SUNCOAST SEMINAR

Presented by the
Pinellas Optometric Association

Course Syllabus

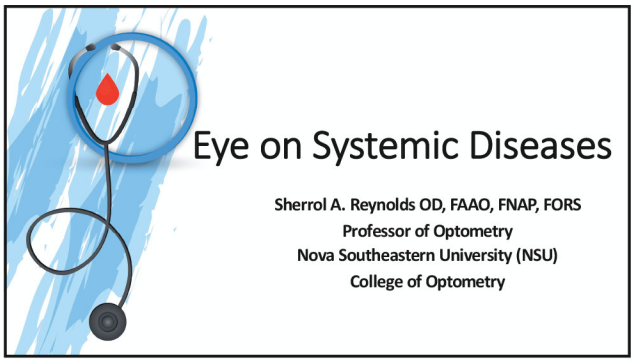
Suncoast Seminar 2024
Schedule of Events

Saturday, April 27, 2024

7:45 am – 8:15 am	**Registration** **Continental Breakfast** - *sponsored by Eye Institute of West Florida* **Exhibit Hall** open
8:15 am – 9:55 am	**Co-Managing the Light Adjustable Lens (90938-PO)** T. Hunter Newsom, M.D., Brian Szabo, D.O., and Eric Fazio, O.D.
9:55 am – 10:40 am	**Break** - *sponsored by Updegraff Vision* **Exhibit Hall** open
10:40 am – 12:20 pm	**Emerging Trends in Macular Disease (TQ) (90790-TD)** Sherrol A. Reynolds, O.D.
12:20 pm – 1:10 pm	**Lunch** - s*ponsored by St. Luke's Cataract & Laser Institute* **Exhibit Hall** open
1:10 pm – 1:20 pm	**Lighthouse of Pinellas Update**
1:20 pm – 1:30 pm	**F.O.A. Update**
1:30 pm – 3:10 pm	**Eye on Systemic Disease (TQ) (90791-SD)** Sherrol A. Reynolds, O.D.
3:10 pm – 3:30 pm	**Break -** *sponsored by Sight360*
3:30 pm – 5:10 pm	**The ODs Role in Diabetes (TQ) (86739-TD)** Sherrol A. Reynolds, O.D.

Sunday, April 28, 2024

7:30 am – 8:00 am	**Registration** **Continental *Breakfast*** - *sponsored by Next Vision Instruments*
8:00 am – 9:40 am	**Neural Pearls (TQ) (89379-NO)** Joe Sowka, O.D.
9:40 am – 10:00 am	**Break** – *sponsored by Suncoast Seminar*
10:00am – 11:40 am	**Prevention of Medical Errors (89825-EJ)** Joe Sowka, O.D.
11:40 am – 12:00 pm	**Break** – *sponsored by Suncoast Seminar*
12:00 pm – 1:40 pm	**Florida Jurisprudence (89275-EJ)** Joe Sowka, O.D.


Eye on Systemic Diseases
Sherrol A. Reynolds OD, FAAO, FNAP, FORS
Professor of Optometry
Nova Southeastern University (NSU)
College of Optometry

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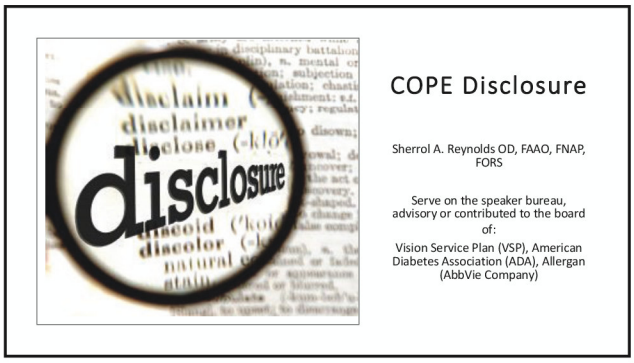
disclosure
COPE Disclosure
Sherrol A. Reynolds OD, FAAO, FNAP, FORS
Serve on the speaker bureau, advisory or contributed to the board of:
Vision Service Plan (VSP), American Diabetes Association (ADA), Allergan (AbbVie Company)

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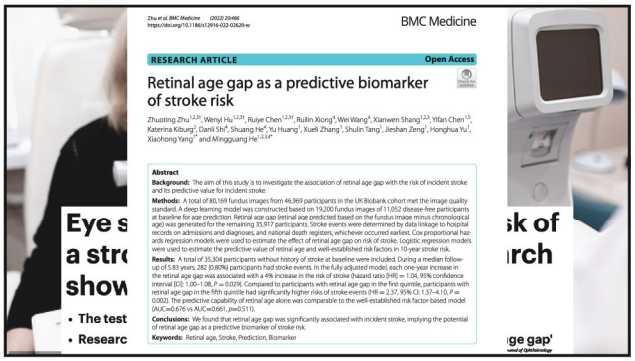
BMC Medicine
RESEARCH ARTICLE
Open Access
Retinal age gap as a predictive biomarker of stroke risk
Abstract
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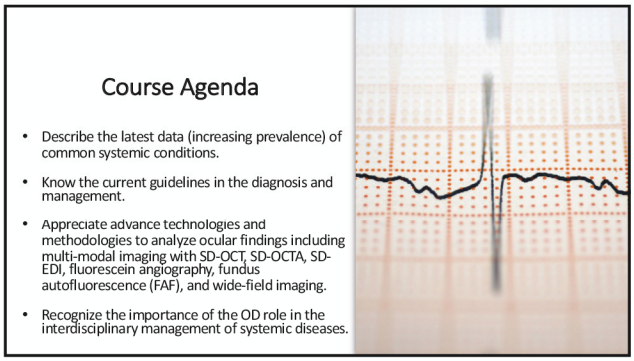
Course Agenda
• Describe the latest data (increasing prevalence) of common systemic conditions.
• Know the current guidelines in the diagnosis and management.
• Appreciate advance technologies and methodologies to analyze ocular findings including multi-modal imaging with SD-OCT, SD-OCTA, SD-EDI, fluorescein angiography, fundus autofluorescence (FAF), and wide-field imaging.
• Recognize the importance of the OD role in the interdisciplinary management of systemic diseases.

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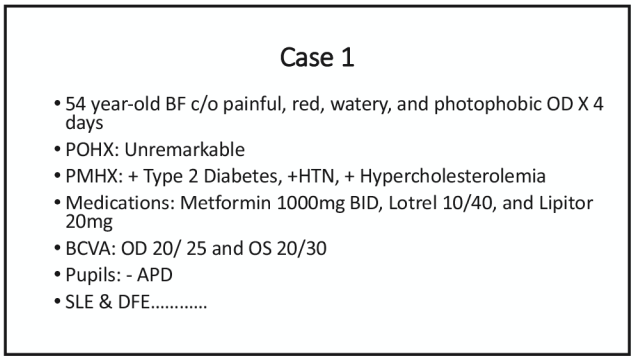
Case 1
• 54 year-old BF c/o painful, red, watery, and photophobic OD X 4 days
• POHX: Unremarkable
• PMHX: + Type 2 Diabetes, +HTN, + Hypercholesterolemia
• Medications: Metformin 1000mg BID, Lotrel 10/40, and Lipitor 20mg
• BCVA: OD 20/ 25 and OS 20/30
• Pupils: - APD
• SLE & DFE.....

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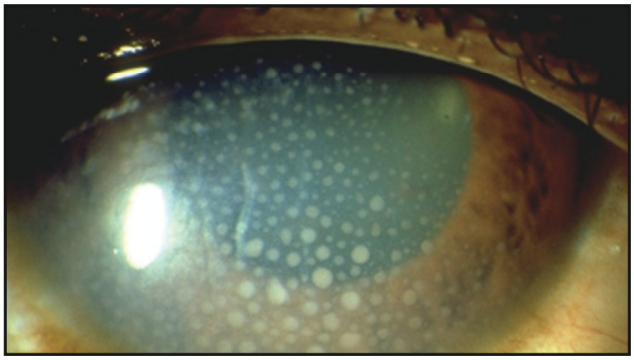

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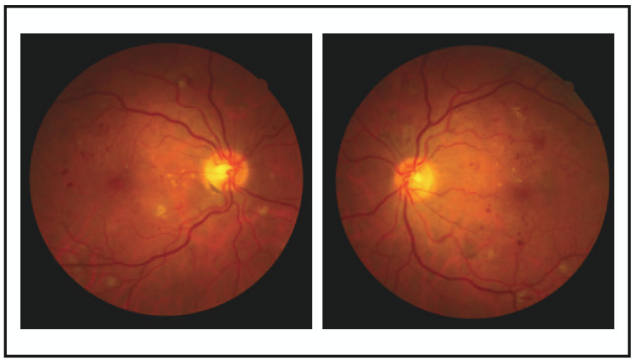

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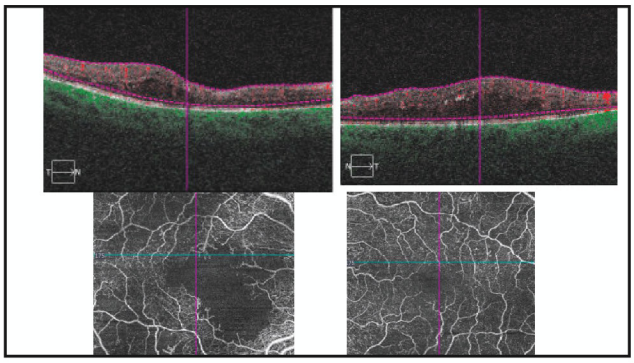

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Assessment & Plan

- Very Severe NPDR with CI- DME OU
- Stage 3 HTN Retinopathy OU
- Granulomatous Uveitis OD
  - Pred Forte q1hr OD
  - RTC X 1 day for f/u evaluation
- Set-up appointment with PCP for physical further evaluation and CBC w/ differential
  - Summary report included
- Referred to retinal specialist

9

Prevalence of Diabetic Retinopathy in the US in 2021

Elizabeth A. Lundeen, PhD[1]; Zeb Burke-Conte, BS[2]; David B. Rein, PhD, MPA[3]; et al

Author Affiliations

2060 approximately 60.6 million US adults, or 17.9% of the adult population will have diabetes

Findings The study team estimated that 9.60 million people in the US (26.43% of those with diabetes) had diabetic retinopathy and 1.84 million people (5.06% of those with diabetes) had vision-threatening diabetic retinopathy in 2021. There was marked variation in prevalence across states and the number of people living with diabetes-related eye disease grew substantially since prevalence was last estimated in 2004.

Meaning The US prevalence of diabetes-related eye disease remains high and may grow in the coming decades due to the increasing burden of diabetes among youth and adults.

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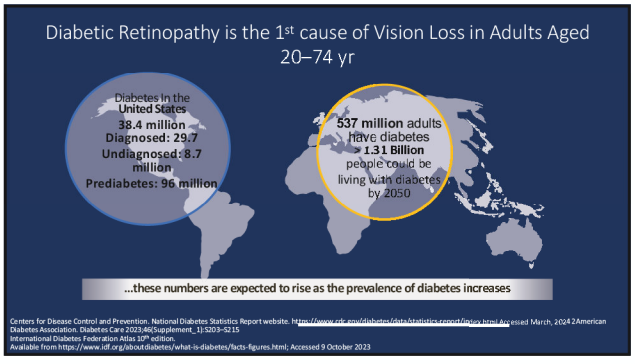

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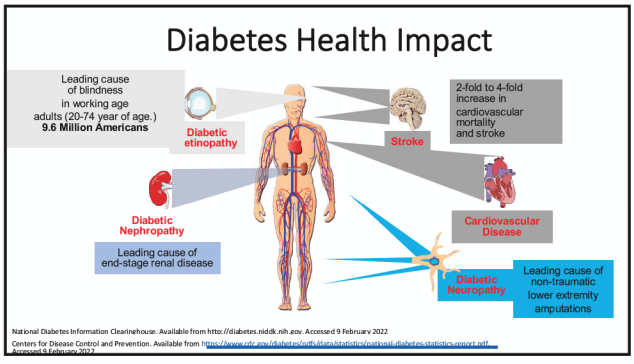

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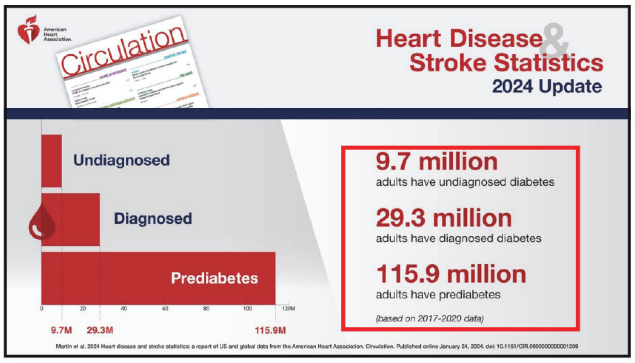

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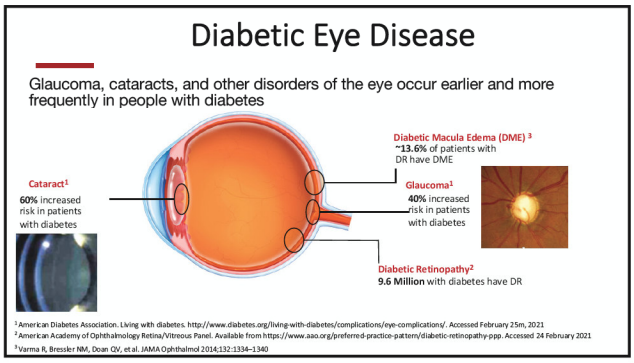

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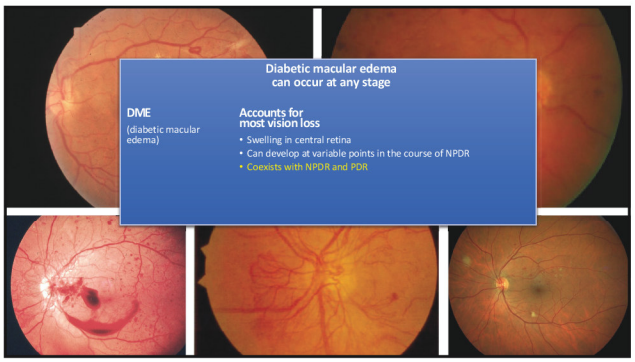

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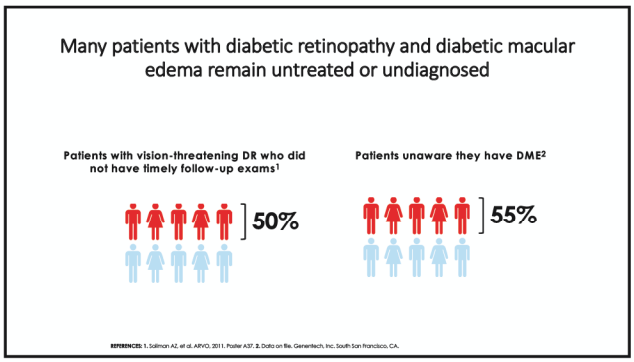

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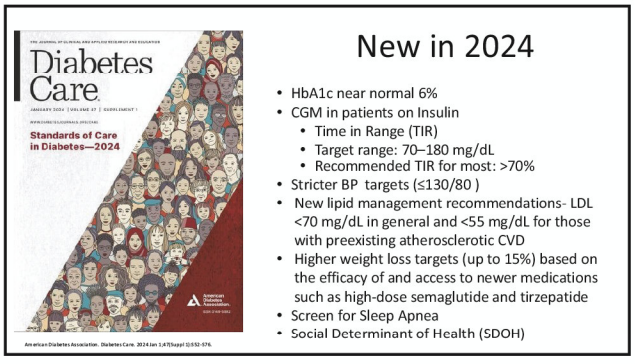

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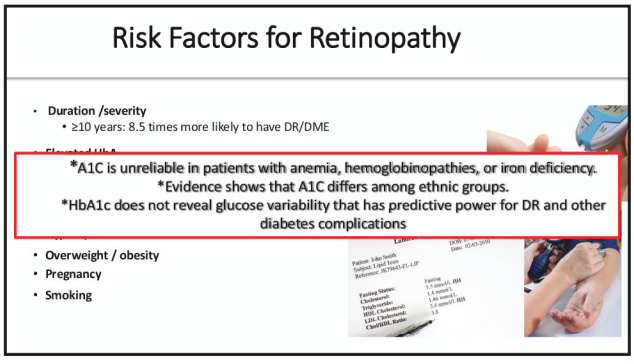

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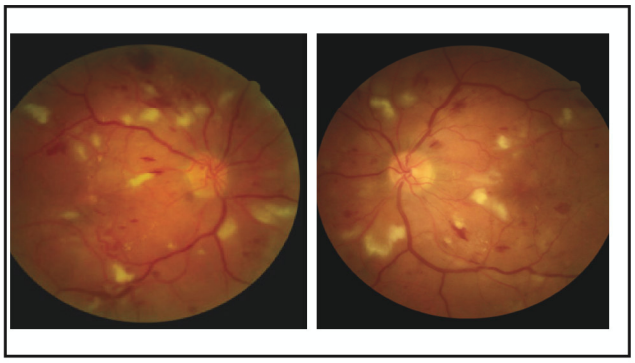

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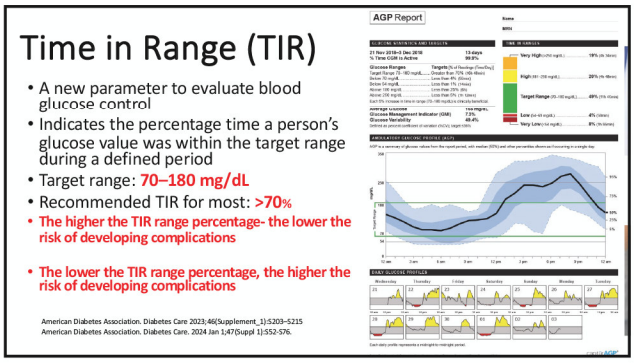

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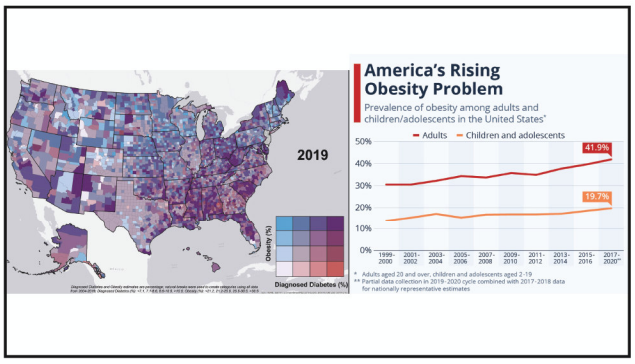

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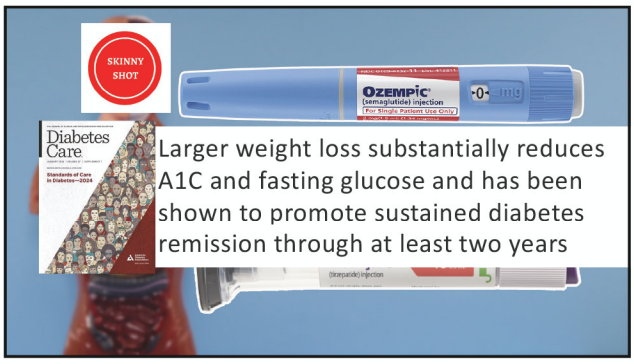

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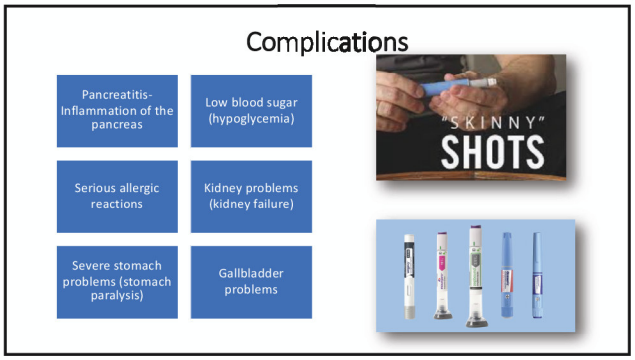

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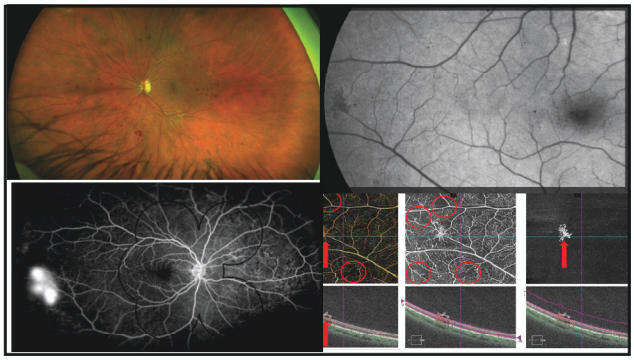

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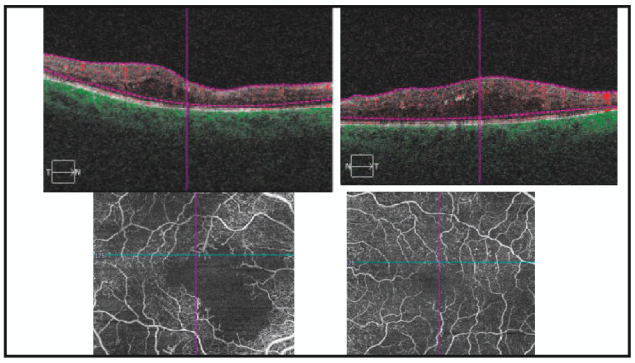

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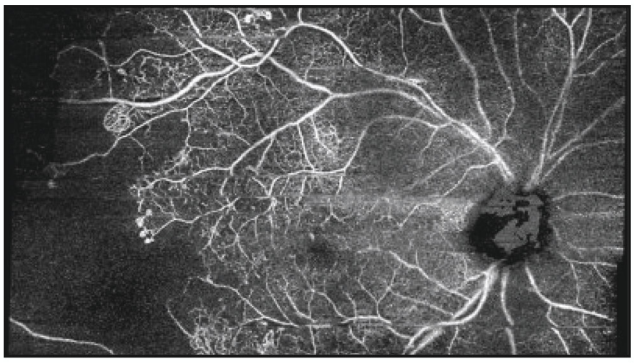


26

Approved Agents for DR/DME

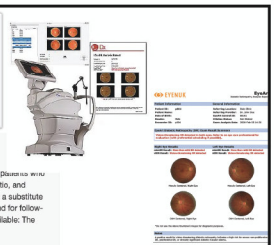
Ranibizumab 0.3 mg (DME)
Aflibercept 2.0 mg
Brolucizumab 6.0 mg
Faricimab 6.0 mg
Aflibercept HD (8.0 mg)
Steroids: Dexamethasone implant (Ozurdex) Fluocinolone implant (Iluvien) Intravitreal Triamcinolone (Triessence)

27

Biosimilars
Ocuphire Pharma's APX3330
Ocuterra Failed Phase 2 (3/2024)

28

ARTIFICIAL INTELLIGENCE for the Screening of Diabetic Retinopathy



TELEMEDICINE AND ARTIFICIAL INTELLIGENCE FOR DIABETES

The American Diabetes Association (ADA) recommends retinal telemedicine screening to identify [illegible] have DR as a method of overcoming barriers to in-person care, such as a low provider-to-patient ratio, and prohibitive distance to reach a provider.[29] That said, it's important to note that retinal photos are not a substitute for a comprehensive dilated eye exam. This is especially the case when the photos are unreliable and for follow-up if abnormalities are detected. Two automated deep-learning artificial intelligence devices are available: The IDx-DR, from Digital Diagnostics, and the EyeScreen, from Eyenuk, Inc.

- The Dx-DR sensitivity and specificity of 87.4% and 89.5%, respectively, 1 in 10 patients will have a false-positive or false-negative result.
- EyeNuk is an AI screening program that utilizes the EyeArt software which has shown positive results with over 95% sensitivity when using fundus images obtained from smartphone

US Food and Drug Administration. FDA permits marketing of artificial intelligence-based device to detect certain diabetes-related eye problems. 2018. Accessed August 27, 2022.

29

The Multidisciplinary Diabetes Care Team

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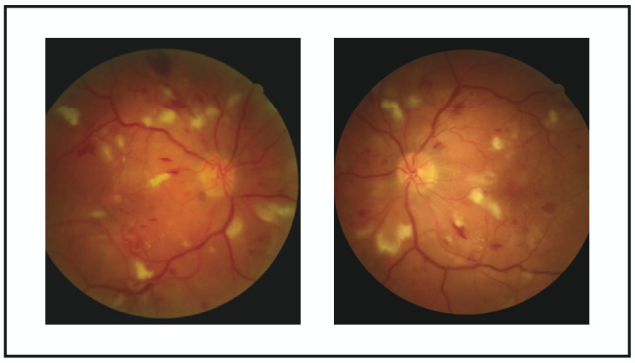

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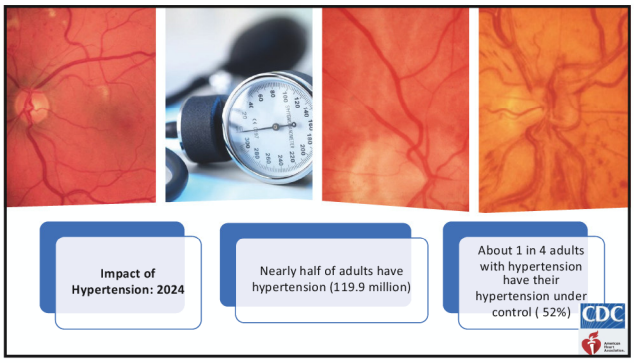

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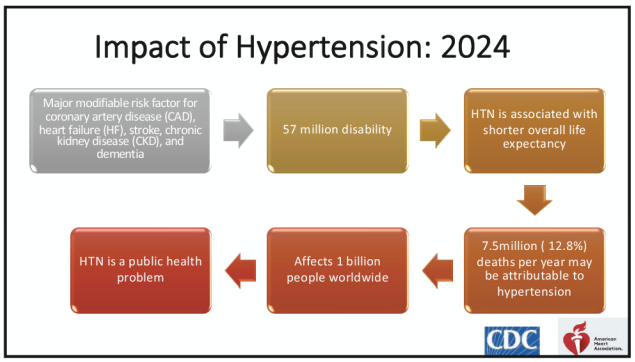

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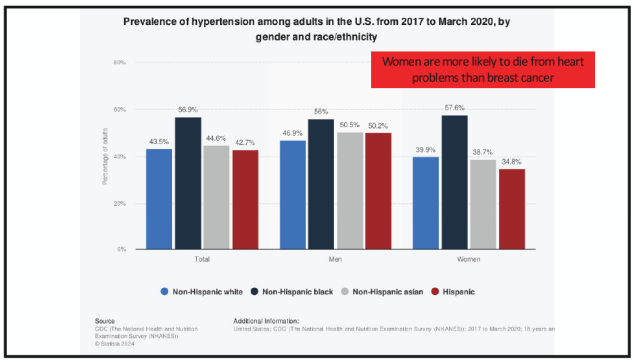

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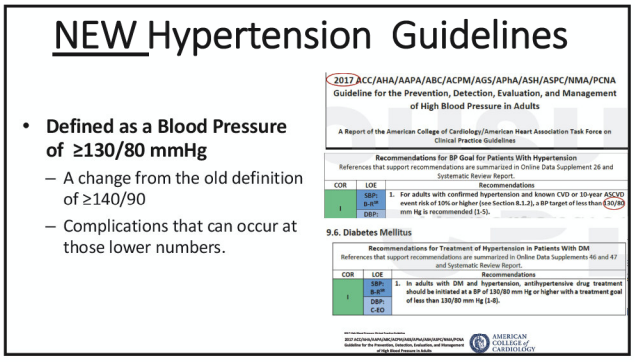

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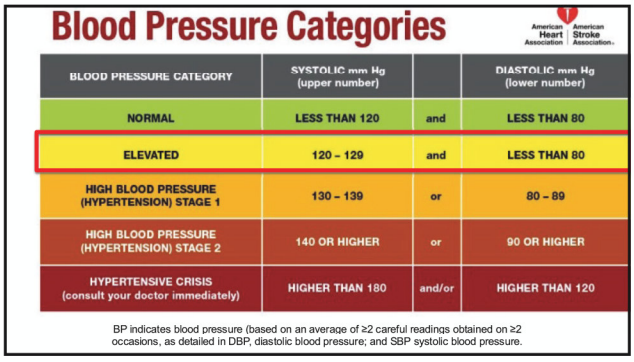

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Recently published 2023 European Society of Hypertension (ESH) Guidelines for the Management of Arterial Hypertension

Table2. Blood pressure classification (in mm Hg)

	Normal (Systolic/Diastolic)	Elevated/High Normal	Hypertension, Stage/Grade 1	Hypertension, Stage/Grade 2	Hypertension, Stage/Grade 3
ACC/AHA	<120/<80	120–129/<80	130–139/80–89	≥140/≥90	Not defined
ESC/ESH	120–129/80–84	130–139/85–89	140–159/90–99	160–179/100–109	≥180/≥110

Guidelines for the management of arterial hypertension The Task Force for the management of arterial hypertension of the European Society of Hypertension: Endorsed by the International Society of Hypertension (ISH) and the European Renal Association (ERA). J Hypertens. 2023 Dec 1;41(12):1874-2071

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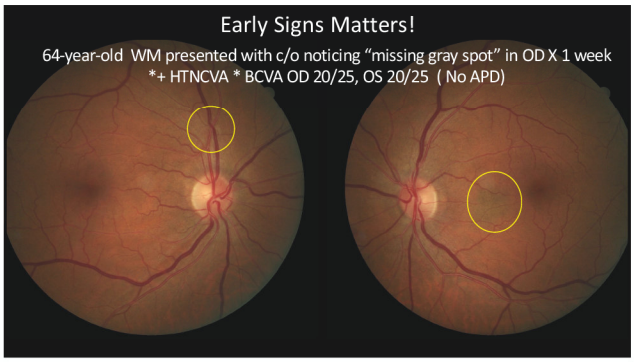

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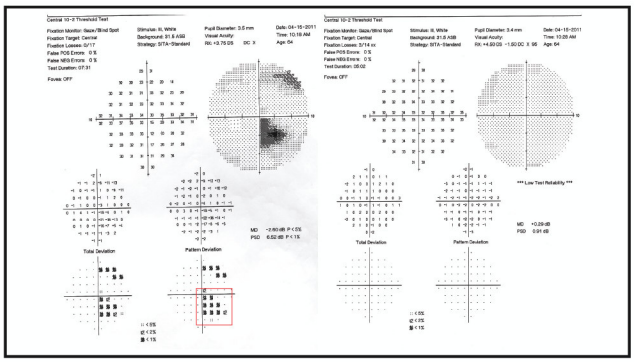

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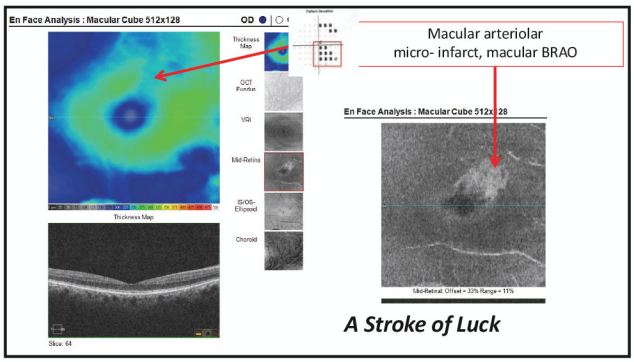

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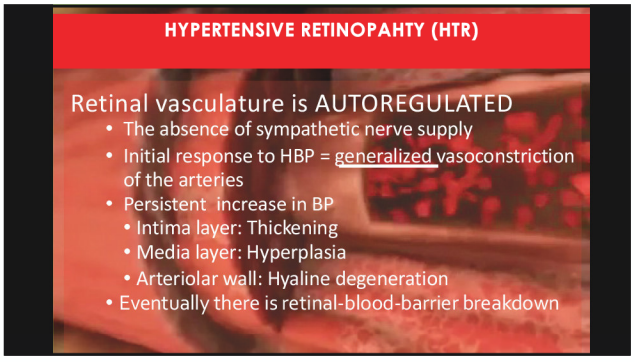

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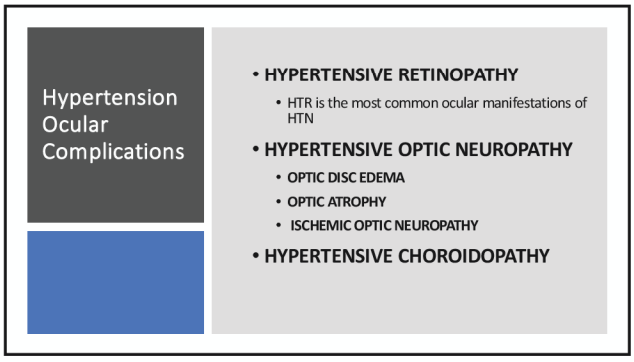

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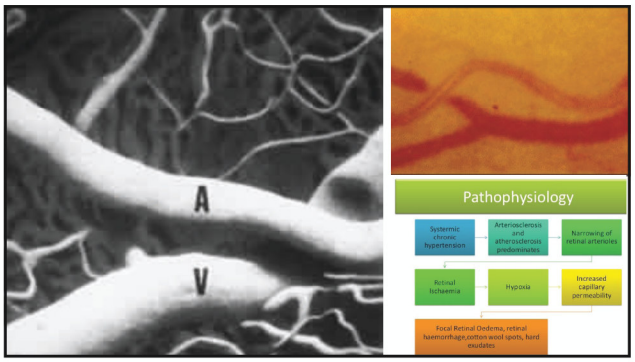

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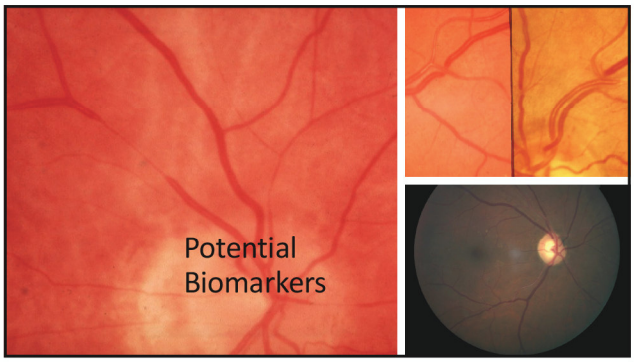

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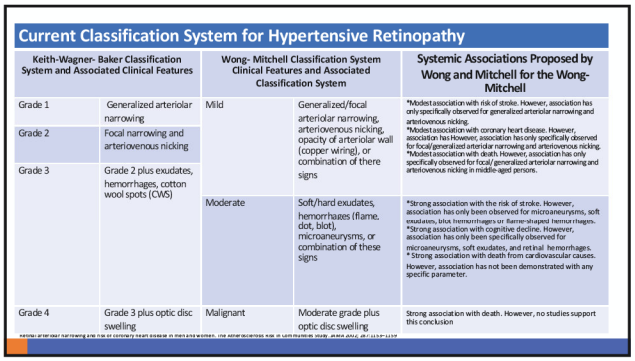

Current Classification System for Hypertensive Retinopathy

Keith-Wagner- Baker Classification System and Associated Clinical Features		Wong- Mitchell Classification System Clinical Features and Associated Classification System		Systemic Associations Proposed by Wong and Mitchell for the Wong-Mitchell
Grade 1	Generalized arteriolar narrowing	Mild	Generalized/focal arteriolar narrowing, arteriovenous nicking, opacity of arteriolar wall (copper wiring), or combination of there signs	*Modest association with risk of stroke. However, association has only specifically observed for generalized arteriolar narrowing and arteriovenous nicking. *Modest association with coronary heart disease. However, association has However, association has only specifically observed for focal/generalized arteriolar narrowing and arteriovenous nicking. *Modest association with death. However, association has only specifically observed for focal/ generalized arteriolar narrowing and arteriovenous nicking in middle-aged persons.
Grade 2	Focal narrowing and arteriovenous nicking			
Grade 3	Grade 2 plus exudates, hemorrhages, cotton wool spots (CWS)	Moderate	Soft/hard exudates, hemorrhages (flame, dot, blot), microaneurysms, or combination of these signs	*Strong association with the risk of stroke. However, association has only been observed for microaneurysms, soft exudates, blot hemorrhages or flame-shaped hemorrhages. *Strong association with cognitive decline. However, association has only been specifically observed for microaneurysms, soft exudates, and retinal hemorrhages. * Strong association with death from cardiovascular causes. However, association has not been demonstrated with any specific parameter.
Grade 4	Grade 3 plus optic disc swelling	Malignant	Moderate grade plus optic disc swelling	Strong association with death. However, no studies support this conclusion

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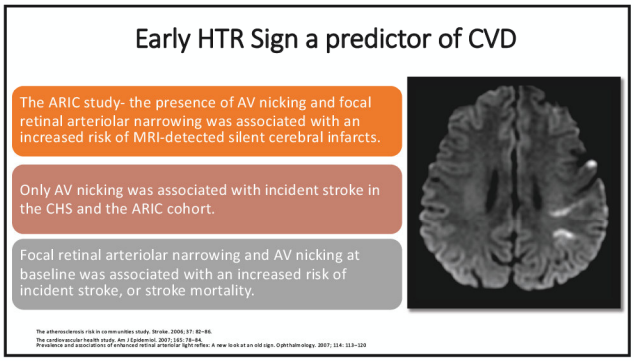

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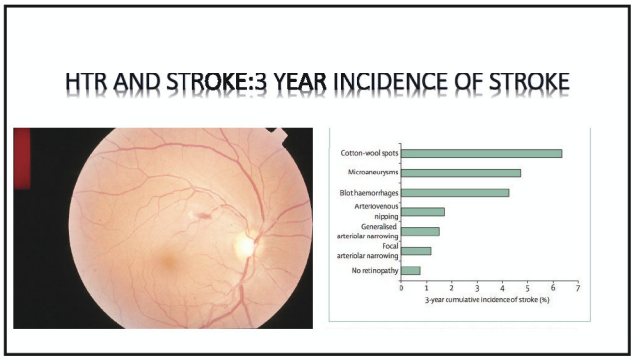

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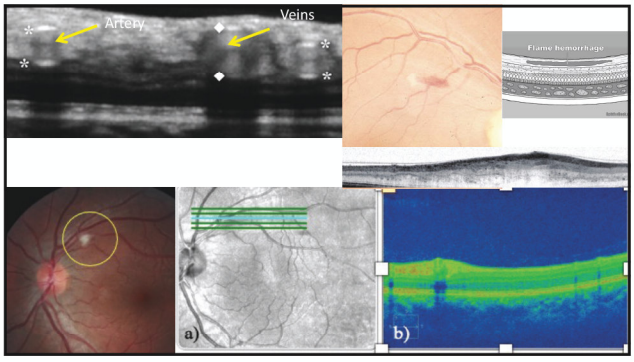

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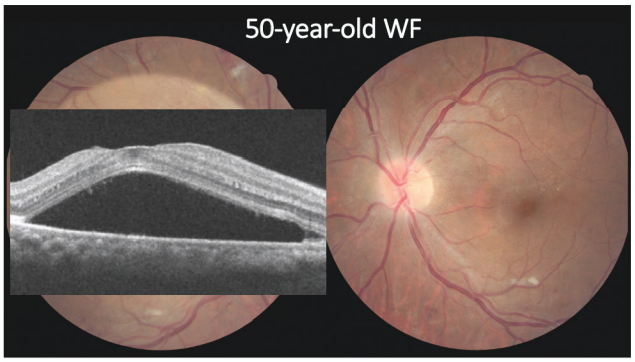

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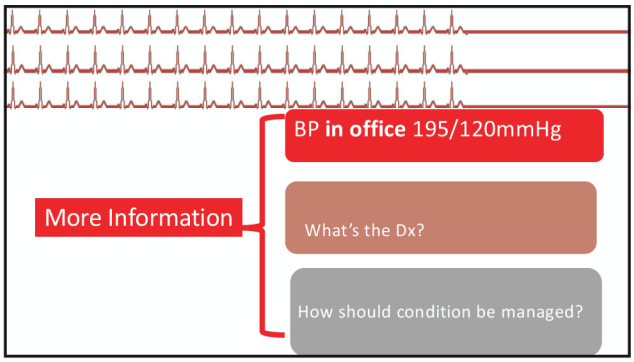


50

The myth & truth about malignant HTR

MYTHS vs FACTS

- Myth
  - Malignant HTR occurs in all patients with HTN
  - BP needs to be lowered STAT
- Truth
  - Malignant HTR rarely occurs
    - 1 to 2 cases per million per year
  - BP must be lowered slowly over hours or days

51

Hypertensive Crisis

Urgency

- Severe Hypertension (> stage2)
- \+
- NO End Organ Damage
- Usually due to under-controlled HTN

Emergency (911)

- Severe Hypertension
  Severely elevated BP (≥180/120mmHg)
- \+
- End Organ Damage

52

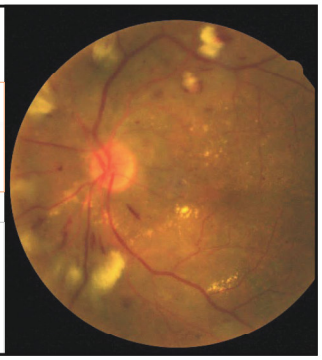
Hypertensive Urgency

Goal: Reduce BP over several hours to day

- Elderly at high risk of ischemia from rapid reduction of BP, therefore slower reduction in BP in this patient population

Treatment

- Initiate medication
- Increase dose of existing medication or add another medication
- Re-institute medication(s) in non-compliant patients



53

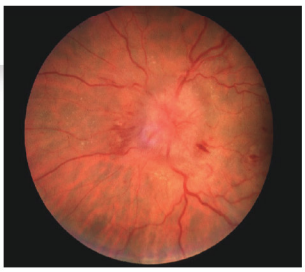
Hypertensive Emergency

Goal: Lower Diastolic BP to approximately 100-105 over 2-6 hours

- Anti-hypertensive agents (IV drip) for and admission to ICU
- Maximum initial fall not to exceed 25%
- More aggressive decrease (abrupt drop in BP) can lead insufficient perfusion pressures and organ damage
- Ischemic stroke and myocardial ischemia

Treatment

- If focal neurological symptoms present, obtain MRI to r/o acute stroke (rapid BP correction contraindicated)
- ***The mortality rate is 50% at 2 months and 90% at one year if untreated***



54

Signs and Symptoms/ End-Organ Damage

- Headaches
- Nausea/ vomiting
  - Cerebral edema
- Epistaxis
- Chest Pain
- Shortness of Breath (SOB)
- Confusion
- Loss of consciousness
- Dizziness
- TIA/AF
- Diplopia
- Other neurological signs and symptoms
- Hypertensive Encephalopathy
- Intracerebral Hemorrhage
- Acute MI
- LV failure with pulmonary edema
- Acute Coronary Syndrome(ACS)
- Dissecting aortic aneurysm
- Eclampsia/ Pre-eclampsia

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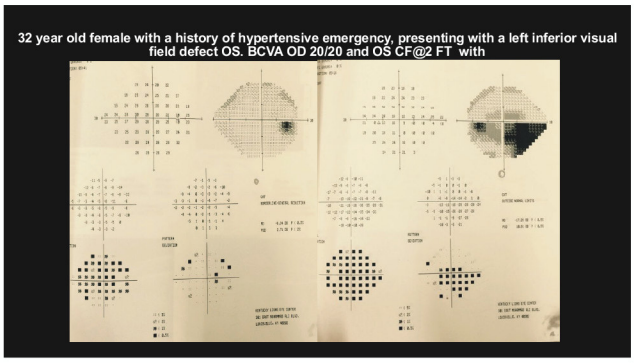

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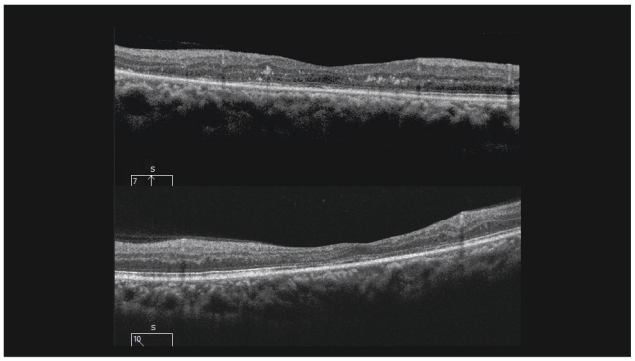


57

Hypertensive Choroidopathy

The choriocapillaries are vulnerable to acute severe HBP rise

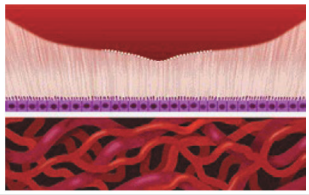
They do not autoregulate

Vasculature alteration causes choroidal vasculature infraction

Overlying RPE damage

HTR is typically observed with chronic slow progressive HBP

HTN choroidopathy is more common in YOUNG patients with acute severe HBP



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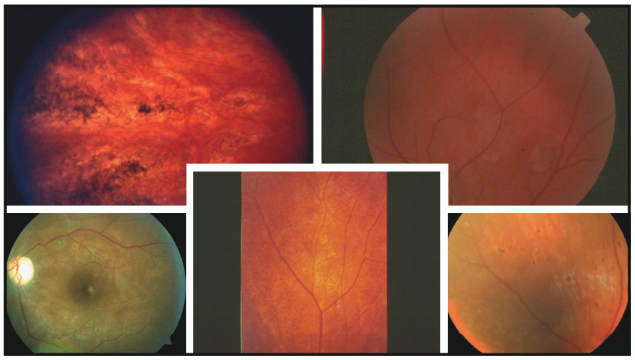
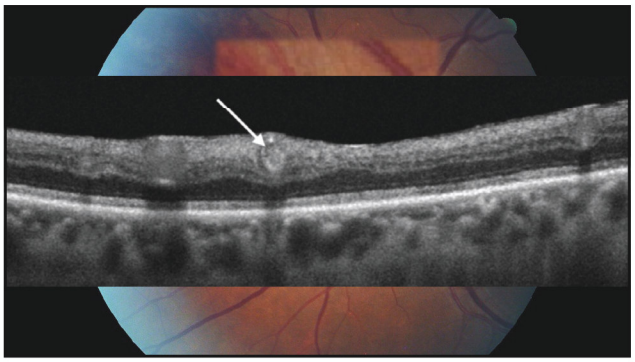


59

Hypertensive Choroidopathy Management

- The lesions are NOT the problem
- Because of the association with ACUTE onset of HTN
- URGENT REFERRAL

60



61

Impact of Hypercholesterolemia 2024

- 86 million U.S. adults have total cholesterol levels above 200 mg/dL.
- Nearly 25 million adults in the United States have total cholesterol levels above 240 mg/dL.
- High cholesterol raises the risk for heart disease, the leading cause of death, and for stroke, the fifth leading cause of death.

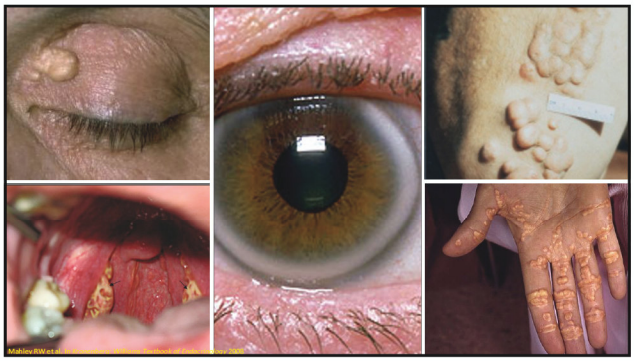
Cholesterol
- Desirable <200
- Borderline High 200-339
- High ≥240

Triglycerides
- Desirable <150
- Borderline 175-199
- High 200-499
- Very High ≥500

HDL
- Low <40
- High ≥60

LDL
- Desirable < 100 (70)
- Borderline 100-159
- High 160-189
- Very High ≥190

62



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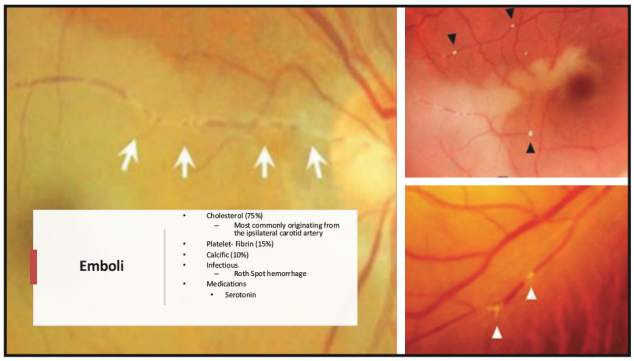

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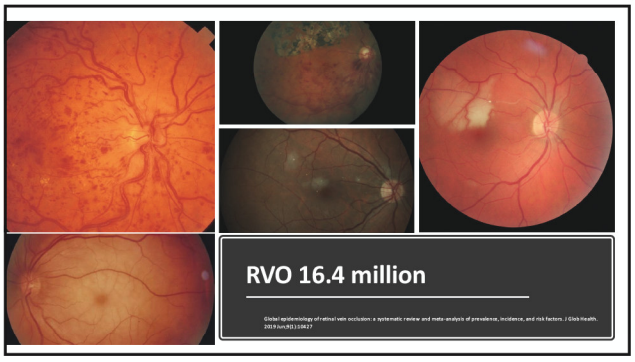

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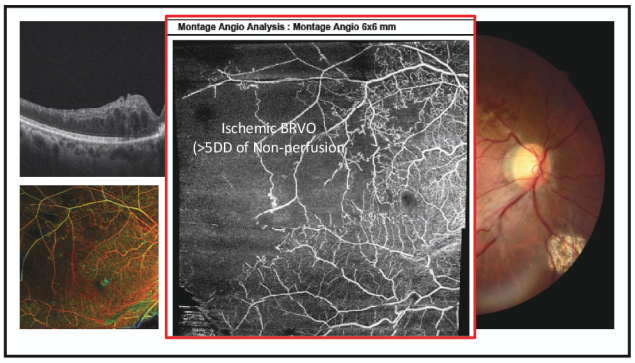

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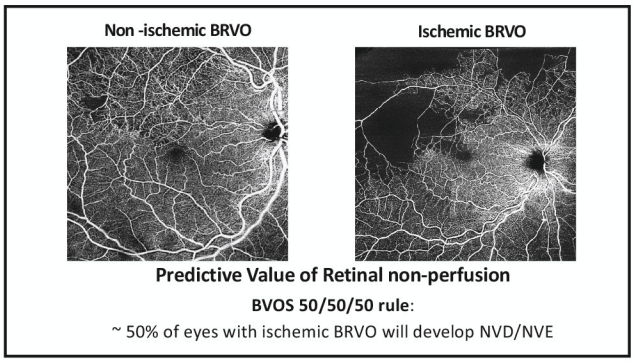

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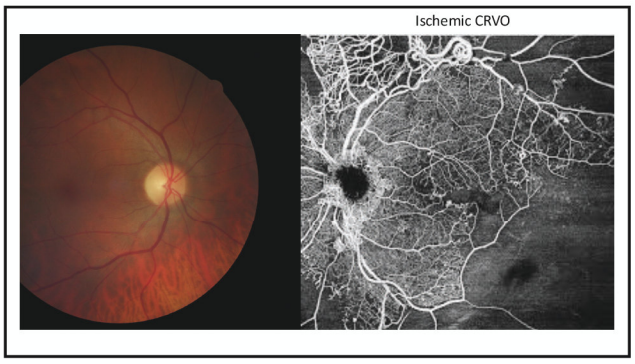

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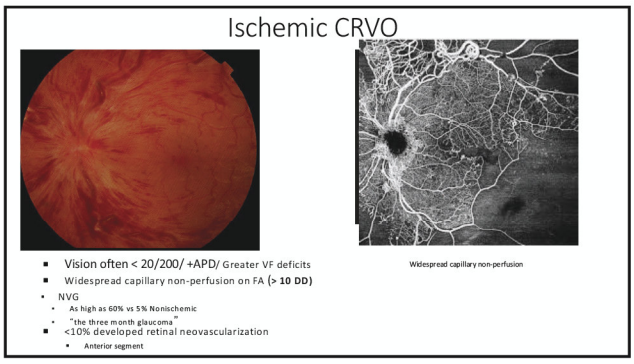

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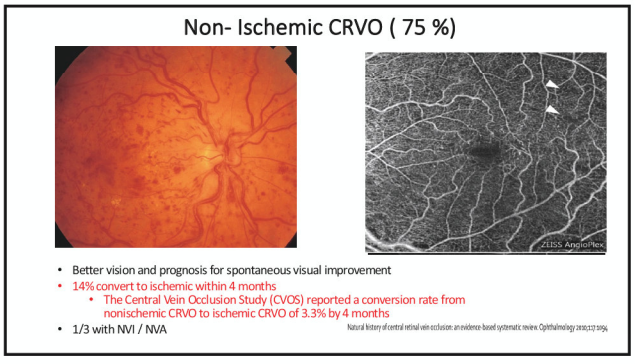

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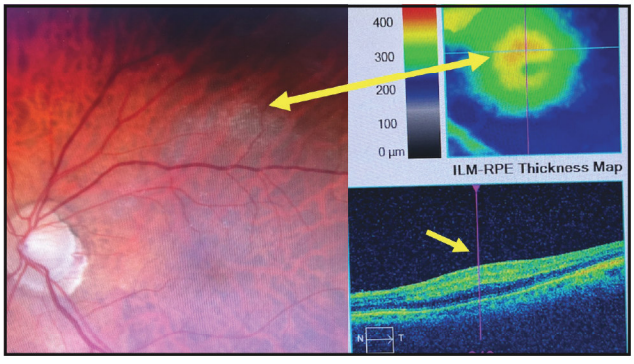

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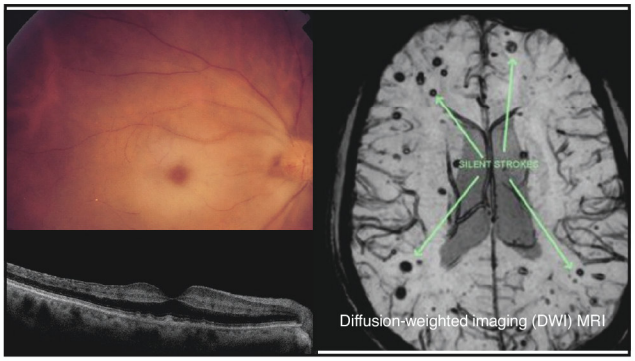

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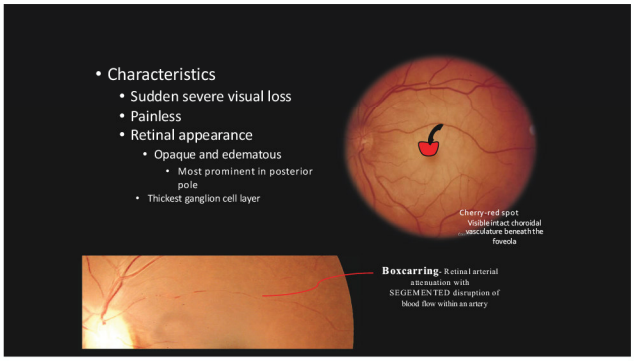

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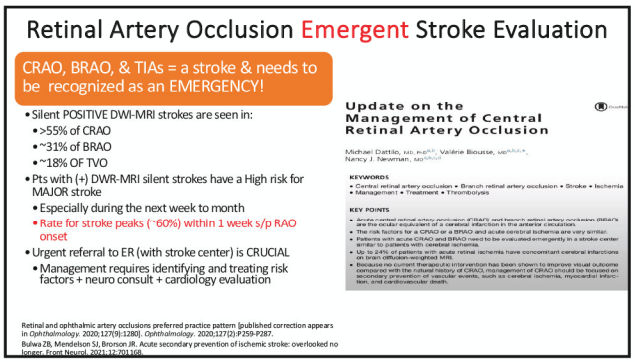

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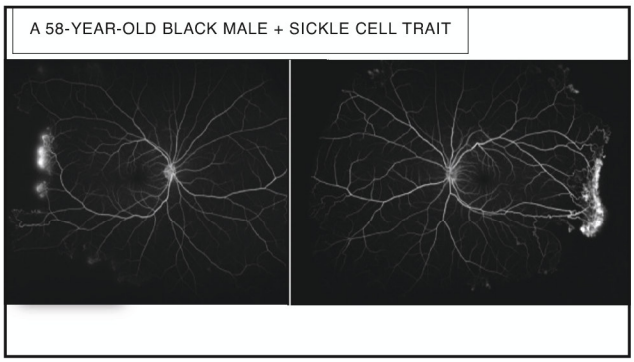

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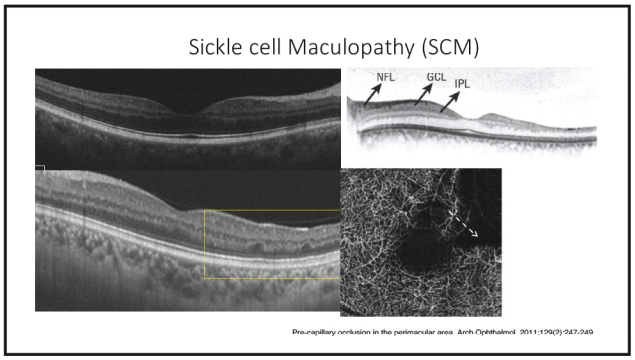

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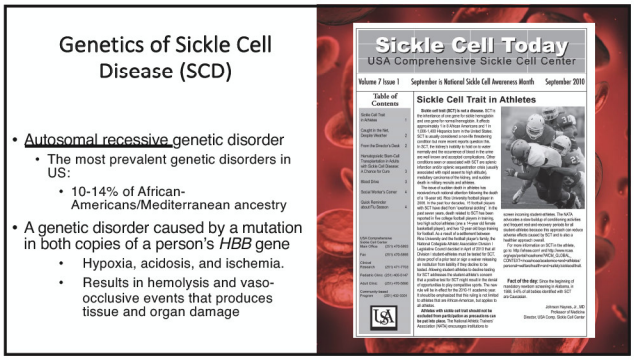

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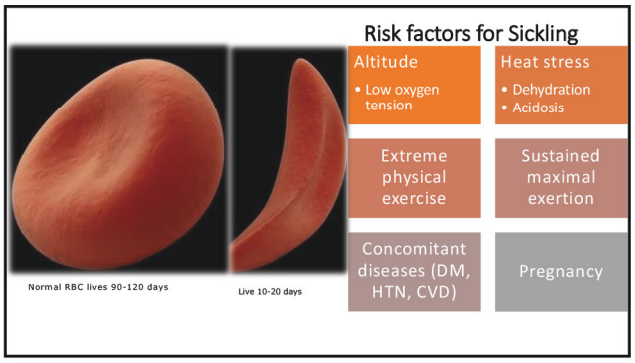

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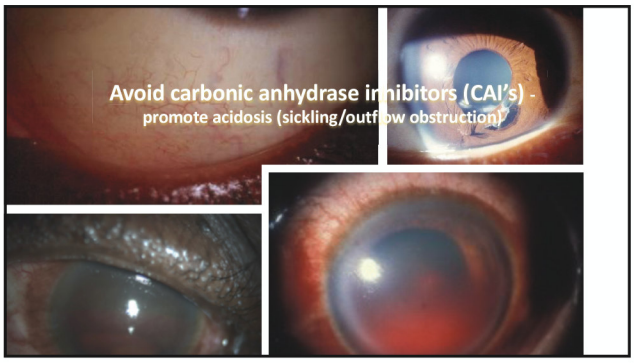

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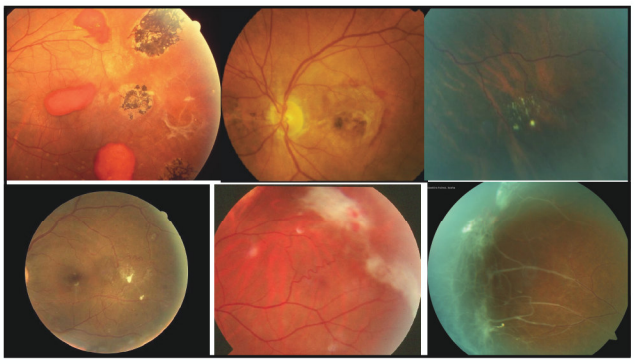

81

	Name	Genetics	Systemicmanifestations	PSR prevalence (Fekrat and Goldberg [7])	PSR prevalence (Dembélé et al. [8])	PSR prevalence (Bonanomi et al. [9])	PSR prevalence (Leveziel et al. [10])	PSR prevalence (Downes et al. [11])
HbSS	Sickle cell anemia	Sickle cell homozygote	Most severe systemically	3%	5.2%	14.64%	18.1%	14%
HbSC	Sickle cell "C" trait	Sickle cell heterozygote, with another abnormal HbC allele	Mild systemically	33%	12.4%	54.54%	54.6%	43%
HbSThal	β-Thalassaemia anemia	Sickle cell heterozygote, with another β-thalassaemia allele	Severe form systemically (β^0) Milder form systemically (β^+)	14%	9.4% ($S\beta^0$ thalassemia) 9.3% ($S\beta^+$-thalassemia)	–	–	–
HbSD, HbSE, HbSO		Sickle cell heterozygote, with another abnormal Hb allele	Varies systemically	–	–	–	–	–
HbAS	Sickle cell trait	Sickle cell heterozygote, with 1 normal Hb allele	Mild systemically	–	–	–	–	

Graefe's Archive for Clinical and Experimental Ophthalmology volume 257, pages1353–1364(2019

82

83

SCD Genomic Update

Bone Marrow/ Stem Cell Transplant for SCD

- Children- younger than 16
- Severe SCD
- ***Is this a CURE for SCD?***
  - Successful in about 85% of children who had transplants
  - Risk of dying after a transplant is about 5% to 10%

Excellent outcome of stem cell transplantation for sickle cell disease

Tanja Vallée[1] · Irene Schmid[2] · Lisa Gloning[3] · Martina Bazzoni[4] · Jutta Ahrens[5] · Tobias Feuchtinger[6] · Christoph Klein[7] · Vincent D. Gaertner[8] · Michael H. Albert[9]

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Abstract
Many sickle cell disease (SCD) patients lack matched family donors (MFD) or matched unrelated donors (MUD), implying haploidentical donors (MMFD) as a logical donor choice. We used a reduced toxicity protocol for all donor types. We included 31 patients (3–22 years) with MFD (n = 15), MMFD (10), or MUD (6) HSCT and conditioning with alemtuzumab/ ATG, thiotepa, fludarabine and treosulfan, and post-transplant cyclophosphamide for MMFD. After the initial six patients, treosulfan was replaced by targeted busulfan (AUC 65-75 ng*h/ml). After a median follow-up of 26 months (6–123), all patients are alive and off immunosuppression. Two MMFD patients experienced secondary graft failure with recurrence of SCD, both after treosulfan conditioning. Neither acute GVHD ≥ °III nor moderate/severe chronic GVHD was observed. The disease-free, severe GVHD-free survival was 100%, 100%, and 80% in the MFD, MUD, and MMFD groups, respectively ($p = 0.106$). There was a higher rate of virus reactivation in MMFD (100%) and MUD (83%) compared to MFD (46%; $p = 0.005$), but not of viral disease (20% vs 33% vs 13%; $p = 0.576$). Six patients had treosulfan-based conditioning, two of whom experienced graft failure (33%), compared to 0/25 (0%) after busulfan-based conditioning ($p = 0.032$). Donor chimerism was ≥ 80% in 28/31 patients (90%) at last follow-up. Reduced toxicity myeloablative conditioning resulted in excellent overall survival, negligible GVHD, and low toxicity among all donor groups in pediatric and young adult patients with SCD.

Keywords Sickle cell disease · Stem cell transplantation · Haploidentical · Busulfan

Front. Med., February 2023 Sec. Hematology Volume 10 – 2023
Vallée, T., Schmid, I., Gloning, L. et al. Excellent outcome of stem cell transplantation for sickle cell disease. Ann Hematol 102, 3217–3227 (2023)

84

First Gene Therapies to Treat Patients with Sickle Cell Disease

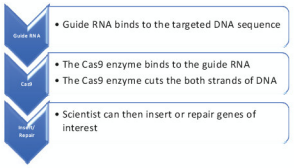
- Approve December 2023
- The first cell-based gene therapies for the treatment of sickle cell disease (SCD) in patients 12 years and older.
- **Casgevy** is the first FDA-approved therapy utilizing CRISPR/Cas9, a type of genome editing technology.
  - Crispr –cas9 (clusters of regularly interspaced short palindromic repeats
- **Lyfgenia** uses a lentiviral vector (gene delivery vehicle) for genetic modification

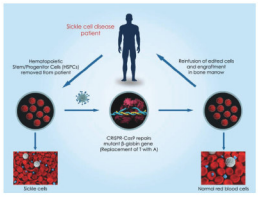
FDA Approves First Gene Therapies to Treat Patients with Sickle Cell Disease. FDA New Release. December 08, 2023. Accessed January 20, 2024
S. Demirci et al. CRISPR-Cas9 to induce fetal hemoglobin for the treatment of sickle cell disease. Mol. Ther. Methods Clin. Dev. 2021; 23 (10): 276-285
Casgevy and Lyfgenia: Two gene therapies for sickle cell disease. Med Lett Drugs Ther. 2024 Jan 2;66(1694):9-10.

85

Crispr –cas9

(clusters of regularly interspaced short palindromic repeats)





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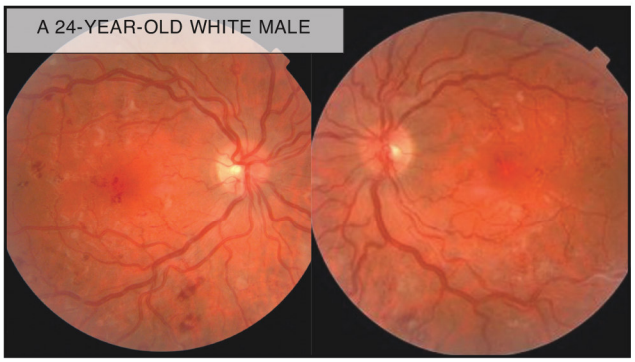


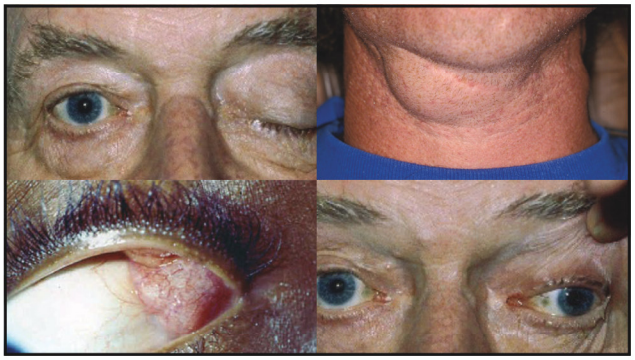
87

Leukemia

- Type of Leukemia
  - Type of white blood cell affected
    - Myeloid cells
    - Lymphoid (Lymphatic system)
  - Acute or Chronic
    - **Acute**
      - Rapid/progressive course that ends in death within months
      - Without treatment- average survival rate is 4 months
    - **Chronic**
      - Insidious onset and symptoms
      - Longer survival
        - Respond to treatment

- Acute myelogenous leukemia-AML
  - **common adult leukemia**
- Acute lymphocytic leukemia-ALL
  - **common in young children**
- Chronic myelogenous leukemia-CML
  - Philadelphia chromosome (+) is >90% of cases
- Chronic lymphocytic leukemia-CLL

88



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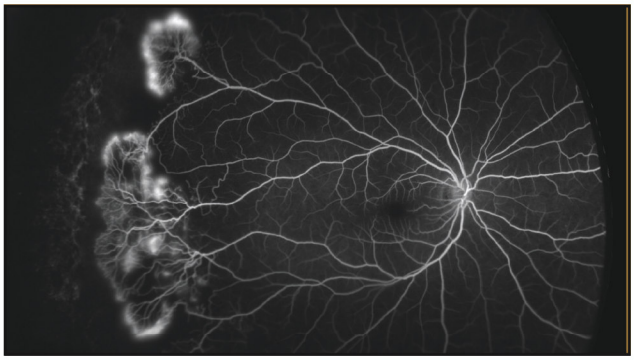

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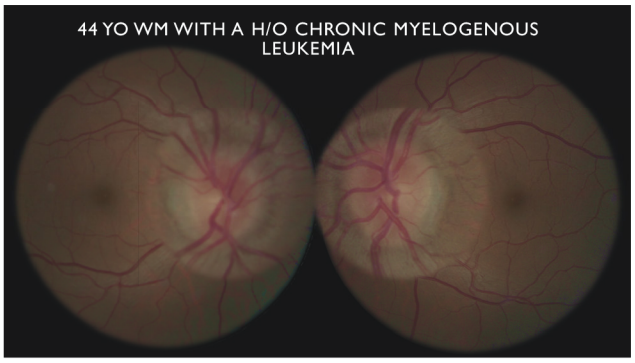

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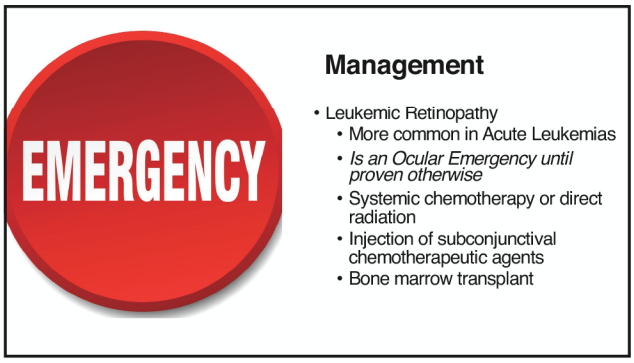

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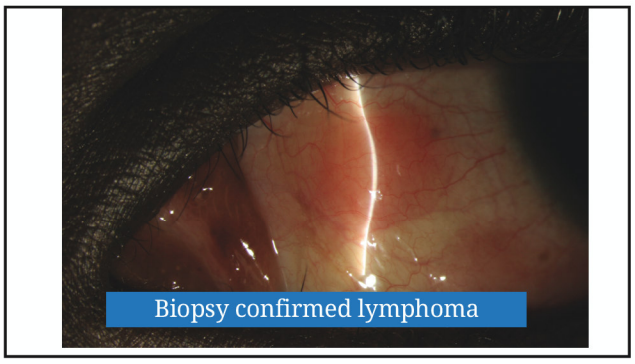

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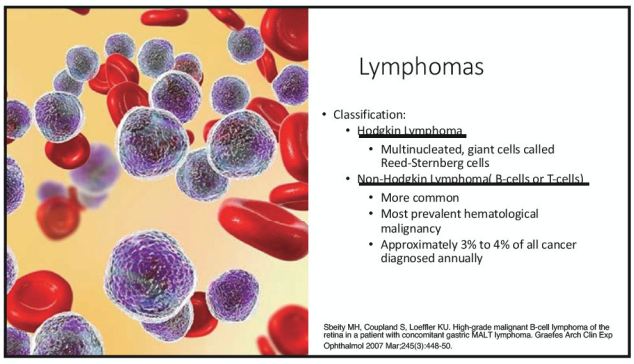

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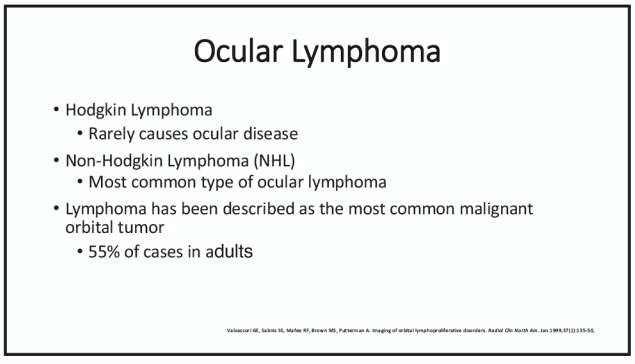

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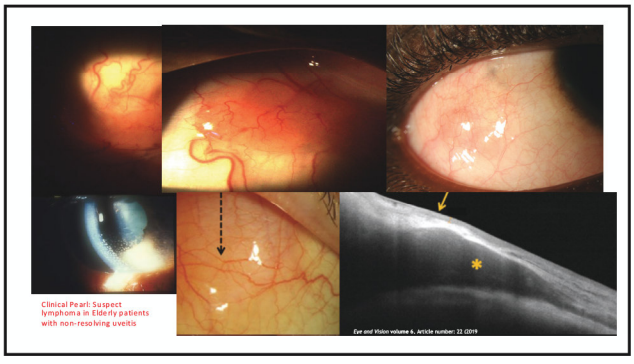

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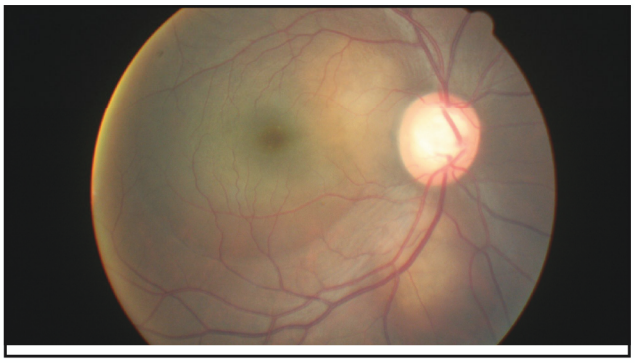

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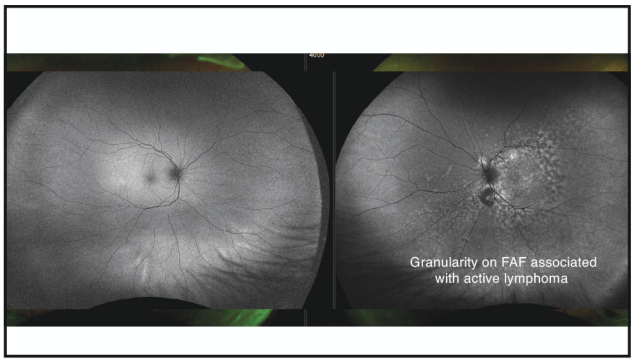

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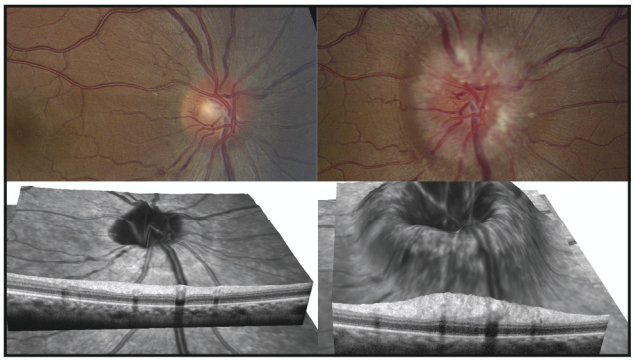

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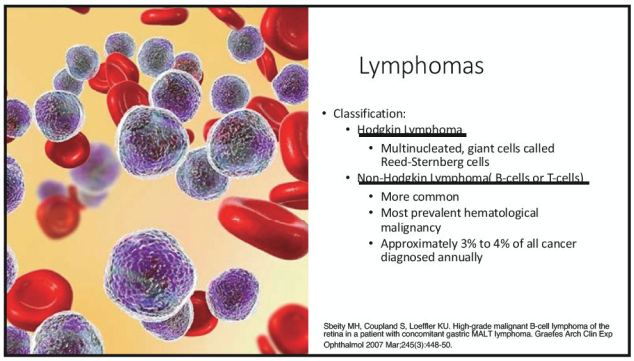

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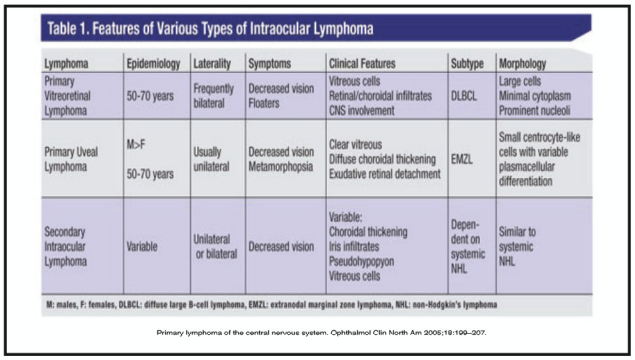

Table 1. Features of Various Types of Intraocular Lymphoma

Lymphoma	Epidemiology	Laterality	Symptoms	Clinical Features	Subtype	Morphology
Primary Vitreoretinal Lymphoma	50-70 years	Frequently bilateral	Decreased vision Floaters	Vitreous cells Retinal/choroidal infiltrates CNS involvement	DLBCL	Large cells Minimal cytoplasm Prominent nucleoli
Primary Uveal Lymphoma	M>F 50-70 years	Usually unilateral	Decreased vision Metamorphopsia	Clear vitreous Diffuse choroidal thickening Exudative retinal detachment	EMZL	Small centrocyte-like cells with variable plasmacellular differentiation
Secondary Intraocular Lymphoma	Variable	Unilateral or bilateral	Decreased vision	Variable: Choroidal thickening Iris infiltrates Pseudohypopyon Vitreous cells	Dependent on systemic NHL	Similar to systemic NHL

M: males, F: females, DLBCL: diffuse large B-cell lymphoma, EMZL: extranodal marginal zone lymphoma, NHL: non-Hodgkin's lymphoma

Primary lymphoma of the central nervous system. Ophthalmol Clin North Am 2005;18:199–207.

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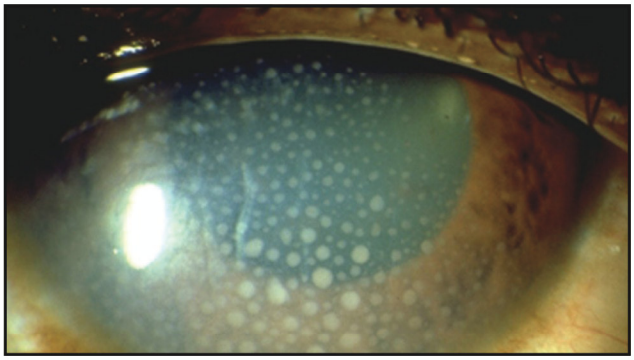


102

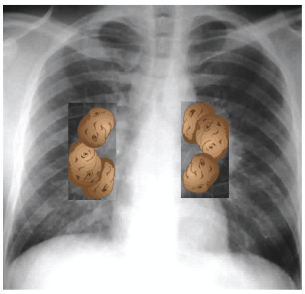
Sarcoidosis

- A multisystem granulomatous inflammatory disease
  - Noncaseating Granulomas (NCG)- are comprised of epithelioid cells and giant cells
  - Delayed hypersensitivity and heightened Th1 immune response in affected organs
- 16X more common in Black females
  - The disease is usually more serious
- Predominantly in the lungs and lymph nodes
- Arthritis/ Bone and joint involvement

103

Clinical features

- Bilateral hilar lymphadenopathy AKA "Potato nodes"
- Pulmonary infiltration
- Arthritis/Bone and joint involvement
- Neurological involvement
- Cardiac involvement



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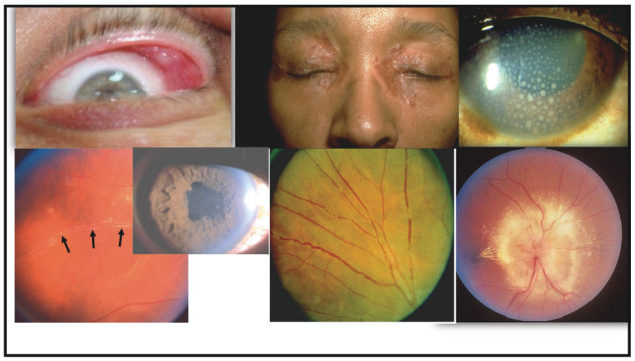

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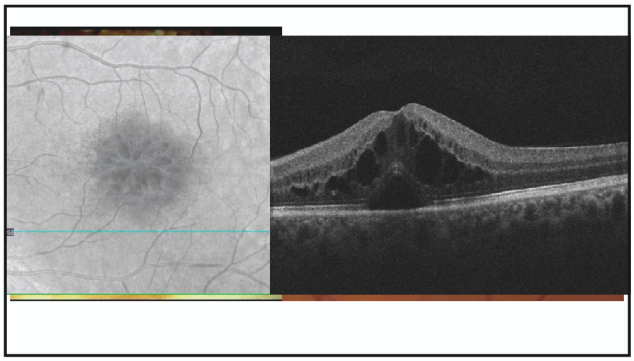

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Laboratory Findings

(+) Angiotensin-converting enzyme (ACE)

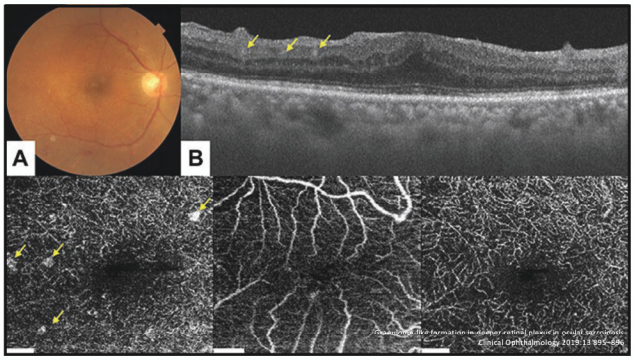
(+) PPD

Chest X-ray
- Hilar lymphadenopathy

Pulmonary function test

Tissue Biopsy

107



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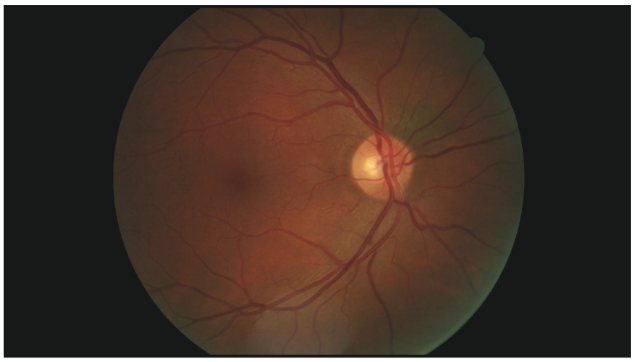

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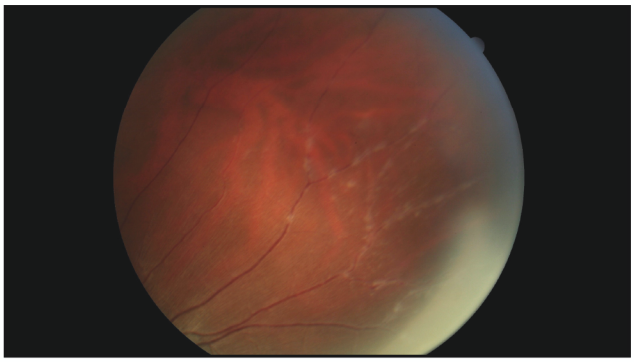


110

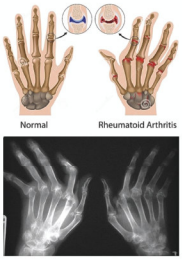
Rheumatoid Arthritis (RA)

- Inflammation of the synovial membrane of the joints and/or other internal organs
- Prevalence: 1-2%
- Occurrence:
  - Any age
  - 3:1 Females
  - Unknown etiology
    - Interplay between genetic (HLA-DRB1) predisposition and environmental triggers.

111

Rheumatoid Arthritis (RA)

- Swelling of synovial lining
  - Angiogenesis
- Rapid division/growth of cells=Pannus
  - Synovial thickening/hyperplasia
  - Inflammatory vascularized tissue
  - Generation of metalloproteinases
- Cytokine release
  - Infiltration of leukocytes
- Changes in cell-surface adhesion molecules & cytokines
  - Destruction of bone & cartilage



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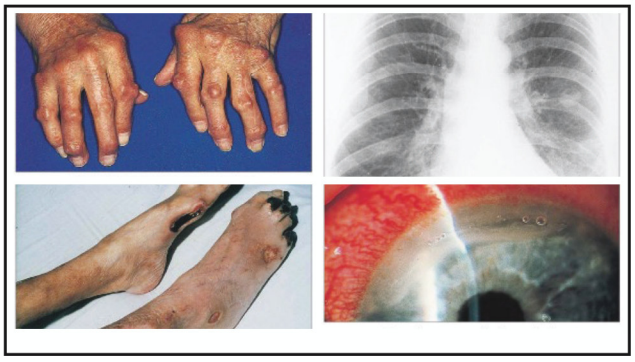

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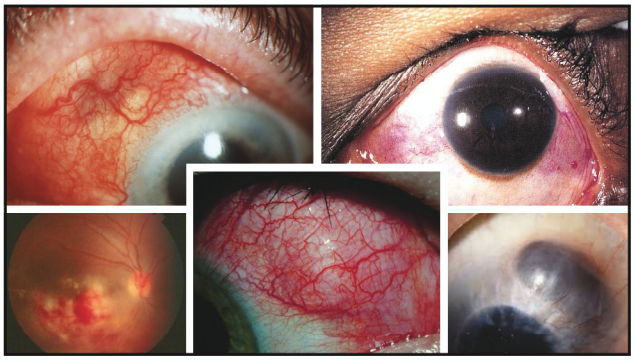


114

TREATMENT OVERVIEW

- Non-pharmacologic therapy
- Pharmacologic therapy
  - Non-disease modifying drugs
  - NSAIDs
  - Corticosteroids
    - Prednisone < 10mg PO daily
- Disease-modifying antirheumatic drugs (DMARDs)
- Non-biologics
- Biologics

DRUG	DOSE	MONITORING
Methotrexate	PO/IM: 7.5-15mg weekly	• Baseline LFTs, CBC, SCr/BUN, hepatitis panel • CBC, AST/ALT, albumin q1-2 months
Leflunomide	PO: 100mg daily x 3 days, then 10-20 daily OR 10-20 mg daily w/o LD	• Baseline LFTs, CBC • CBC, AST/ALT monthly, then q6-8 weeks
Hydroxychloroquine	PO: 200-300mg BID x 1-2 months, then can ↓ to 200mg daily or BID	• Baseline eye exam • Ophthalmoscopy q9-12 months
Sulfasalazine	PO: 500mg BID, then ↑ to 1000mg BID	• Baseline CBC • CBC weekly x 1 month, then q1-2 months
Minocycline	PO: 100-200mg daily	• LFTs, BUN/SCr with long-term treatment

115

Biologics

- Infliximab (Remicade)
- Etanercept (Enbrel)
- Adalimumab (Humira)
- Golimumab (Simpani)
- Certolizumab (Cimzia)
- Ixekizumab (Taltx)
- Anakinra (Kin
- Abatacept (Orencia)
- Rituximab (Rituxan)
- Toclizumab (Acetemra)
- Tofacitinib (Xeljanz)

Drug Targets:
- TNF α
- IL-1
- IL-6
- B cells
- JAK

116

117

SjÖgren's Syndrome

- Systemic chronic inflammatory disorder characterized by lymphocytic infiltrates in exocrine organs
  - Lacrimal, salivary, and sweat glands
- Occurrence:
  - 4/5/6th decade
  - 9:1 Females
  - Autoimmune- HLA- B8/ DR3
  - Antibodies to the Ro antigen

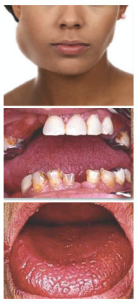
118

SjÖgren's Syndrome

Primary
- Sjogren's syndrome that occurs alone

Secondary
- Rheumatoid Arthritis
- Systematic Lupus Erythematosus
- Scleroderma
- About 50% of patients have secondary Sjogren's

Sicca Syndrome
- Xerophthalmia (dry eyes)
- Xerostomia (dry mouth)
- Xeroderma (dry skin)
- Parotid gland enlargement



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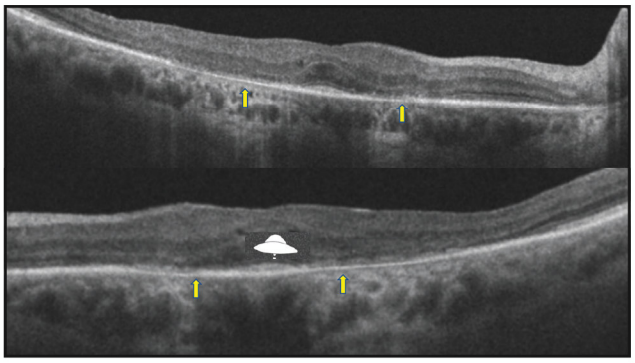
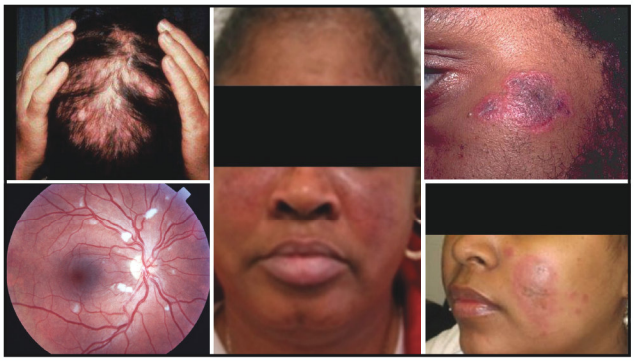


121

Systemic Lupus Erythematous (SLE)

- An inflammatory, multisystem, autoimmune disease of unknown etiology with protean clinical and laboratory manifestations and a variable course and prognosis
- Occurrence:
  - Women in their reproductive years
  - **10:1 Females**
  - Variation in race/ethnicity:
    - More common in Black (3–6x)
    - Hispanic and Native American (2–3x)
    - Asian (2x) populations

122



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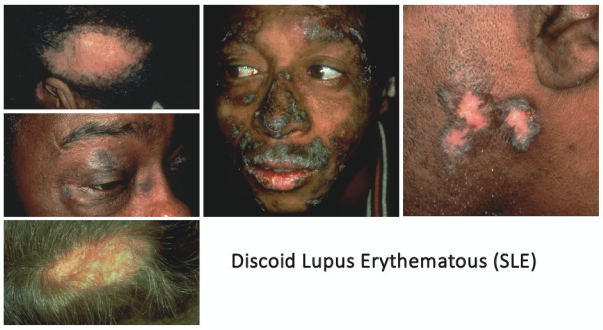

Discoid Lupus Erythematous (SLE)

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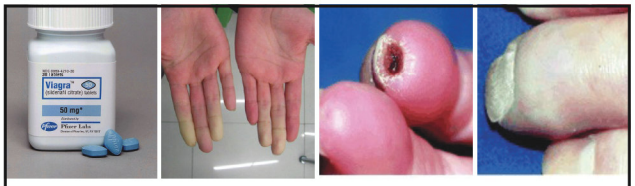


Sildenafil in the Treatment of Raynaud's Phenomenon Resistant to Vasodilatory Therapy

Abstract

Background — Vasodilatory therapy of Raynaud's phenomenon represents a difficult clinical problem because treatment often remains inefficient and may be not tolerated because of side effects.

Methods and Results — To investigate the effects of sildenafil on symptoms and capillary perfusion in patients with Raynaud's phenomenon, we performed a double-blinded, placebo-controlled, fixed-dose, crossover study in 16 patients with symptomatic secondary Raynaud's phenomenon resistant to vasodilatory therapy. Patients were treated with 50 mg sildenafil or placebo twice daily for 4 weeks. Symptoms were assessed by diary cards including a 10-point Raynaud's Condition Score. Capillary flow velocity was measured in digital nailfold capillaries by means of a laser Doppler anemometer. While taking sildenafil, the mean frequency of Raynaud attacks was significantly lower (95±14 versus 52±18; P=0.0064), the cumulative attack duration was significantly shorter (581±130 versus 1049±245 minutes, P=0.0038), and the mean Raynaud's Condition Score was significantly lower (2.2±0.4 versus 3.6±0.5, P=0.0388). Capillary blood flow velocity increased in each individual patient, and the mean capillary flow velocity of all patients more than quadrupled after treatment with sildenafil (p [illegible] versus [illegible], P=[illegible]). Two patients reported side effects leading to discontinuation of the study drug.

- Occurs in 20-30% of patients with SLE
- Episodic vasospasm of small peripheral arteries
- Blue discoloration of hands and feet

125

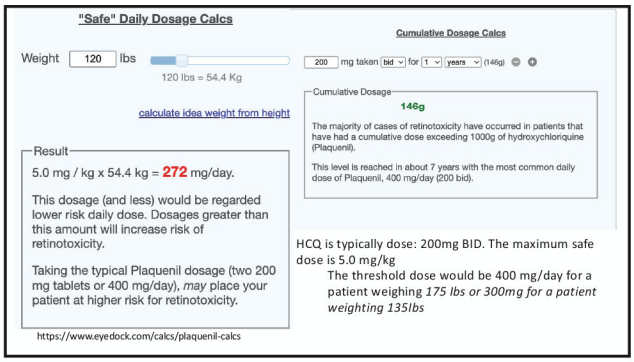
126

Recommendations on Screening for Chloroquine and Hydroxychloroquine Retinopathy (2016 Revision)

Daily dose	>5.0 mg/kg (real weight) for Hydroxychloroquine >2.3 mg/kg (real weight) for Chloroquine
Drug use time	More than 5 years
Renal disease	Abnormal glomerular filtration rate
Concomitant drugs used	Tamoxifen use
Macular disease	Can affect the evaluation and susceptibility to chloroquine and hydroxychloroquine

Adapted from: Marmor MF, Kellner U, Lai TY, Melles RB, Mieler WF: American Academy of Ophthalmology. Ophthalmology. 2016 Jun; 123(6):1386-94.

127



HCQ is typically dose: 200mg BID. The maximum safe dose is 5.0 mg/kg

The threshold dose would be 400 mg/day for a patient weighing *175 lbs or 300mg for a patient weighting 135lbs*

128

Lesser Risk Factors

Age	•Elderly patients might seem to be at higher risk •A recent demographic study found no significant association between age and risk of toxicity
Liver disease	•No clear association between liver disease and toxicity has been demonstrated
Genetic factors	•There have been suggestions that some patients have a genetic predisposition to HCQ toxicity •More research necessary

Ask about common side effects of CQ/HCQ therapy

- Pruritus, headaches, dizziness and gastrointestinal upset to detect those that are non-compliant and those that are receiving a dose that is too high.
- Less frequent side effects include discoloration of the oral cavity, nails, skin and hair and rash

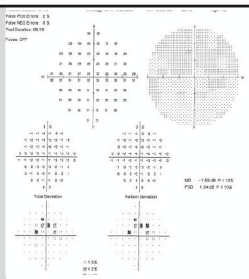
129

Table 3. Clinical Examination Techniques

Recommended Screening Tests
- Primary tests: ideally do both
  - Automated visual fields (appropriate to race)
  - SD OCT
- Other objective tests (as needed or available):
  - mfERG
  - FAF
- Newer tests of possible value in future
  - Microperimetry
  - Adaptive optics retinal imaging

Not Recommended for Screening
- Fundus examination
- Time-domain OCT
- Fluorescein angiography
- Full-field ERG
- Amsler grid
- Color testing
- EOG

EOG = electro-oculogram; ERG = electroretinogram; FAF = fundus autofluorescence; mfERG = multifocal electroretinogram; SD OCT = spectral-domain optical coherence tomography.



White 10-2: White Stimulus/ 24-2 or 30-2 VF for Asian Patients

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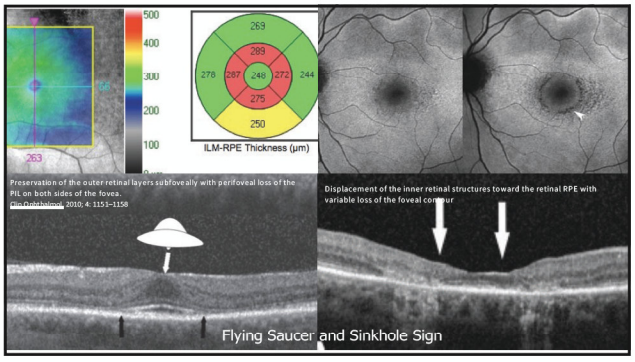

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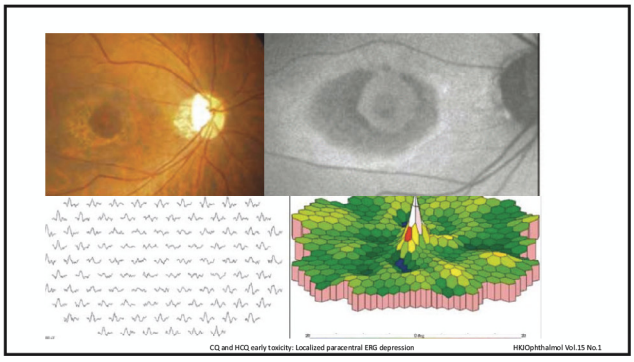


132

SEQUENTIAL CHANGES IN HYDROXYCHLOROQUINE RETINOPATHY UP TO 20 YEARS AFTER STOPPING THE DRUG

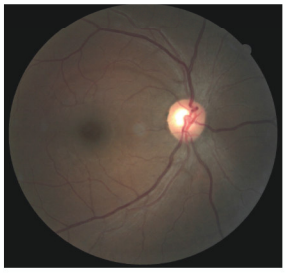
Implications for Mild Versus Severe Toxicity

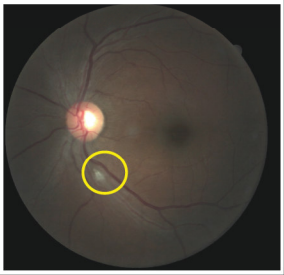
Results

- Early and moderate cases stabilized in FAF appearance, foveal thickness, ellipsoid zone line length, and visual acuity for up to 9 years after stopping HCQ.
- By contrast, severe cases demonstrated a continual loss of these parameters for up to 20 years off the drug.
- Presence of RPE damage at initial examination predicted progressive retinopathy over many years.

133

23-year-old African-American female presented complaining of a "spot" on the retina of her left eye one-week prior by a previous eye doctor. She denied symptoms of pain, floaters, flashes of light, trauma, systemic disease, medication use or smoking.





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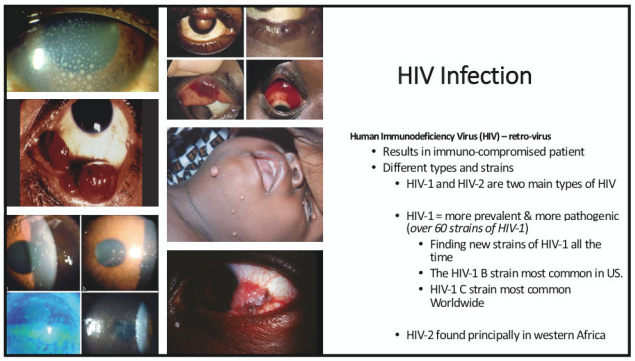
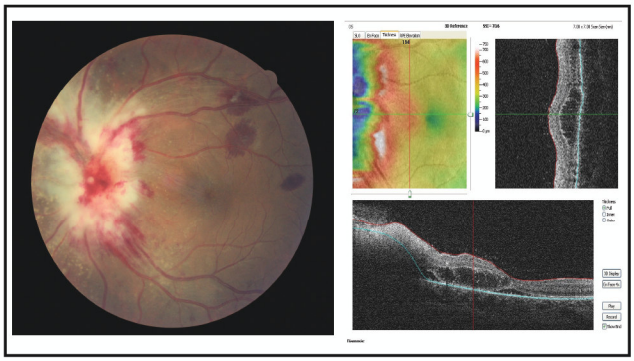


HIV Infection

Human Immunodeficiency Virus (HIV) – retro-virus

- Results in immuno-compromised patient
- Different types and strains
  - HIV-1 and HIV-2 are two main types of HIV
  - HIV-1 = more prevalent & more pathogenic (*over 60 strains of HIV-1*)
    - Finding new strains of HIV-1 all the time
    - The HIV-1 B strain most common in US.
    - HIV-1 C strain most common Worldwide
  - HIV-2 found principally in western Africa

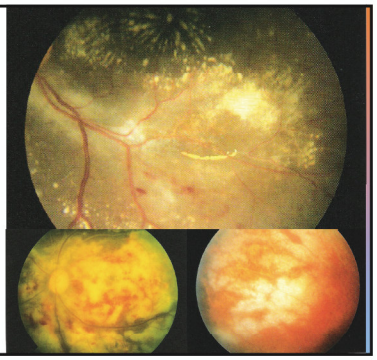
135



136

CMV Retinitis

- Slow progression
- Starts in periphery
- Spreads along retinal vasculature towards posterior pole
- Dense white/granular opacification (full-retinal thickness)
- Hemorrhage
- Mild vitritis
- **The ocular symptoms of CMV retinitis include the four "F's"**
  - **Failing vision**
  - **Floaters**
  - **Flashes**
  - **Field deficits**



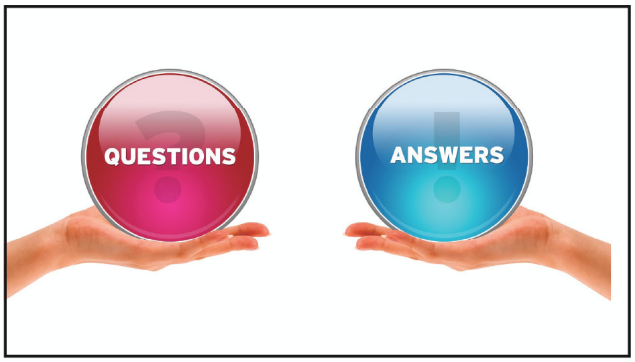
137

Conclusion

Early detection and treatment are crucial in preventing and reducing visual impairment from these conditions.

Optometry is on the forefront of early detection of the silent killers.

138



139

THANK YOU

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140