

OCULAR INTERNET TEXTBOOK

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The Ocular Internet Textbook is available to ophthalmologists free. It may be accessed at *dds.medflow*- username-*ddsuser* password-*ddsuser*. There are 511 differential diagnosis topics and 1583 medical topics.

The basis of this material is built on previous literary works:

1. Roy FH, Ocular Differential Diagnosis. 8th edition. Medrounds.org. 2007
2. Roy FH, Ocular Syndromes and Systemic Disease. 4th edition. Medrounds.org, 2007.
3. Roy FH, Fraunfelder FW, Fraunfelder FT: Roy and Fraunfelder's Current Ocular Therapy. 6 th edition. Saunders/Elsevier. London UK. 2008
4. Roy FH, Tindall R (Editors): Master Techniques in Ophthalmic Surgery. 2nd edition. Medrounds.org, 2009.
5. Roy FH chief editor Emedicine/ophthalmology.com 2009.

Credit has been given to each source in the Ocular Internet Textbook.

This author has envisioned the following scenario in the examination room with a computer beside you:

1. Identify problem with a differential diagnosis list
2. Look at as many hyperlinked topics as necessary and continue to drill down and receive as much information as needed.
3. By studying your patient and evaluation of age, sex, geographic location and other factors a small differential diagnosis list can be identified.
4. What lab tests will separate these diagnosis?
5. What is the most reasonable treatment for this entity?

II. Organizational DDX

1. Topic

Entropion (Inversion Of Lid Margin)

ICD9-374.00

1. Congenital, including congenital epiblepharon-inferior oblique insufficiency; ectrodactyly, ectodermal dysplasia, cleft lip-palate syndrome, including with and without lower eyelid retractor insertion

A. Inferior oblique insufficiency syndrome

B. [Dental-ocular-cutaneous syndrome](#)

C. [Siemen syndrome \(anhidrotic ectodermal dysplasia\)](#)

2. Acquired

A. Spastic entropion-acute, affecting lower lid, precipitated by acute inflammation or prolonged patching ICD9-374.03

B. Mechanical entropion ICD9-374.02

(1) [Anophthalmos](#)

(2) [Enophthalmos](#)

(3) Microphthalmos

(4) [Lymphedema](#)

C. Senile entropion-relative enophthalmos secondary to fat atrophy ICD9-374.01

D. Cicatricial entropion-physical and chemical burns of conjunctiva and cicatrizing diseases, including trachoma and leprosy ICD9-374.04

(1) Chronic cicatricial conjunctivitis

(2) [*Leprosy *\(Hansen disease\)](#)

(3) Radiation

(4) Thermal burns

(5) [Trachoma](#)

(6) Following cryosurgery of the eyelid

(7) [Amendola syndrome](#)

(8) [Variola](#)

Additional Resources:

<http://www.emedicine.com/oph/TOPIC212.HTM>

2. Divisions

a. Congenital

b. Acquired

1. Spastic
 2. Mechanical
 3. Senile
 4. Cicatricial
-
3. With cicatricial- look up trachoma or leprosy
 4. What lab test are ordered to separate these entities

Trachoma

ICD-9: 076.0

General: Most common in rural communities of the Middle East, Africa, Asia, and South and Central America; caused by *Chlamydia trachomatis*; associated with poor sanitation and medical care.

Ocular: Chronic keratoconjunctivitis; papillae follicles; keratitis; opacities of cornea; scars of palpebral conjunctiva; ptosis; tearing; entropion.

Clinical: Rhinitis; otitis media; upper respiratory tract infection.

Laboratory: Most endemic areas, lab tests are unavailable. Commercial polymerase chain reaction (PCR) based assay has high sensitivity and specificity.

Treatment: Tetracycline eye ointment for six weeks or a single dose azithromycin systemically

Additional Resources:

<http://www.emedicine.com/oph/TOPIC118.HTM>

Hansen Disease (Leprosy)

ICD-9: 330.2

General: Communicable disease caused by *Mycobacterium leprae*.

Ocular: Keratitis; leukoma; pannus; corneal ulcer; uveitis; iris atrophy; dacryocystitis; anisocoria; multiple pupils; decreased or absent pupillary reaction to light; paralysis of seventh nerve; episcleritis; blepharospasm; lagophthalmos; madarosis; secondary glaucoma; decreased intraocular pressure; subconjunctival fibrosis; punctate epithelial keratopathy; posterior subcapsular cataract; corneal hypesthesia; prominent corneal nerves; iridocyclitis; foveal avascular keratitis; scleritis; interstitial keratitis; iris pearls; dry eye.

Clinical: Disease affects primarily the skin, mucous membrane, and peripheral nerves.

Laboratory: Skin biopsy specimens contain vacuolated macrophages, few lymphocytes, and numerous acid-fast bacilli often in clumps or globi.

Treatment: The WHO recommends multiple drug therapy (MDT) for all forms of leprosy. MDT 14 consists of rifampin, ofloxacin, and minocycline

Additional Resources:

<http://www.emedicine.com/oph/TOPIC743.HTM>

II. Informational DDX

1. Topic

Frosted-Branch Angitis

ICD9-426.53

In this condition, unusual thick sheathing surrounds all the retinal veins and less often the arteries, making them look like frosted tree branches.

1. [Herpes simplex](#) viruses types 1 and 2
2. Acute lymphoblastic [leukemia](#)
3. Large cell [lymphoma](#)
4. [Crohn disease](#)
5. [Systemic lupus erythematosus](#)
6. [Acquired immune deficiency syndrome](#)

References:

Kim TS, et al. Retinal angiopathy resembling unilateral frosted branch angiitis in a patient with relapsing acute lymphoblastic leukemia. *Am J Ophthalmol* 1994; 117, 6:806-808.

Ridley ME, et al. Retinal manifestations of ocular lymphoma. *J Ophthalmol* 1992; 99, 7:1153-1161.

dds.medflow.com-herpes simplex, leukemia, lymphoma, Crohn disease, systemic lupus erythematosus, acquired immune deficiency syndrome

2. 6 systemic diseases

3. Print off half sheets, compare, lab tests

Herpes Simplex

ICD-9: 054.9

General: Large, complex deoxyribonucleic acid (DNA) virus.

Ocular: Conjunctivitis; keratitis; iridocyclitis; corneal ulcer; uveitis; hyphema; hypopyon; iris atrophy; cataract; scleritis; dacryoadenitis; blepharitis; acute retinal necrosis.

Clinical: Recurrent skin vesicles on lids, perioral area, nose, and genitalia; meningitis, encephalitis.

Laboratory: Viral cultures

Treatment: Antiviral therapy, topical or oral, is an effective treatment of epithelial herpes infection

Additional Resources:

<http://www.emedicine.com/oph/TOPIC100.HTM>

Leukemia

ICD-9: 208.0

General: Acute or chronic blood disorder.

Ocular: Engorgement of conjunctival vessels; papillary hypertrophy; aggregations of tumor cells in conjunctiva, choroid, and orbit; secondary glaucoma; retinal venous engorgement and tortuosity with pronounced constrictions; retinal hemorrhages; retinal detachment; cotton-wool spots; macular edema; papilledema; optic atrophy; optic neuritis; paralysis of extraocular muscles; hypopyon; vitreous opacities; retinal sea fans; perilimbal subconjunctival infiltrates; corneal leukemic infiltration (rare); shallow serous retinal detachments; hyphema; iris neovascularization; central retinal vein occlusion; vitreous infiltrates.

Clinical: Frequent involvement of central nervous system; intracranial hemorrhage; thrombocytopenia; rising white cell count.

Laboratory: CBC and differential, bone marrow aspiration, immunophenotyping, chromosomal analysis

Treatment: Chemotherapy with or without radiotherapy

Additional Resources:

<http://www.emedicine.com/oph/TOPIC489.HTM>

Lymphoid Hyperplasia (Reactive Lymphoid Hyperplasia; Lymphoid Tumors; Malignant Lymphoma; Pseudolymphoma; Pseudotumor; Burkitt Lymphoma; Neoplastic Angioendotheliomatosis)

ICD9-204.8

General: Occurs in tropical Africa; young children; idiopathic orbital inflammation; systemic disease is rarely associated but occasionally occurs with either vasculitis or lymphomas; etiology of Burkitt lymphoma currently includes three factors: (i) [Epstein-Barr virus](#), (ii) [malaria](#), and (iii) chromosomal translocations activating the *c-myc* oncogene, which induces uncontrolled B-cell proliferation.

Ocular: Proptosis; extraocular motility disturbances; lesions of orbit, lacrimal gland, conjunctiva, and uvea; cortical blindness; retinal artery occlusion; retinal vascular and pigment epithelial alterations; vitreitis.

Clinical: Maxillary tumor; Epstein-Barr virus; cranial neuropathy.

References:

Brooks HL, et al. Orbital Burkitt's lymphoma in a homosexual man with acquired immune deficiency. *Arch Ophthalmol* 1984; 102: 1533-1537

Cheung MK et al. Diagnosis of reactive lymphoid hyperplasia by chorioretinal biopsy. *Am J Ophthalmol* 1994; 118: 457-462

Crohn Disease (Granulomatous Ileocolitis)

ICD-9: 330.2

General: Autoimmune or hypersensitivity inflammatory change; slight prevalence in males; Jewish people most frequently affected; onset at any age; more severe in young people; remission; relapses.

Ocular: Recurrent conjunctivitis; marginal corneal ulcers; keratitis; blepharitis; dry eye; scleritis; episcleritis; iris atrophy; uveitis; pupil immobility and dilatation;

macular edema; macular hemorrhages; extraocular muscles palsy; vitreal haze; retinal vasculitis; subconjunctival nodules; conjunctival ulcer; pannus; acute dacryoadenitis; orbital pseudotumor.

Clinical: Inflammatory bowel disease; abdominal distention; tenderness of abdomen; mass in right lower quadrant of abdomen; diarrhea; abdominal cramps; bloating; flatulence; weight loss; nervousness; tension; depression; pyoderma gangrenosum.

Laboratory: Test result positive for ASCA and negative for p-ANCA antigen suggests the presence of Crohn disease. Ct, MRI, barium contrast studies, colonoscopy and upper endoscopy may also be useful

Treatment: Treat diarrhea, antibiotic and anti-inflammatory drugs, antimetabolites, anti-tumor necrosis factor antibody, immunosuppressive agents, surgical correction for fibrostenotic obstruction may be necessary.

Additional Resources:

<http://www.emedicine.com/med/TOPI477.HTM>

Disseminated Lupus Erythematosus (Systemic Lupus Erythematosus; Lupus Erythematosus; Kaposi-Libman-Sack Syndrome, SLE)

ICD-9: 695.4

General: Possible etiology includes viral infections and genetic predisposition; immunologic abnormalities.

Ocular: Keratitis; keratoconjunctivitis sicca; corneal ulcer; optic nerve atrophy; optic neuritis; papilledema; arteritis; central retinal vein occlusion; retinal detachment; microaneurysm; scleritis; uveitis; ptosis; conjunctivitis; paralysis of third nerve; homonymous hemianopsia; multifocal microinfarcts; mydriasis; nystagmus; proptosis; orbital myositis; pseudoretinitis pigmentosa; photophobia.

Clinical: Polyarthrits; morning stiffness; fever; malaise; fatigue; polyserositis; renal disease; central nervous system disease; anemia; leukopenia; maculopapular rash in a "butterfly" distribution over malar region; alopecia.

Laboratory: Antibodies to double-stranded DNA or the SM antigen or a false-positive serology test for syphilis; positive antinuclear antibody test that is caused by a medication.

Treatment: Fever, rash, musculoskeletal, and serositis manifestations respond to hydroxychloroquine and NSAIDs. Low-to-moderate-dose steroids are necessary for acute flares. CNS involvement and renal disease constitute more serious disease and often require high-dose steroids and other immunosuppression agents. Diffuse proliferative lupus nephritis has been treated with cyclophosphamide induction therapy.

Additional Resources:

<http://www.emedicine.com/med/TOPI2228.HTM>

Acquired Immunodeficiency Syndrome (AIDS; Acquired Cellular Immunodeficiency; Acquired Immunodeficiency)

ICD-9: 090.9

General: Acquired breakdown of the immune system followed by disease that takes advantage of the body's collapsed defenses; acquired by shared drug needles or sexual intercourse; occurs most frequently in homosexually active men (75%), intravenous drug abusers (13%), and Haitian immigrants (6%).

Ocular: Retinal cotton-wool spots; cytomegalovirus retinitis; retinal periphlebitis; conjunctival Kaposi sarcoma; necrotizing retinitis; retinal hemorrhages; conjunctivitis sicca; orbital Burkitt lymphoma; peripheral retinochoroiditis; vitritis; fungal corneal ulcer; hypopyon; acute glaucoma; third nerve palsy; anterior uveitis; atypical retinitis; orbital pseudotumor; herpes zoster ophthalmicus; herpes simplex keratitis; bacterial keratitis; molluscum contagiosum; cytomegalovirus retinitis; toxoplasma retinitis; acute retinal necrosis; human immunodeficiency virus (HIV) retinitis; syphilitic retinitis; *Pneumocystis carinii* choroiditis; fungal and bacterial endophthalmitis; fungal choroiditis; conjunctival microvasculopathy; keratitis sicca; subconjunctival hemorrhage.

Clinical: Because of lowered immunity, one third develop Kaposi sarcoma; pneumonia caused by *Pneumocystis carinii*; death.

Laboratory: ELISA test is used for screening other tests are used to evaluate false-positive and false-negative test results.

Treatment: Medical consultations are required for systemic treatment. The treatment of CMV retinitis can include drugs such as Ganciclovir, Valganciclovir, Fomivirsen, Foscarnet and Cidofovir . All of these drugs have specific adverse effects and complicate the decision to use for treatment.

Additional Resources:

<http://www.emedicine.com/emerg/TOPI253.HTM>

<http://www.emedicine.com/oph/TOPIC417.HTM>

4. Analyze lab test- start treatment

Financial Disclosure- The author is a consultant to Medflow. If this system at some point is commercialized, the author would gain financially.