form of anterior uveitis were treated with mydriatics - cycloplegics, topical steroids. The patients with moderate, severe, intermediate uveitis treated with mydriatics - cycloplegics, topical steroids, periocular steroids and systemic steroids.

Nonresponders or steroid contra indicated patients were treated with immuno suppresants after a complete blood count, liver function test, renal function test, with physician clearance was obtained. They are also periodically followed with the same investigations.

Complicated cataract without active inflammation for more than 3 months was taken up for small incision cataract surgery under the cover of pre operative and post operative steroids under general anaesthesia.

Post inflammatory glaucoma was managed with topical anti glaucoma drugs - 0.25% timolol eye drops and taken for anti glaucoma surgery.

Most of the choroiditis were presented late without active lesion and hence was only followed up.

ANALYSIS AND OBSERVATION

TABLE 1 : AGE INCIDENCE

Age in Year	No of Cases	Percentage
0-3	2	4
>3-6	15	10
>6-9	12	24
>9-12	21	42
>12-15	10	20

In our study the maximum number of cases of uveitis in children were found to be within the age groups of 9-12 years and 6-9 years comprising 42% and 24% respectively.

TABLE 2 SEX INCIDENCE

Sex	No of Case	Percentage
Male	28	56
Female	22	44

Out of the 50 cases in this study 28 were males (56%) and 22 were females (44%)

TABLE 3 DURATION & ONSET

Duration	No of Case	Percentage
Acute	35	70
Acute Recurrent	7	14
Chronic	8	16

Out of 50 cases 35 cases 70% presented with acute onset of less than 6 weeks, 7 cases (14%) with acute recurrent onset and 8 cases (16%) were of chronic duration of more than 6 weeks

TABLE 4 AETIOLOGICAL ANALYSIS

Aetiology	No. of Cases	Percentage
Idiopathic	29	58
Traumatic	5	10
Toxoplasma / Rubella	5	10
Focal Sepsis	3	6
JRA	4	8
Tuberculous	3	6
Masquerade	1	2

In the aetiological analysis, 98% of cases were of unknown aetiology. 10% of cases had traumatic aetiology. 10% had toxoplasma Rubella as actiology and 6% were found to be of Tuberculous aetiology. Focal sepasis

was found in (6%) and Juvenile Rheumatoid Arthritis in (8%) as aetiology, 1 case of masquerade syndrome.

Table 5. Anatomical Analysis

Type	No of Cases	Percentage
Anterior	38	76
Intermediate	4	8
Posterior	5	10
Pan	3	6

Based on Anatomical classification of uveitis, in our study 38 cases (76%) were anterior uveitis, 5 cases (10%) were posterior uveitis 4 cases (8%) were intermediate uveitis and 3 cases (6%) were found to be panuveitis.

TABLE 6 AETIOLOGICAL ANALYSIS BASED ON ANATOMICAL CLASSIFICATION

Aetiology	Anterior Uveitis		Intermediate Uveitis		Posterior Uveitis		Pan Uveitis	
	No of Cases	%	No of Cases	%	No of Cases	%	No of Cases	%
Idiopathic	24	63.16	2	50	0	0	3	100
Traumatic	5	13.16	0	0	0	0	0	0
Toxoplasma / Rubella	0	0	0	0	5	100	0	0
Focal Sepsis	3	7.89	0	0	0	0	0	0
JRA	4	10.53	0	0	0	0	0	0
Tuberculous	1	2.63	2	50	0	0	0	0
Masquerade	1	2.63	0	0	0	0	0	0

In case of anterior uveitis majority of cases were of unknown aetiology (63.16%), next came trauma (13.16%) juvenile Rheumatoid arthritis (10.53%) focal sepsis (7.89%) Tuberculous (2.63%) Masquerade (2.63%).

In case of intermediate uveitis idiopathic aetiology was 50% and Tuberculous 50%. In case of posterior uveitis aetiology of toxoplasma was 100%. Incase of pan uveitis aetiology is mainly idiopathic 100%.

TABLE 7 AGE INCIDENCE BASED ON ANATOMICAL CLASSIFICATION

Age in years	Anterior Uveitis		Intermediate Uveitis		Posterior Uveitis		Pan Uveitis	
	No of Cases	%	No of Cases	%	No of Cases	%	No of Cases	%
0-3	1	2.13	0	0	1	20	0	0
>3-6	3	7.89	0	0	2	40	0	0
>6-9	8	21.05	2	50	0	0	2	66.67
>9-12	18	47.37	1	25	1	20	1	33.33
>12-15	8	21.05	1	25	1	20	0	0

In our study anterior uveitis was common in 9 -12 age group. Intermediate uveitis is common in 6 - 9 age group. Posterior uveitis is common in 3 - 6 age group. PAN uveitis common in 6-9 age group.

TABLE 8 SEX INCIDENCE BASED ON ANATOMICAL CLASSIFICATION

Sex	Anterior Uveitis		Intermediate Uveitis		Posterior Uveitis		Pan Uveitis	
	No of Cases	%	No of Cases	%	No of Cases	%	No of Cases	%
Male	23	60.53	1	25	1	20	3	100
Female	15	39.47	3	75	4	80	0	0

Presentation of anterior uveitis is common in male 60.53% than female 39.47%.

Intermediate uveitis common in females 75% than males 25%. In posterior uveitis females are common 80% than males 20%. In PAN uveitis only males were seen 100%.

TABLE 9. DURATION AND ONSET ANATOMICAL CLASSIFICATION

Sex	Anterior Uveitis		Intermediate Uveitis		Posterior Uveitis		Pan Uveitis	
	No of Cases	%	No of Cases	%	No of Cases	%	No of Cases	%
Acute	31	81.58	8	100	-	-	1	33.33
Acute Recurrent	7	18.42	0	0	0	0	0	0
Chronic	0	0	0	0	5	100	2	66.67

Incase of anterior uveitis 81.58%, were of acute onset 18.42% Acute Recurrent onset. Incase of intermediate uveitis all 100% were acute onset. Incase of Posterior uveitis all 100% were of chronic onset. Incase PAN uveitis 33.33% were Acute onset, and 66.67% chronic onset.

TABLE 10. VISUAL OUTCOME OF UVEITIS ON ANATOMICAL LOCATION

Type	6/6 to 6/12	6/12 to 6/24	6/24 and less
	Cases	Cases	Cases
Anterior uveitis	34	4	0
Intermediate uveitis	4	0	0
Posterior uveitis	0	0	5
Panuveitis	0	0	3

In our study visual outcome was good in anterior uveitis in 34 patients with 6/6 to 6/12, and in 4 patients with 6/12 to 6/24. Intermediate uveitis patients had good visual outcome all belonging to 6/6 to 6/12 category. Posterior uveitis and Panuveitis patients had poor visual outcome as they presented late, comprising of 8 of the total patients.

TABLE 11. COMPLICATIONS

Complication	No. of Cases	Percentage
Complicated cataract	10	20%
Band Keratopathy	1	2%
RD	3	6%
Glaucoma	1	2%

In our study, out of 50 cases, complicated cataract was seen in 10 cases (20%) Band Keratopathy in one case (2%) RD in 3 cases (6) Glaucoma in 1 case 2%.

TABLE 12 SEVERITY AND TREATMENT

Severity	No of Cases	Percentage	Treatment given
Severe	6	12	Cycloplegics, Mydricaine Periocular, topical and systemic steroids, immuno suppresants
Moderate	25	50	Cycloplegics, periocular topical and systemic steroids
Mild	11	22	Cycloplegics topical steriods
Quiet eye	8	16	Cataract surgery, follow up

In our study, uveitis was severe in 6 cases (12%) were treated with Atropine eye drops,mydricaine sub-conjunctival injection periocular topical and systemic steriods, Immuno suppresants. Moderate cases were 25(50%) were treated Cycloplegics, periocular topical and systemic steroids. Mild

cases were 11 (22%) and treated with mydriatics and topical steroids. Cases (16%) presented with quite eye were followed up and complicated cataract treated with cataract extraction with PCIOL implantation.

TABLE : 13 VISUAL OUTCOME AFTER SURGERY

	SICS WITH PCIOL						
Pre Op.Vn	4/60	4/60	HM+	HM+	HM+	CFCF	6/36
Post Op. Vn.	6/18	6/9	6/9	6/18	6/18	6/18	6/12

Out of 7 cases in which catract surgery with PCIOL implantation was done two cases improved to a post operative visual acuity of 6/9 and better, one case 6/12, 4 cases to 6/18. In cases with RD for cosmetic purpose, lens removal was done.

DISCUSSION

In this study of fifty patients, the following observations were made.

Uveitis is more common in 9 - 12 years age group

Sex incidence was more relatively male 56% when compared to females 44%

Acute onset was much higher than other types.

In aetiology idiopathic accounted maximum (58%) followed by trauma and toxoplasma (10%) each.

Juveinile Rheumatoid Arthritis is 8% Tuberculosis and focal sepsis with 6% each, and masquerade syndrome with retinoblastoma as 2%

In anatomical classification the other studies conducted between 1954 – 1969 by Kimura et al. (1954), Kimura and Hogan (1966), Perkins (1966), Witmer and Korner (1966), Kazden et al. (1967), Makley et al. (1969) and Jutte et al. (1969) shows anterior uveitis to be 32.8 % posterior uveitis 45.2% and intermediate uveitis 22%[1,2,3,4]

In our study on anatomical classification, according to international uveitis study, group classification, anterior uveitis was 76%, followed by posterior 10%, Intermediate 8%, PAN uveitis 6%.

Aetiological Analysis

According to study conducted by D – Ben Ezra et al. of 821 patients 41.7% patients were intermediate uveitis followed by panuveitis 30.8% patients posterior uveitis 14.1 patients and anterior uveitis 13.4%.[25]

From a study by Perkins Es ophthalmologica 36: 189 1984 the causes of anterior uveitis ranks with idiopathic 32.7% JRA 6.3%, Fuch's 5.7%, Ankylosing spondylitis 5.1%, Reiters syndrome 5.2%. Posterior uveitis had toxoplasma as 9.2% idiopathic 6.9% followed by idiopathic retinal vascultis 4.6%.[3]

In our study anterior uveitis had aetiology had idopathic 63.16%, Trauma as 13.16%, Juvenile Rheumatoid Arthritis as 10.53%, sepsis as 7.89%, Tuberculosis 2.63% and tumor as 2.63%, visual outcome was good to better in these patients.

Intermediate uveitis had etiology of idiopathic 50% and tuberculosis 50% and visual outcome was better.

In posterior uveitis, toxoplasma / Rubella had incidence of 100%, visual outcome was very poor. PAN uveitis had idiopathic 100% as incidence all three had poor visual outcome.

The Juvenile Rheumatoid Arthritis were from Rheumatology Dept. Govt. General Hospital, Chennai and they were treated there with indomethacin and methotrexate 10 mg / wk. with folic acid.[8,19,20,29,31] All of them were ANA negative and of pauci articular type.

The patient who had Retinoblastoma was eneucleated for the same eye and followed up for other eye.

The trauma presented with uveitis were blunt injury and presented with Anterior uveitis, not affecting much of visual outcome 6% patients presented with focal sepsis (Dental caries + sinusitis) were treated for the same in Dental, ENT Departments in Govt. General Hospital, Chennai and had good visual recovery.

Tuberculosis patients were treated at Institute of Thoracic medicine chetpet with Anti tuberculous drugs.

In our study, uveitis was severe in 6 cases (12%) which were treated with Atropine eye drops; mydricaine Subconjuctival steriods periocular steriods, systemic steriods, immuno suppresants.[31,34]

Moderate cases were 25 (50%) and treated with mydriatics, periocular and systemic steriods.

Mild cases were 11 (22%) and treated with mydriatics and topical steroids.

8 cases (16%) presented with quiet eye were followed up and complicated cataract treated with cataract extraction with PCIOL implantation.[22,23,30] under general anaesthesia.

The patients with uveitis had better visual outcome if they are presented earlier and responded to treatment - 72%.

Some patients had moderate vision, as they presented late with complications and hence surgery with medical management enabled them to have better vision.

Patients who presented late or had their visual status ignored went in for non recoverable complications and hence their vision was very poor.

Clinical Presentation

Anterior uveitis was common in 9 to 12 yrs age group and in Males and of acute onset. Intermediate uveitis was common in 6 to 9 age group and common in females, and acute onset.

Posterior uveitis was common in 3 - 6 age group and common in females, chronic onset. PAN uveitis was common in 6 - 9 age group and in males and mainly by chronic onset.

Complications

The major complication observed in this study was complicated cataract 20% followed by Retinal detachment as 6% and Band Keretopathy as 2% and glaucoma as 2%.

Retinal detachment was seen with the help of B scan and present in chronic presentation. 3 cases of 4 juvenile Rheumatoid arthritis presented with complicated cataract, with Band shaped keratopathy. Post inflammatory glaucoma was present in Acute Recurrent onset.

Treatment

In this study the treatment was based on the severity, complications and systemic associations.

Idiopathic anterior uveitis was treated with mydriatic, cyclopegics, topical steroids, periocular steroids, systemic steroids, and the anterior chamber reaction regressed drastically. [33,34]

Complicated cases which had

1. Complicated cataract was treated with small incision cataract surgery with PCIOL implantation after active inflammation has subsided [21,22,30] under general anaesthesia.

2. Eyes with Retinal detachment were treated with cataract removal for cosmetic purpose.

3. The eyes with choroditis could only be followed up as they did not belong to active group.

4. The case of post inflammatory glaucoma with shallow anterior chamber and iris bombe was treated with 0.25% Timolol and was subjected for glaucoma surgery who had good Iop control post operatively.

5. Band shaped keratopathy was not affecting the visual axis and hence was not treated.

Factors affecting visual outcome

1. The patients who had anatomical location as anterior and intermediate uveitis had good visual outcome than posterior uveitis and pan uveitis.

2. The patients who presented earlier that is within 6 weeks of complaints duration had better visual outcome than who presented late.

3. The patients who had retinal detachment and choroiditis had divergence of the affected eye and did not have a good prognosis as they presented late.

4. Visual outcome was moderate in patients who had complicated cataract and glaucoma who underwent surgery with appropriate precautions.

5. Band shaped keratopathy was not in the visual axis and hence the patient had good vision.

CONCLUSION

1) Uveitis in children can be progressive and cause serious visual impairment if not diagnosed and treated earlier.

2) Paediatric uveitis is common in 9-12 years age group

3) Anterior uveitis is more common than other forms. Other forms when presented are late and has lead to serious visual impairment.

4) Unknown cause was major aetiology detected in children. JRA leads to major complications if the eye is not assessed.

5) Toxoplasma mostly go unnoticed and hence produced vision catastrophe. As this is infective in nature early diagnosis can make it treatable to ensure good vision.

6) Intermediate Uveitis also go unnoticed due to good vision and can be detected only by clinical examination and school screening camps.

7) All strabismus should be evalauated as they can be due to a panuveitis sequale or post uveitis sequale.

8) Early diagnosis and prompt treatment with mydriatics, corticosteroids, immunosuppresants, follow up prevent complications and ensure good vision.

9) Complicated cataract under steroid and immunosuppresants, taken for SICS WITH PCIOL at an earlier date, gave good visual prognosis.

10) The team work of pediatrician, rheumatologist, ENT physicians, chest physicians with ophthalmologist can lead to an early diagnosis and treatment and prevent the complication and ensure the children to have good vision.