FACULTY OF MEDICINE
Ophthalmology Department

Infectious Uveitis

ESSAY
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قسم طب وجراحة العين

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SUMMARY

Uveitis is inflammation of the uvea. It is the pigmented, vascular middle layer of the eye, sandwiched between the corneoscleral outer protective layer and the retina

There are many Uveitis entities; several classification schemes are clinically useful. According to standardization of uveitis nomenclature working group (SUN) the four commonly used classifications for describing Uveitis entities are temporal, morphological, anatomical, and etiological.

The temporal classification of Uveitis divides Uveitis entities by duration into acute uveitis and chronic uveitis. The morphological classification is either nongranulomatous or granulomatous.

The anatomical classification uses the terms iritis, iridocyclitis, vitritis, retinochoroiditis, choroiditis, and panuveitis. The etiological classification is either infectious or noninfectious.

Infectious uveitis is the big entity of uveitis. It may be caused by bacteria such as in tuberculosis and syphilis which were thought to be the cause of majority of cases of uveitis, viruses such as cytomegalovirus. Fungi such as Candida. Protozoa such as toxoplasmosis.

Because specific antimicrobial therapy can be curative and prevent long term visual sequelae, early diagnosis of infectious causes of uveitis should be a priority to ensure good prognostic outcome.

Investigations of a case of infectious uveitis are multiple and include laboratory as ESR, skin biopsy for leprosy, tuberculin skin tests,

PCR, ELISA, IFA and Imaging studies as chest X ray.

Management of a case of infectious uveitis depends on the diagnosis of the cause followed by proper anti infective therapy; the outcome however depends on the stage of the disease and promptness of diagnosis and therapy.

Follow –up is very important and depends on the cause of the uveitis, the severity of the uveitis, and the medications used in treatment

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List of abbreviations

AFB	acid-fast-bacilli
AIDS	acquired immunodeficiency syndrome
AMD	age related macular degeneration
APMPPE	acute posterior multifocal placoid pigment epitheliopathy
ARN	acute retinal necrosis
ASPPC	acute syphilitic posterior placoid chorioretinopathy
AUS	American Uveitis Society
CME	cystoid macular edema
CMVR	Cytomegalovirus retinitis
CNS	Central nervous system.
CNVM	choroidal neovascular membranes
CSF	cerebrospinal fluid
DUSN	diffuse unilateral subacute neuroretinitis
EBV	Epstein-Barr virus
ELISA	enzyme-linked immunosorbent assay
EVS	Endophthalmitis Vitrectomy Study
FDA	Federal Drug Association-approved
FTA-ABS	Fluorescent treponemal antibody absorption tests
HAART	highly active antiretroviral therapy
HD	Hansen's disease
HIV	human immunodeficiency virus
HLA-B7	human lymphocyte antigen B-7
HSV	herpes simplex virus
HTLV-1	Human T-cell lymphotropic virus type 1
IgG	immunoglobulin G
IgM	immunoglobulin M
IOP	intraocular pressure
IRU	immune recovery uveitis
IVTA	intravitreal triamcinolone acetonide
JIA	Juvenile idiopathic arthritis
LL	lepromatous type
MALT	mucosa-associated lymphoid tissue
MAT	microscopic agglutinin test

MDT	multidrug treatment
MHA-TP	microhemagglutinin assay for *T. pallidum*
Nd: YAG	neodymium: yttrium-aluminum-garnet
OHS	Ocular Histoplasmosis syndrome
PCR	polymerase chain reaction
PORN	progressive outer retinal necrosis
PPV	pars plana vitrectomy
RPE	retinal pigment epithelium
RPR	Rapid plasma reagin
SSPE	subacute sclerosing panencephalitis
TB	tuberculosis
T. pallidum	*Treponema pallidum*
TT	tuberculoid type
VDRL	Venereal Disease Research Laboratory
VEGFI	vascular endothelial growth factor inhibitors
VOH	Verteporfin in Ocular Histoplasmosis
VZV	Varicella-zoster virus

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Introduction

Uveitis is defined as inflammation of the uveal tract, which is the vascular coat of the eye, and composed of the iris, the ciliary body, and the choroid. Inflammation of these structures is frequently accompanied by involvement of the surrounding ocular tissues, including the cornea, sclera, vitreous, retina, and optic nerve. [1].

The diagnosis is made based on an extensive review of the patient's family and personal history, review of medical systems, systemic and ocular examinations, and targeted laboratory investigation based on suggestive historical and clinical findings [1].

The relationship between intraocular inflammation and systemic disease was suggested by the concept of focal infection, which described the ability of infection at extraocular sites to provoke ocular inflammation. The theory regarded the spread of infection or toxins from an extraocular source as the origin of intraocular inflammation [1].

Common sources of focal infection reported to be associated with uveitis were the teeth and tonsils. The cause of uveitis was believed to be determined after a site of systemic infection was identified, and treatment was directed at elimination of the extraocular infection [2].

Infectious uveitis may be caused by bacterial organisms such as tuberculosis (TB) and syphilis which were thought to be the cause of the majority of cases of uveitis. Viruses such as herpes virus and cytomegalovirus (CMV). Parasitic such as toxoplasmosis [2].

ANATOMY

The uvea (from the Latin, uva or grape) is the vascular coat of the eye, lying between the sclera and the neuroepithelium .It consists of the iris, the ciliary body, and the choroid. [3]

The former represents the anterior part, the latter is the posterior part, and the ciliary body forms the middle part. Each of these components of the uvea has a unique histology, anatomy and function. [3]

IRIS:

The iris forms a diaphragm in front of the crystalline lens. The iris controls the amount of light transmitted into the eye by changes in the pupillary size. The vascular supply of the iris originates from the anterior and long posterior ciliary arteries.

Histologically, the iris is made up of three layers:

(1) An anterior layer composed of fibroblasts, melanocytes, and collagen, with its anterior surface folded into many ridges and crypts.

(2) A middle stromal layer containing fibroblasts, melanocytes, and collagen.

(3) A posterior layer composed of the dilator pupillae muscle and the pigment epithelium. The stroma, or the middle layer, makes up the bulk of the iris and contains blood vessels, nerves, melanocytes, and clump cells in a loose extracellular matrix of collagen and mucopolysaccharides. [3]

The iris color is determined by the number and degree of melanin granules in the superficial stromal melanocytes. [3]

Unlike the anterior surface, the posterior epithelium is velvety smooth and uniform. It consists of two layers of densely pigmented cells, which are arranged apex to apex. [4]

The dilator muscle of the pupil extends from the region of the sphincter muscle to the base of the iris and is located in the posterior portion of the iris. The sphincter muscle is located in the posterior iris stroma in the pupillary zone and consists of a circular band of smooth muscle fibers (Fig. 1-1). The dilator muscle is innervated by parasympathetic nerves and the sphincter muscle by the sympathetic nervous system. [5]

(Fig. 1-1) Trichrome stain of the anterior segment showing the normal anatomy of the iris, angle, and ciliary body. Note the dilator and sphincter muscle of the iris and ciliary body muscle (red). The ciliary body appears with hyalinization of the stroma (blue). [5]

CILIARY BODY:

The ciliary body extends from the base of the iris and becomes continuous with the choroid at the ora serrata. It is approximately 6-6.5 mm in anteroposterior dimension. It consists of an anterior portion called the pars plicata and a posterior portion called the pars plana. The pars plicata contains approximately 70 fingerlike projections called ciliary processes, which are covered by the ciliary body epithelium. The pars plana is the flat part of the ciliary body and ends at the ora serrata. The ciliary processes are thin and fingerlike in children (Fig. 1-2). With age they become thickened and reveal hyalinization of the stroma (Fig. 1-3). The stroma of these areas is filled with fibrous connective tissue, rich vascular networks, melanocytes, and bundles of smooth muscle. [6]