

Advanced Technology in Eyecare

Biologics and OCT Grand Rounds

Anthony DeWilde, OD FAAO

Biologics in Eyecare

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No Financial Disclosures

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What are Biologics?

Made from Living Organism

Contain

1. Proteins that control the action of other proteins
2. Genes that control production of vital proteins
3. Modified human hormones
4. Cells that suppress or activate components of the immune system

BIOLOGICS: BIGGER AND MORE COMPLEX MOLECULES
SMALL MOLECULE
ACETYLSALICYLIC ACID
(ASPIRIN)
21 ATOMS
BIOLOGICALLY
ENGINEERED ANTIBODY
> 20,000 ATOMS

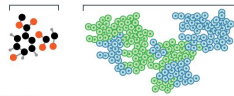
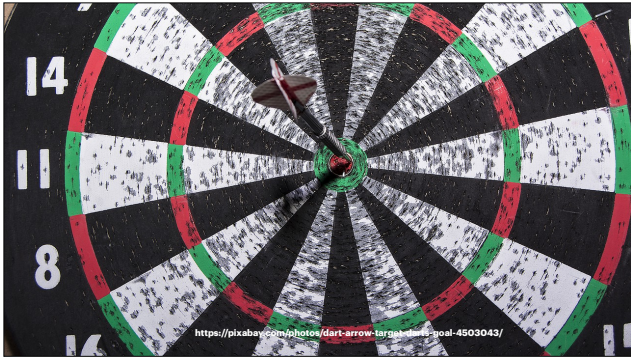


Figure 1
Lipinski's Rule of Five
March 2004

https://www.wipo.int/wipo_magazine/en/2017/03/article_0007.html



<https://pixabay.com/photos/tank-war-battlefield-army-shells-449772/>



Biologics Utility

Most common uses

Anti-TNF

Anti-Interleukin

Anti-CGRP

Biologics Utility

Autoimmune Disease

Inflammatory Bowel Disease

Psoriasis

Ankylosing Spondylitis

Graves' Disease

Myasthenia Gravis

Biologics Utility

Headache

Migraine
Cluster Headache

Biologics Utility

Ocular Disease

Exudative AMD
Neurotrophic Keratopathy
Uveitis



Side Effects

- Injection site rash
- Infection
- Headache
- Allergic reaction
- Tuberculosis




What about Biosimilars?

- Similar Structure
- Similar Efficacy
- Costs Less

ALL ABOUT BIOSIMILARS
WHAT YOU NEED TO KNOW.

A biosimilar must be highly similar to the original "reference" product in terms of:

-  MOLECULAR STRUCTURE
-  SAFETY
-  CLINICAL EFFICACY

BIOSIMILARS ARE NOT GENERIC DRUGS
They can have small differences in clinically inactive components than the reference drug.

<https://www.oncnursingnews.com/web-exclusives/biosimilars-what-you-need-to-know>

Systemic Disease

Inflammatory Bowel Disease

Commonly associated with
**Acute Anterior Unilateral
Nongranulomatous Uveitis**

Stomach pain
Bloody stool
Diarrhea



<https://pixabay.com/photos/disease-medicine-health-medication-4392164/>

Sees Gastroenterologist

Endoscopy
Colonoscopy
Stool samples
CT/MRI

Treatment includes

Corticosteroids
Aminosalicylates
Immune suppression
(Azathioprine, Methotrexate)

Biologics

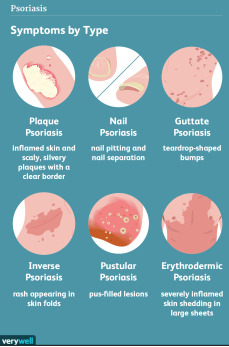
(Remicade, Humira, Stelara, etc)

Psoriasis

Commonly associated with
**Acute Anterior Unilateral
Nongranulomatous Uveitis**

Skin rash - at joints, scalp
White patches
Can have joint pain

<https://www.verywellhealth.com/psoriasis-symptoms-2788277>



Sees Dermatology

Usually diagnosed visually
May require skin biopsy

****Anti - IL 23**

Treatment includes
Topical Corticosteroids
Vitamin D analogues
Light Therapy
Immune suppression
(Cyclosporine, Methotrexate)

Biologics

**(Remicade, Humira, Stelara,
Enbrel, Tremfya**, Skyrizi)**



Ankylosing Spondylitis

Commonly associated with
**Acute Anterior Unilateral
Nongranulomatous Uveitis**

Lower back pain
Worse with rest
Better with movement
Better with NSAID



Possible combination of clinical, laboratory, or imaging SpA features	Post-test probability
IBP plus family history	51%
IBP plus heel pain	35%
IBP plus uveitis	54%
IBP plus synovitis	39%
IBP plus dactylitis	42%
IBP plus family history plus heel pain	78%
IBP plus uveitis plus NSAID*	85%
IBP plus heel pain plus synovitis plus alternating buttock pain	89%
IBP plus family history plus heel pain plus NSAID*	95%
IBP plus heel pain plus HLA-B27	83%
IBP plus NSAIDs* plus HLA-B27	88%
IBP plus heel pain without HLA-B27	6%
IBP plus NSAIDs* without HLA-B27	8%
IBP plus dactylitis plus ESR/CRP	62%
IBP plus HLA-B27 plus ESR/CRP	78%
IBP plus HLA-B27 without ESR/CRP	47%
IBP plus HLA-B27 plus MRI	93%
IBP plus HLA-B27 without MRI	14%
IBP plus heel pain plus HLA-B27 without MRI	35%

The pretest probability of low back pain is assumed to be 5%. IBP = inflammatory back pain. SpA=axial spondylarthritis. CRP=C-reactive protein. *A good response to NSAIDs is needed. Adapted from Radwalek et al¹¹ with permission of BMJ Publishing Group.

Sees Rheumatology

X-ray, CT, MRI

Possible HLA B-27 testing

**** IL-17**

Treatment includes

NSAID

Physical Therapy

Anti-TNF biologics

**(Humira, Enbrel, Remicade,
Cimzia)**

Anti-IL biologics**

(Cosentyx, Taltz)

Migraine

Classic vs Common

Unilateral, painful headache

Aura

Nausea, vomiting

Light/sound sensitivity

Mostly women



Nearly 1 in 4 US households includes
someone with Migraine

<https://migraineresearchfoundation.org/about-migraine/migraine-facts/>

Sees Neurology

CT, MRI - rule out other causes

May need other testing

(EEG, Lumbar Puncture)

Treatment includes

Preventative

Abortive

Preventative

Topamax
Beta Blockers
Verapamil
Amitriptyline
Botox injections
Anti-CGRP (Ajovy, Engality, Aimovig)

CGRP antagonists

Benefits include

Reduction in number of headaches

Reduction in intensity of headaches



CGRP Inhibitors

www.cerebritorb.com

aimovig
Erenumab (150 mg)

Preventive, Injection.
70 or 140 mg subcutaneously once a month.

AJOVY
Famciclovir (150 mg)

Preventive, Injection.
225 mg subcutaneously once a month or 475 mg once every 3 months.

Engality
Lasmiditan (50 mg)

Preventive*, Injection.
Initial/loading dose: 240 mg subcutaneously.
Maintenance: 120 mg subcutaneously monthly.

wyepti
Ceftriaxone (1000 mg)

Preventive, Intravenous infusion.
100 or 300 mg, infusion given over 30 minutes every 3 months in a healthcare setting.

UBRELVY
Ubrogepant (50 mg)

Abortive, Oral administration.
50 to 100 mg orally. Second dose may be taken, if needed. Max dose: 200 mg in a 24-hour period.

Nurtec ODT
Rimegepant (75 mg)

Abortive and preventive, Oral administration.
Abortive dose: 75 mg as needed, max 75 mg/day.
Preventive dose: 75 mg every other day.

QULIPTA
Ibuprofen (400 mg)

Preventive, Oral administration.
10 mg, 30 mg, or 60 mg taken orally once daily.

*also used in the treatment of cluster headaches, 300 mg in 2 pre-filled syringes of 100 mg each.

CGRP medication also approved for
Cluster Headaches

Abortive

- OTC NSAIDs
- Caffeine
- Triptans

Ocular Disease

Giant Cell Arteritis

Ocular concern is Arteritic ION
Severe vision loss

Systemic concern is CVA/MI



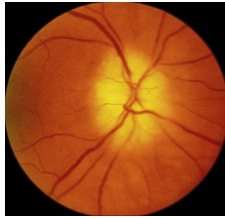
Systemic Symptoms

- Fever
- Malaise
- Headache
- Scalp Tenderness
- Neck pain**
- Jaw claudication**

1/3 of AION patients become bilateral within
14 days

Ocular Signs & Symptoms

- "Pallid" Edema
- Amaurosis Fugax (1/3)
- Rarely diplopia
- CRAO (5-15%)



Management of ischemic optic neuropathies
Indian Journal Ophthalmol 2011, Vol 59, 2, 123-136

Tests

- ESR/CRP/Platelets
- Temporal Artery Biopsy
- Ultrasound
- MRI/MRA
- CTA

Treatment - Rheumatology

- IV/Oral Corticosteroids
 - LONG taper
- DMARDs (steroid sparing agents)
 - Methotrexate
- Biologics (Actemra)**

The only FDA-approved biologic for giant cell arteritis (GCA)

WHEN IS THE TIME TO START ACTEMRA?

Now

Patient Financial Support [LEARN MORE >](#)

SUPERIOR EFFICACY AND STEROID-SPARING SUSTAINED REMISSION*

ACTEMRA 500 + 26-week steroid taper was superior to steroid taper alone in achieving sustained remission from Week 26 through Week 52: 58% (ACTEMRA QW) and 53.1% (ACTEMRA Q2W) vs 14% (placebo + 26-week steroid taper) and 17.2% (placebo + 26-week steroid taper).¹ Most patients in the ACTEMRA arms were steroid free from Week 26 through Week 52.¹

Study

4 Groups

Actemra weekly vs bi-weekly (with 26 week pred taper)

Placebo (with 26 week pred taper)

Placebo (with 52 week pred taper)

1 - Stone, J H, et al. Trial of Tocilizumab in Giant Cell Arteritis. N Engl J Med 2017; 377:317-328

Sustained Remission at 52 weeks

Actemra weekly 56%

Actemra bi-weekly 53%

Placebo 26 week 14%

Placebo 52 week 18%

Cumulative Dose of Prednisone

Actemra weekly 1862 mg

Actemra bi-weekly 1862 mg

Placebo 26 week 3296 mg

Placebo 52 week 3818 mg

Many adverse reactions

Mostly non-serious (like injection site reaction)

More serious reaction in prednisone alone

25% vs 15%

Neurotrophic Keratopathy

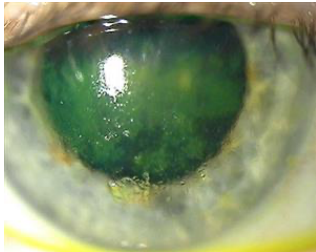
Unilateral presentation

History of

Trauma

CVA

Herpetic infection



Pain is much less than appearance would suggest

Irritation

Foreign Body Sensation

Epiphora

Blur

Prone to infection

Lubrication
Tears, gels, ointments
Bandage CL
Tarsorrhaphy
Amniotic membranes
Plasma Rich Protein (PRP)
Biologics (Oxervate)

Oxervate costs \$29,000 for 7 vials



If paperwork is filled out, patient can get much cheaper

8-week course (patient is shipped 1 week at a time!!)

Refrigerate - take 6x/day

Studies

1. Placebo healed 43% vs Oxervate 70%
2. Placebo healed 29% vs Oxervate 70%

1 - Bonini S, et al. Phase II randomized, double-masked, vehicle-controlled trial of recombinant human nerve growth factor for neurotrophic keratitis. *Ophthalmology*. 2018;125:1332-1343

2 - Pflugfelder SC, et al. Topical recombinant human nerve growth factor (cenergermin) for neurotrophic keratopathy: A multicenter randomized vehicle-controlled pivotal trial. *Ophthalmology*. 2020;127:14-26.

Graves' Disease

Autoimmune Disease

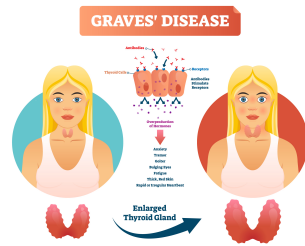
Affects

Eyes

Thyroid

Skin

Mental Health



Sees Rheumatology, Endocrinology

Thyroid scan

Lab tests (thyroid panel)

Not just T3/T4 and TSH

Needs Thyroid antibody testing

Treatments

Help Ocular problems

Lubrication

Diplopia

Treatments

Help Systemic problems

Control thyroid

Thyroidectomy

Radioiodine

Control inflammation

Corticosteroids

Ocular Surgeries

Orbital Decompression

Strabismus surgery

Eyelid retraction

What about Tepezza?

Up to 83% had 2mm
reduction in proptosis

Compared to 20% Placebo

CAS	For initial assessment, only score items 1–7
1	Spontaneous orbital pain
2	Gaze evoked orbital pain
3	Eyelid swelling; considered due to active TED
4	Eyelid erythema
5	Conjunctival redness; considered due to active TED
6	Chemosis
7	Inflammation of caruncle or plica
	Follow-up assessment at 1–3 months can be scored out of 10
8	Increase of >2mm in proptosis
9	Decrease in uniocular excursion in any one direction of >8 degrees
10	Decreased acuity equivalent to 1 Snellen line

³Amended by EUGOGO. Modified

Tepezza is for active Graves' Orbitopathy

Now approved for INACTIVE Thyroid Eye Disease!!

Total of 8 infusions

One infusion every 3 weeks

Cost is **\$46,000** for 3 vials!!!

FDA approved

Inactive TED

Muscle spasm

Hyperglycemia (10%)

Hearing loss (38%**)

Exudative AMD

Choroidal Neovascular Membranes

Well know benefit of Anti-VEGF

These are all biologics



Ranibizumab (Lucentis)

Bevacizumab (Avastin)

Brolucizumab (Beovu)

Injections given monthly until
CNVM resolved

Then, treat and extend

New developments

Longer lasting (Beovu, Vabysmo)

Implantable (port delivery system)



Biosimilars

Cimerli (ranibizumab-eqrn)
Byooviz (ranibizumab-nuna)

Biosimilar to Lucentis
30-40% cheaper
Similar efficacy



Uveitis

Humira is now FDA approved for treatment of noninfectious uveitis
Most beneficial for patients with multiple bouts
Reduce intensity
Reduce recurrence



Other conditions

- Juvenile Idiopathic Arthritis
- Myasthenia Gravis (still under research)
- Diabetes
- Rheumatoid Arthritis (Enbrel, Humira)
- Lupus
- Multiple Sclerosis

Other conditions

Cancer
Sickle Cell Anemia
Osteoporosis

GLP-1 Agonists

Trulicity
Victoza
Ozempic**

Future Research

How do Biosimilars compare to Biologics?

Less frequent dosing?

More conditions approved?

Oral dosage?

Summary

Biologics hold a lot of promise

Improved outcomes

Reduced side effects

But presently can be cost prohibitive

Grand Rounds

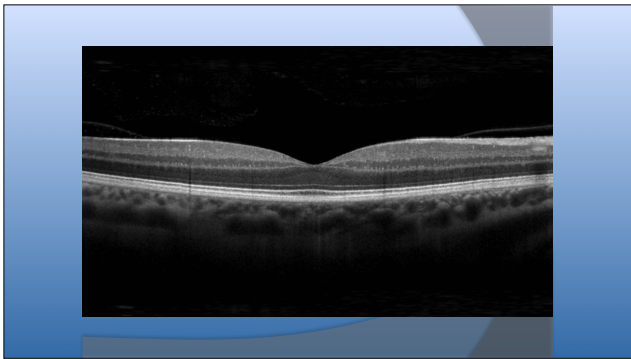
Anthony DeWilde, OD FAAO

OCT

Improve diagnosis

Determine referral

Patient education



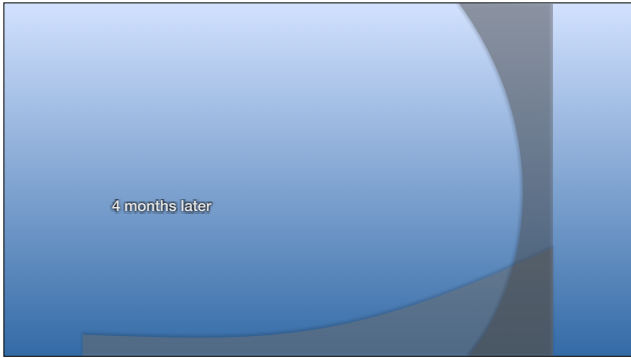
58 year-old
C/O blur OS
"Things seem 'off'"

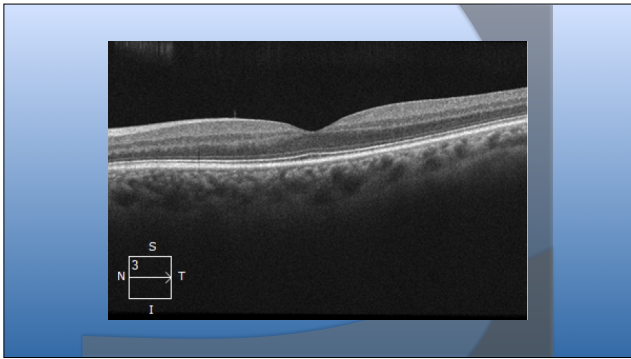
58 year-old	
OD	OS
20/20	20/40
No systemic complications	
Anterior segment normal	





Diagnosis: Vitreomacular Traction (VMT)
 Treatment: Monitor







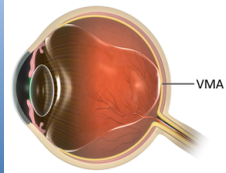
VMT

Vitreous adhesion to retina

Traction

Distortion

Metamorphopsia



Observation

Ocriplasmin (Jetrea)

Pars Plana Vitrectomy

64 year old

CC: Blurred vision OS - present since last year

64 year-old

OD

OS

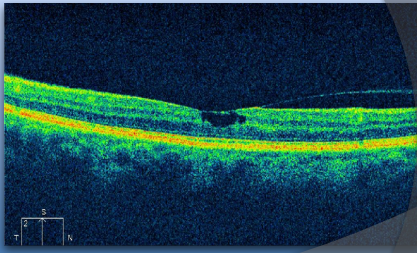
20/25

20/40

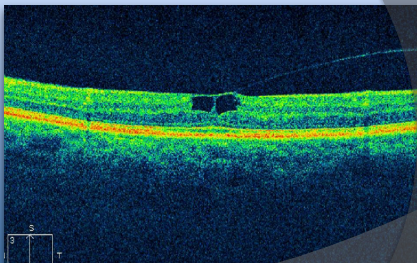
+DM, +HTN

Anterior segment normal

OD

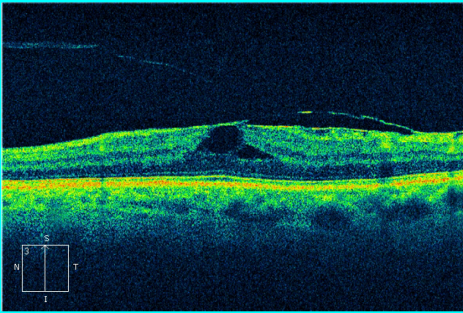


OS

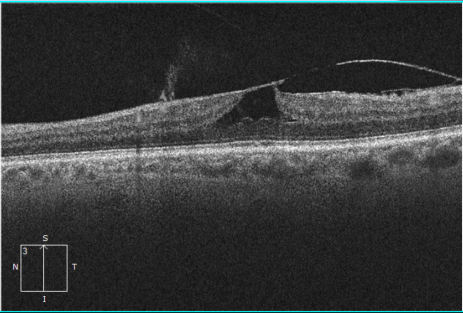


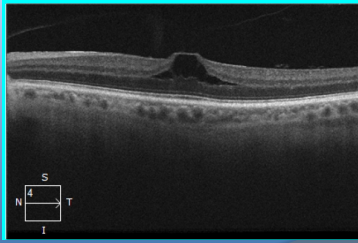
Impending Lamellar Macular Hole

2011



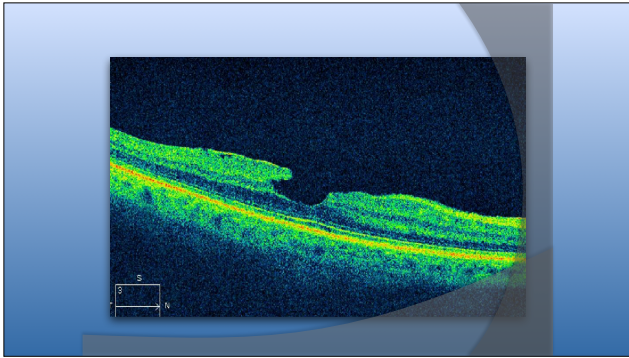
2016





74 year old patient
CC: Blurry vision when reading

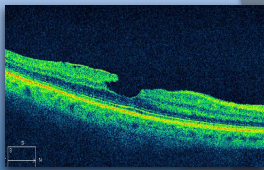
74 year-old	
OD	OS
20/40	20/25
+DM, +HTN	
Cataract OU	



Lamellar Macular Hole

Lamellar Macular Hole


- Not full thickness
- Atypical borders
- “Inverted Anvil”



Acuity typically better
Difficult to treat
Vitrectomy and Peel
May be more selective on when to treat

Before OCT
Diagnosis less certain
Less known about Tx/prognosis

65 Y/O
Progressive blurring
Affecting golf, reading



ENHANCED
VISIBILITY
WITH COLORED GOLF BALLS

The image shows four Callaway golf balls in different colors: blue, silver, red, and yellow. The text 'ENHANCED VISIBILITY WITH COLORED GOLF BALLS' is overlaid on the image. The Callaway logo is visible on the blue ball.

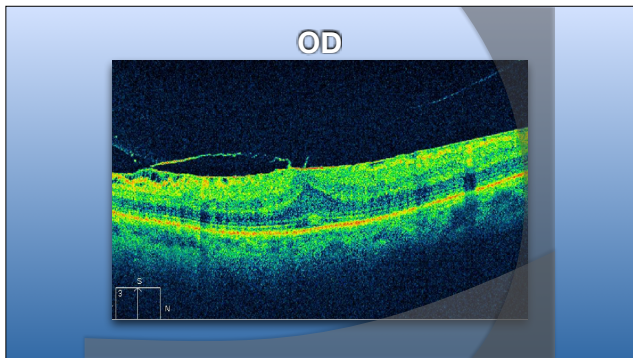
7/2014	
OD	OS
20/20	20/25
Normal Systemic Health	
Bare Cataract OU	

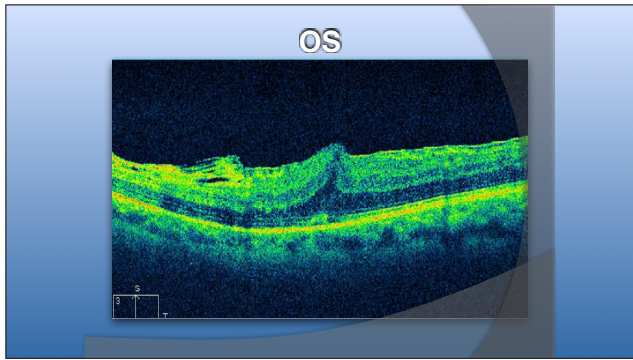
11/2014	
OD	OS
20/20	20/50
ERM OS > OD	
Bare Cataract OU	

02/2015	
OD	OS
20/30	20/50
ERM OU	
Bare Cataract OU	

08/2015	
OD	OS
20/50	20/200
Moderate ERM OD, Severe ERM OS	
Bare Cataract OU	

In 1 year from
20/20 OD, 20/25 OS
To
20/50 OD, 20/200 OS

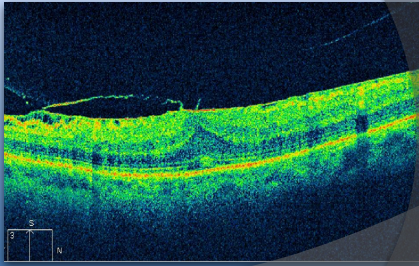




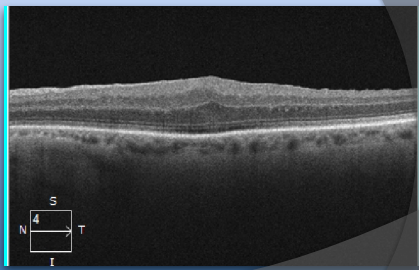
Refer to Retinal Specialist
Vitrectomy and ERM Peel OS (20/200)

01/2016	
OD	OS
20/30	20/40
Moderate ERM OD, ERM Peel OS	
Mild Cataract OU	

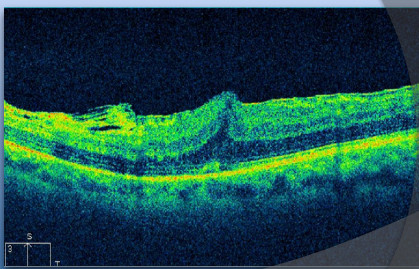
OD



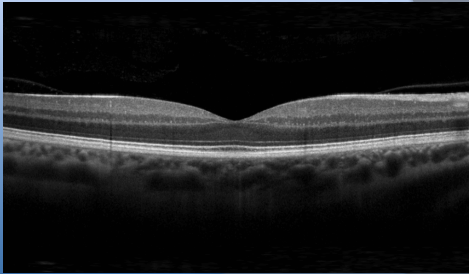
OS



OS



Current OCT



Current

OD	OS
20/20	20/20
ERM Peel OU	
Cataract Surgery OU	

ERM

Macular Pucker

Creates traction of retina

Can induce edema (typically cystic)

From vitreal detachment

PRP or other laser

Cellular growth/traction

20% of patients over 75

Blur

Distortion

Metamorphosis

Range of acuity (20/20 - 20/400)

How many progress?

Typically asymptomatic

If acuity reduced refer to retinal specialist

What acuity should be treated??

Treatment includes

ILM peel

ERM peel

Vitrectomy

**Cataract Surgery

75 year-old

OD

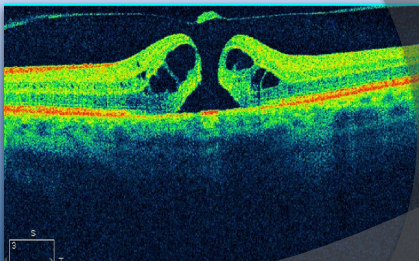
OS

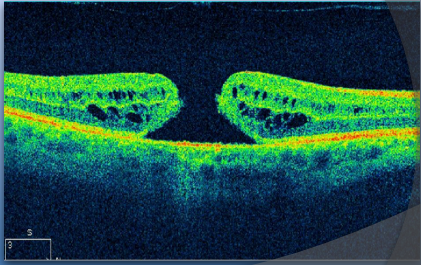
20/50

20/100

DM, HTN, COPD

Anterior Segment Normal - PCIOL OU





Bilateral macular hole

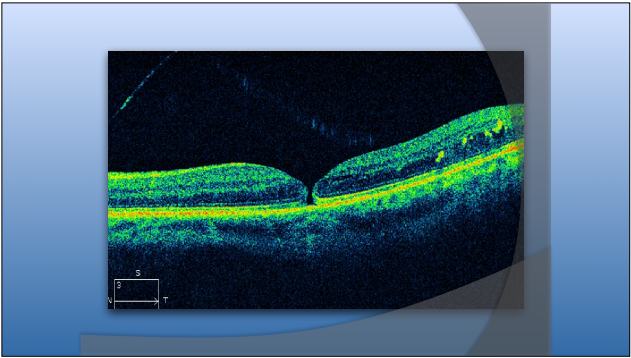
Patient elected to not have treatment

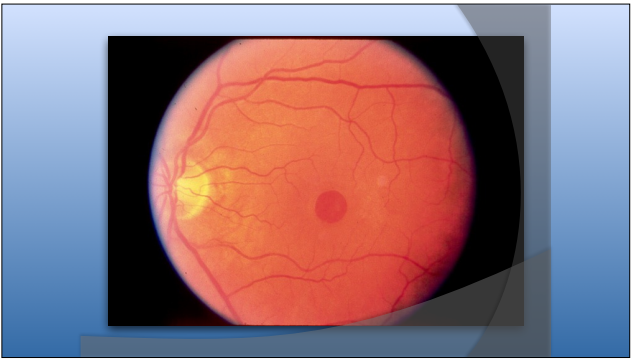
COPD

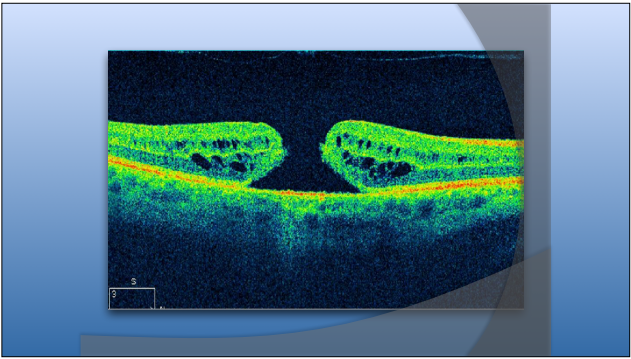
Macular Hole

Full thickness retinal break

Acuity typically 20/100-20/200**







Macular Hole

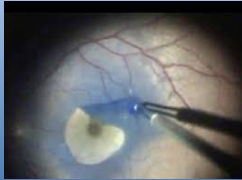
Treatment

Vitrectomy

Broad ILM peel

Fluid gas exchange

ILM Peel increases success from 90% -> 97%



Macular Hole

Complications

Cataract

Face down position

Lack of closure



Macular Hole

Modern Treatment

3 days mostly face down

Then sleep on side

Macular Hole

Modern Treatment

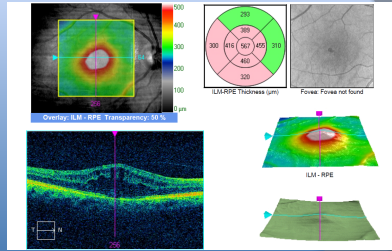
If concurrent cataract - treat first

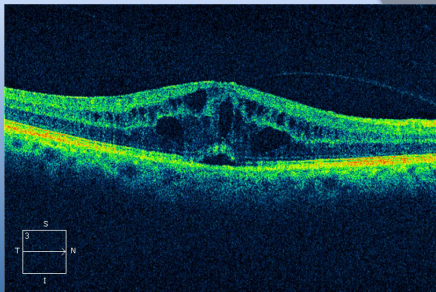
Risk of CME disrupting outcome

67 year-old

OD	OS
20/40	20/30
Glaucoma	
PCIOL OD x 1 month, NS OS	

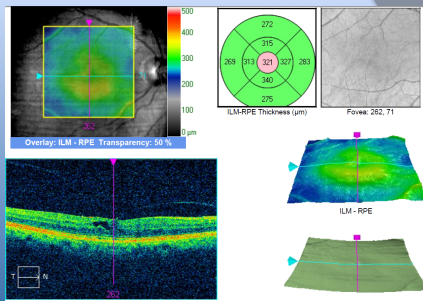
Anterior Segment
Trace Cell OD
Mild K Edema (Fuch's Dystrophy)

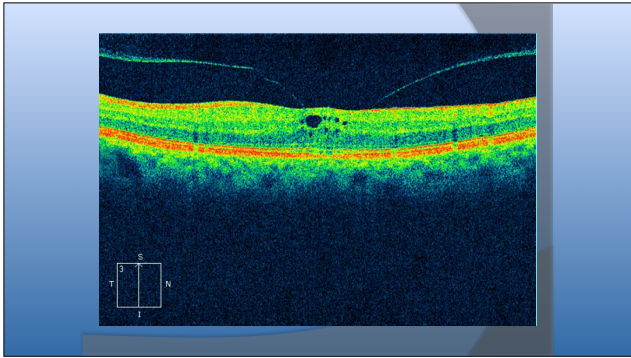




Irvine-Gass CME
Start Pred Forte QID
Diclofenac QID

5 months later
20/20 OD and OS





Irvine Gass CME

- Need to define CME
- Vein occlusion
- ERM
- RP
- Diabetes
- Post-op

Pseudophakic cystoid macular edema

Up to 2.3% in phaco

More common in intracapsular/extracapsular

Risk Factors

Posterior capsule rupture

IOL dislocation

Iris fixed IOL

ACIOL

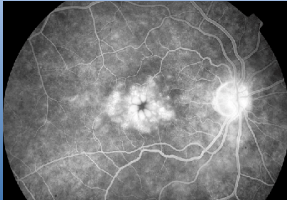
Very few cells in AC

Treatment

Topical NSAID/Steroid QID*

Expect recovery over 3+ months
Generally follow at 6 week intervals

Diabetic Macular Edema vs Irvine Gass CME



71 year old
Glaucoma follow up
Mild blur at near

IOP 8/10 on Latanoprost

NS OU

Anterior Segment normal

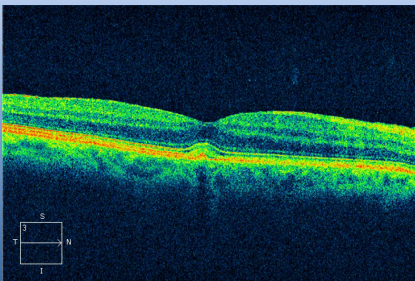
Posterior segment

Glaucoma

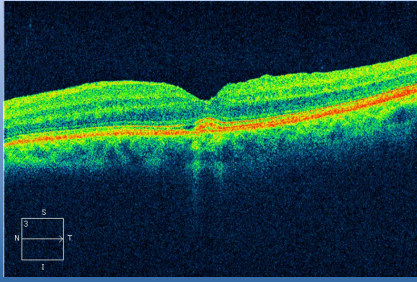
Normal vasculature

One small drusen OU

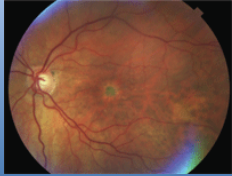
OD



OS

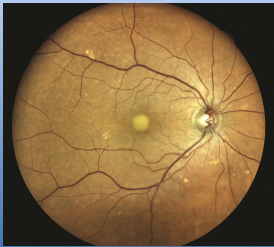


Adult Vitelliform



reviewofoptometry.com

Adult Vitelliform



<https://images.app.goo.gl/57brpcyYLyD1dsT8>

Adult Vitelliform

- Similar to Best's
- Later in life
- Smaller lesions
- Less complications

Adult Vitelliform

- Lipofuscin accumulation
- Between RPE and Photoreceptors
- 5-15% develop CNVM
- Typically mild and asymptomatic

Optometry (2006) 77, 156-166

56 year-old

OD

OS

20/20

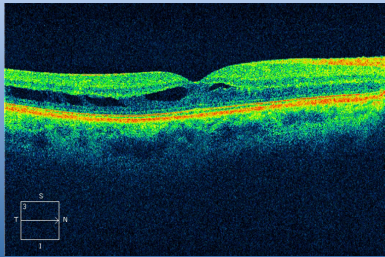
20/20

PCIOL OU

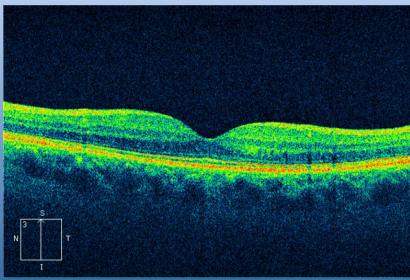
Vision fluctuates - Dry Eye OU

Posterior segment
Normal ONH
Normal vasculature
Macula abnormal

OD



OS



Juvenile Retinoschisis

Incidental finding

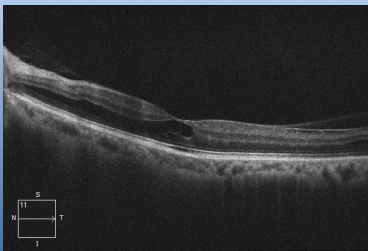
Patient asymptomatic

Treated with CAI (Trusopt) - no benefit

Mrs. H



Mrs. H



Juvenile Retinoschisis

Genetic malformation (x-linked) - typically male

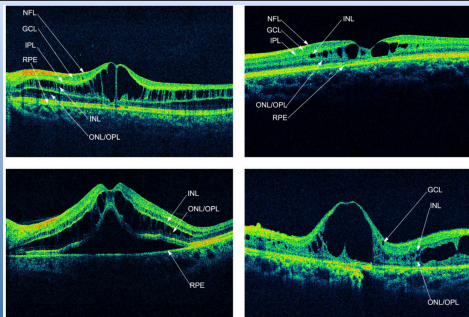
Difficult to diagnose funduscopically

Amblyopia masquerader

SNIFR

Stellate Nonhereditary Idiopathic Foveomacular Retinoschisis

Similar to Juvenile Retinoschisis - no gender predilection



Am J Ophthalmol 2010;149:973-978

Juvenile Retinoschisis

Variable layers affected

Variable appearance

57 year-old

Blur at near

Superior Quadrantopia S/P CVA

S/P RD repair OD

Dermatochalasis OU

Posterior segment normal except

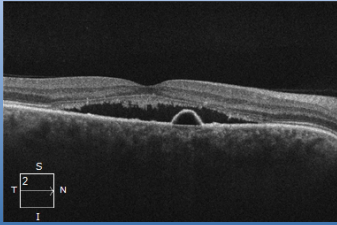
Macula OD has

Pigment changes

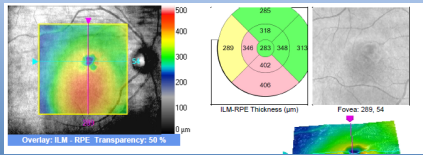
Serous elevation

Macula OS Normal!

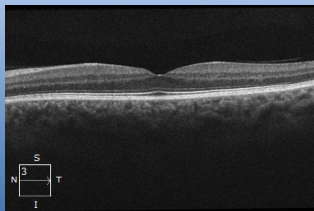
OD



OD



OS



Differential

Idiopathic CNVM

Central Serous

Fluorescein



researchgate.net

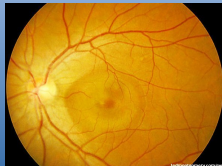
Central Serous

Serous elevation of retina

Males (20-50 years old)

Stress/Cortisol

Steroid



Self-limiting - 3-4 months

Laser

PDT

30% can become chronic

Mineralocorticoid Receptor Antagonists

Spironolactone, Eplerenone

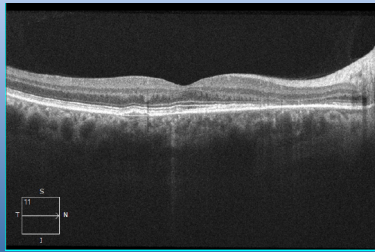
48 year-old

"Film over vision"

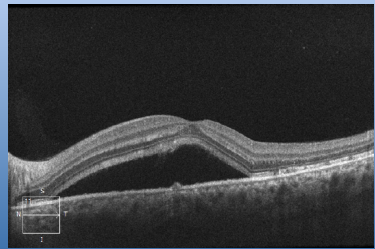
On Testosterone

Recent Steroid Injection

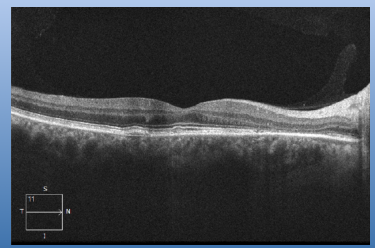
OD - November



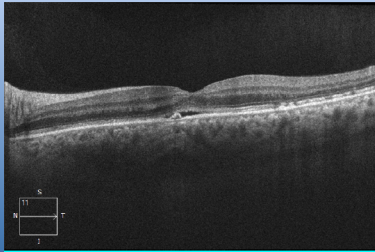
OS - November



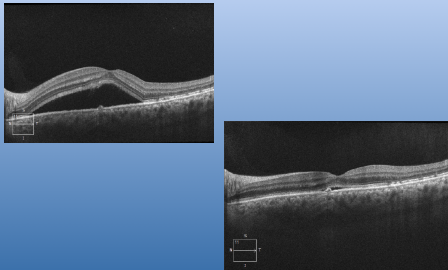
OD - December



OS - December



OS - No treatment



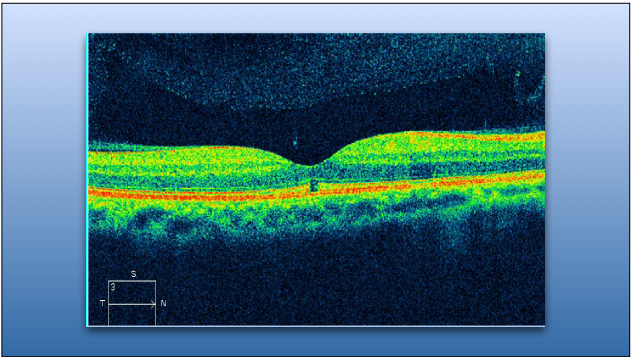
Alerted PCP to side effects of Testosterone, Steroids

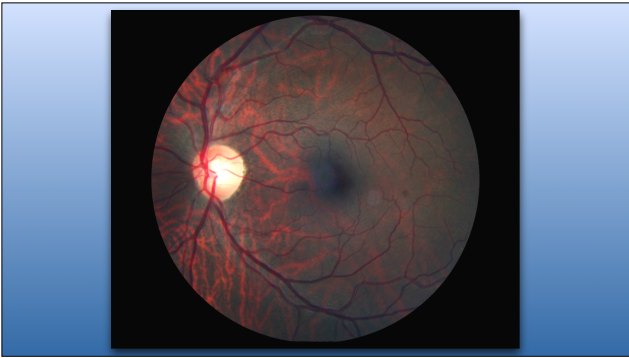
Self-resolved

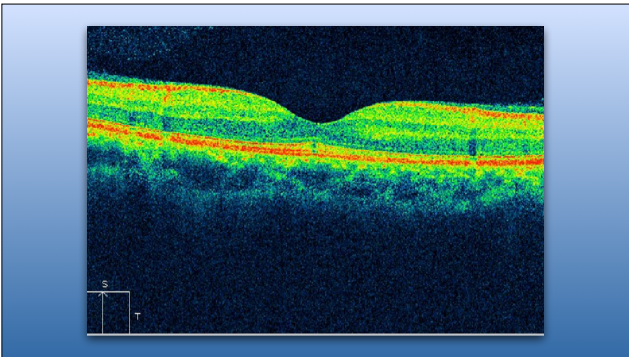
58 year-old

OD	OS
20/20	20/25
Blur at Near	
Anterior Segment Unremarkable	









Diagnosis?

Solar Maculopathy

Thermal Burn

Psych Diagnosis

Eclipse

Drugs

Adjustment Disorder

Alcohol Abuse

Inadequate Housing

Depressive Disorder

Tobacco Dependence



Plaquenil

2016 Recommendations

Continues testing recommendations from 2011

Plaquenil

Low risk drug if correct dosage

If proper dosage, should never see "bull's eye maculopathy"

Plaquenil

Consider modifying risk by modifying dosage

Only come in 200 mg tablets

Patient may want to take fewer than 14 tablets/week



Plaquenil

Study of 500 patients started on Plaquenil
50% were on too high dose for ocular safety

Ophthalmology 2017;124:604- 608

Plaquenil

Height to take med safely based on IDEAL weight
Men - 5'5"
Women - 5'7"

Plaquenil

For every 2" below ideal, subtract 1 tablet per week

Plaquenil

Safe weight for 400 mg/day - based on REAL weight

180 lbs

For every 13 lbs less than this subtract 1 tablet/week

Recommendations

Baseline Examination

If low risk, then test after 5 years

If high risk, test yearly

Recommendations

High Risk

Kidney Disease

Liver Disease

Cumulative Dose

Tamoxifen Use

Case 1

60 Year Old White Female

Blur at distance

Photophobia

Dry eye

Case 1

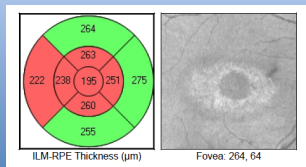
Plaquenil x 20 years

400 mg/day

Lupus

5'4"

105 lbs - safe dosage is 200 mg



Plaquenil toxicity

Should have been on lower dose

Need to discontinue medicine

86 Year Old White Male

Blur at distance

Ocular History: Early AMD

Medical History

Psoriatic Arthritis

HTN

CAD

Hyperlipidemia

Medications

Plaquenil

Fluocinonide

Coreg

ASA 325 mg

5'7" tall

130 lbs - would need 10 tablets/week

Patient at VA since 1999

Every exam: RPE changes OS>OD

Called AMD

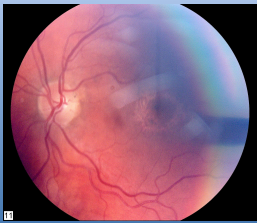
20/20- OD and OS

September 2010

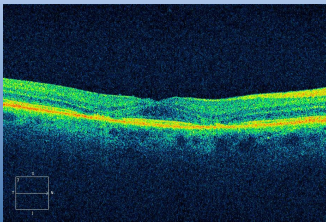
Ring shaped atrophy OS

Fundus Photos/OCT

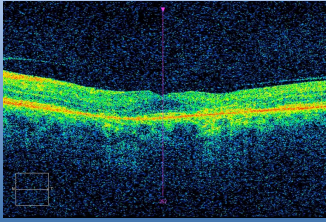
Fundus OS



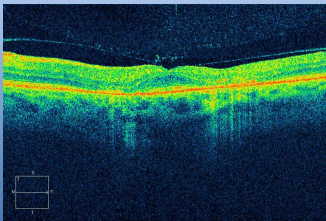
SD-OCT - OS



SD-OCT - OS



SD-OCT - OD



Management

Discontinue Plaquenil
See Rheumatologist -- Patient refused initially

Management

Patient eventually discontinued meds

Asymptomatic

Good outcome?

Case 3

71 Year Old White Male

Evaluation for Plaquenil Maculopathy

No vision complaints

Case 3

On Plaquenil for 7 years

200 mg BID

RA/Lupus

Normal kidney, liver

Normal BMI

Case 3

5'11" tall

155 lbs - should be on 12 tablets/week

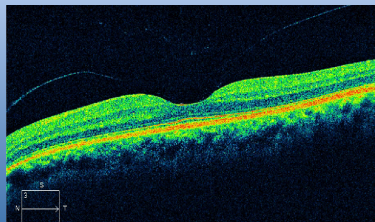
Case 3

BCVA 20/20 OD/OS

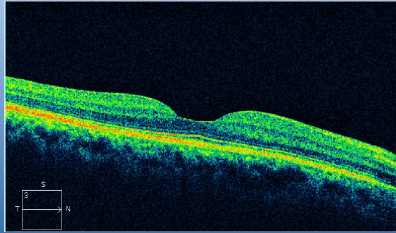
Anterior Segment Unremarkable

Posterior Segment - Mild ERM OD

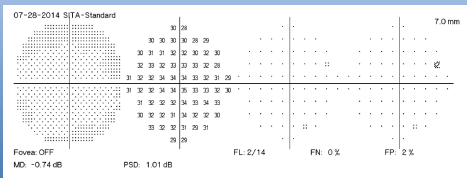
Case



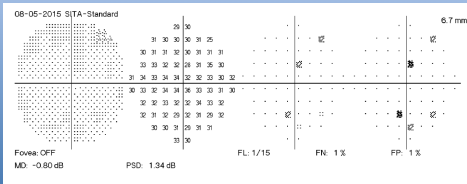
Case



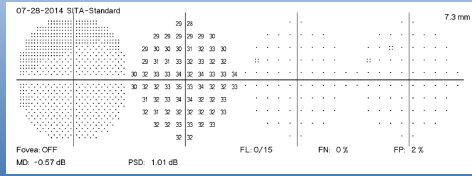
HVF- OD



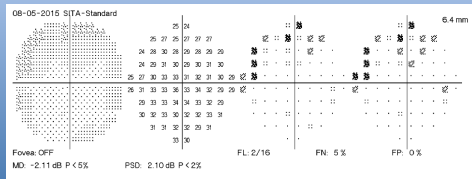
HVF- OD



HVF- OS



HVF- OS



Case 3

Normal macula

Normal OCT

?HVF

Case 3

Do we continue medication?

Do we discontinue medication?

Case 3

Plan

Continue medication

RTC 6 months - retest

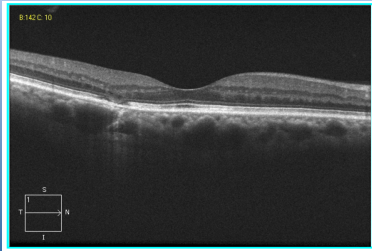
Case 4

64 Y/O White Male

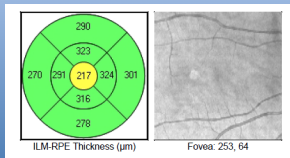
10 years on Plaquenil for RA

+AMD

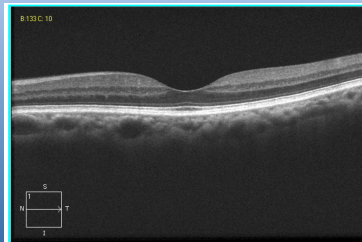
Case 4 - OCT OD



Case 4 - OCT OD



Case 4 - OCT OS



Case 4

Informed Rheumatologist

They discontinued Plaquenil

Was this the right call?

Could we have done better?

68 year-old

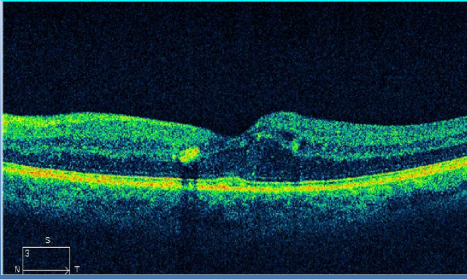
20/25 OD, 20/20 OS

+IDDM (A1c = 8), +HTN

No NVI

Cataract OU





Diagnosis

NPDR OU

No CSME OD

CSME OS

CSME

Retinal thickening 1 disc area – any part within 1 disc diameter of center of fovea

Hard exudates within 1/3 disc diameter of center of fovea with adjacent thickening

Retinal thickening within 1/3 disc diameter of center of fovea

Diabetic Macular Edema

Treatment Criteria - Anti-VEGF

Central retinal thickening

<20/30

Treatment

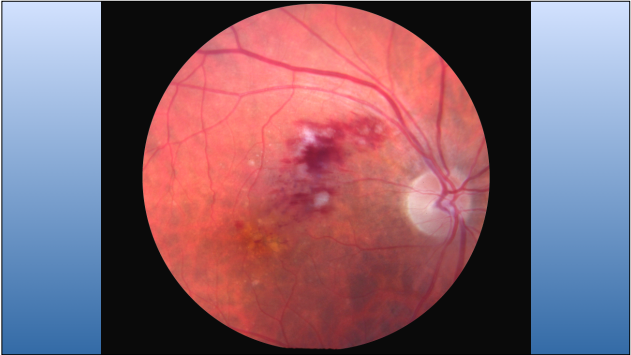
Prompt referral to retinal specialist

Under treatment with IVI Avastin

Prognosis?

How many injections are necessary?

81 year-old
20/25 OD, 20/25 OS
Routine Exam
No Complaints
Mild Cataract OU



Historically treated with laser @ 3 months

Now treated with Anti-VEGF injections

Prognosis?

How many injections needed?

72 year-old

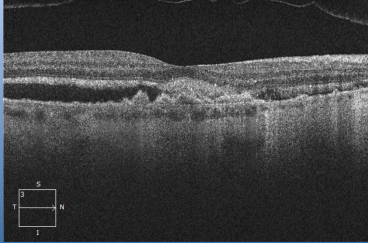
20/50 OD, 20/30 OS

C/O Difficulty Reading

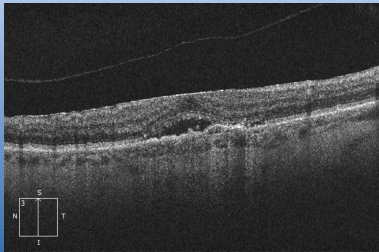
PCIOL OU, AMD OU

IDDM, HTN

OD - 2016



OS - 2016



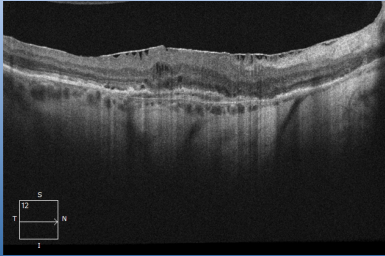
AMD OU

Serous elevation

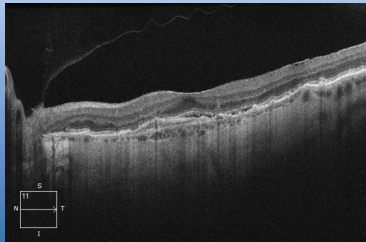
Refer to retina

Intravitreal Anti-VEGF

OD - 2018



OS - 2018



Vision

20/40

20/25

Can we expect better?

Macular Degeneration

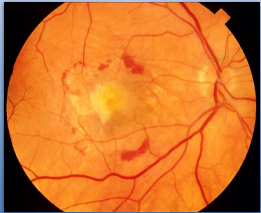
Four potential findings

Sensory detachment

Pigment epithelium detachment (PED)

Sub-Retinal hemorrhage

Sub-RPE hemorrhage



Macular Degeneration

Historically treated with

Nothing

Laser

Visudyne

Studies

90% maintain acuity with treatment

Only 50% untreated maintain

Studies

41% gained 3 lines of acuity with treatment

Only 6% untreated gained

Studies

38-42% achieve 20/40 or better treated

Only 6% untreated reach 20/40

Studies

Avastin = Lucentis = Eylea

Fewer injections with Eylea

11 vs 16 at 2 years

Treat and Extend

Treat every month for 3 months

If stable, extend out

Treat and Extend

90% had stability at 2 years

45% had 20/40 acuity

Ophthalmology 2015;122:1212-1219

Treat and Extend

Fewer injections (13 versus 17) - over 2 years

Fewer Visits

Less \$\$

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