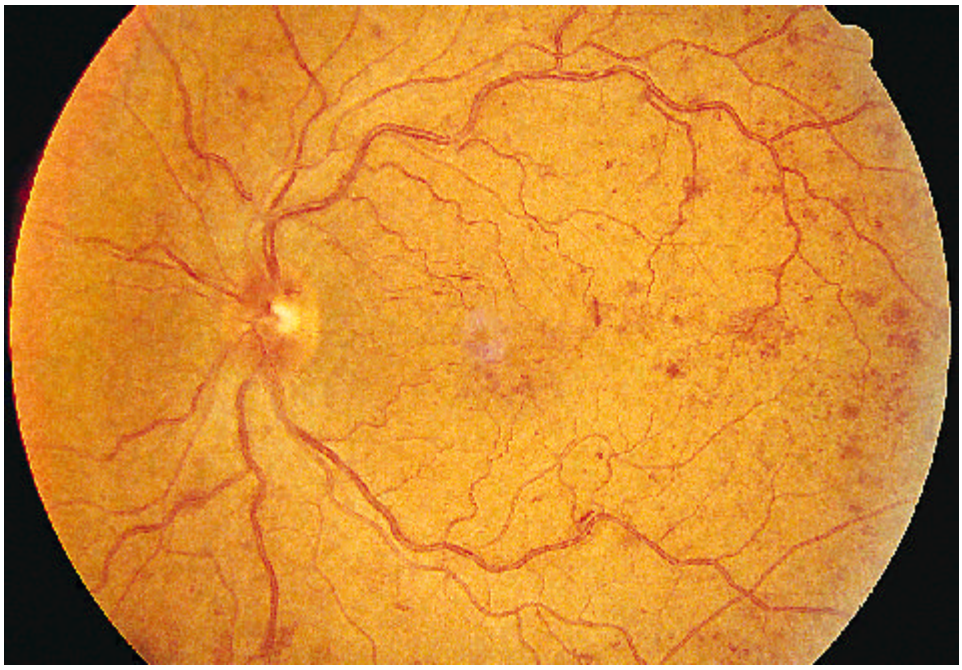
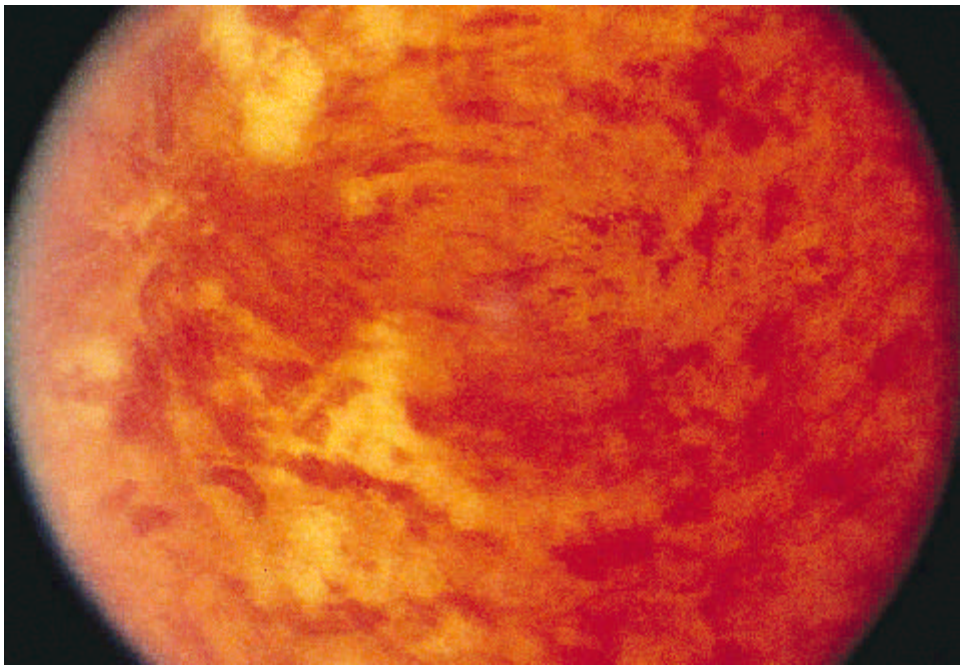
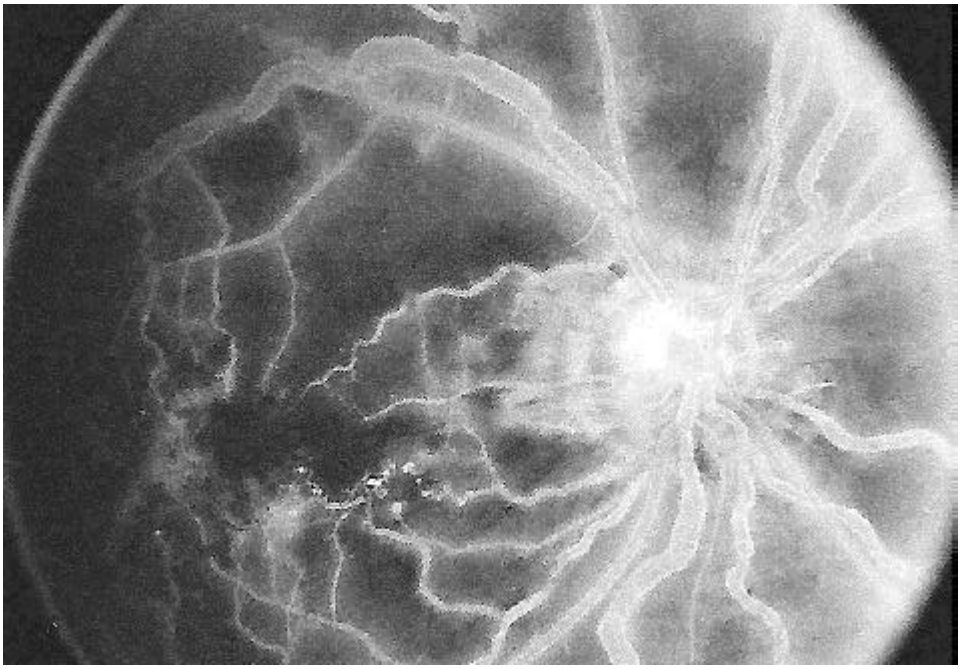






CRVO

Epidemiology

What are associated conditions of CRVO?

- DM, HTN, atherosclerosis, BCP, hypercoaguable states (1 pt)
- OAG (1 pt)

Pathogenesis

What are theories of pathogesis?

- thrombus in vein (1 pt)
- turbulent flow from artery sclerosis (1 pt)
- ESR, anti-phospholipid, protein C or S defiecency, lupus anticoagulent, antithrombin III (1pt)

Ocular manifestations

What are the types of CRVO? And how can you tell them apart?

·

		Non ischemic (3 pt)
		Ischemic (3 pt)
		Indeterminate (1 pt)
75%	25%	
VA >20/200	VA <20/200	
no RAPD	RAPD	
Mod blood	Massive blood	Very massive blood
VF mild	VF defect pronounced	
FA <10 DA ischemic	>10 DA	

ERG	ERG b/a
minimal CWS	>5 CWS

What is the significance of these categories?

- NVI rates (3 pts)
  - NI: 2%
  - 1: 60%
  - Indeterm: 80% convert to I.

What is papillophlebitis? (1 pt)

- <50 years, optic disc swelling out of proportion to hem, CWS around disc
- not always benign

<u>Tests</u>

What is the work up for CRVO in pts younger than 55? (4 pts)

- protein C & S
- antiphospholipid Ab
- antithrombin III
- homocysteinuria
- CBC with diff
- PT/ PTT
- serum protein electrophoresis
- ESR
- BP
- scrape first 4 for pts >55 years

MEDICAL AND OPHTHALMIC WORKUP FOR CENTRAL RETINAL VEIN OBSTRUCTION AND BRANCH RETINAL VEIN OBSTRUCTION

Central retinal vein obstruction
Complete history and physical examination
Complete ophthalmic examination
Fluorescein angiography
Gonioscopy to look for iris and/or angle neovascularization
Blood pressure
Complete blood count
Prothrombin time
Partial thromboplastin time
Antinuclear antibodies
Serum protein electrophoresis
Erythrocyte sedimentation rate
Branch retinal vein obstruction
Complete history and physical examination
Complete ophthalmic examination
Fluorescein angiography
Blood pressure

What is the most important clinical prognostic factor? (1pt)

VA

<u>DDX</u>

What is the ddx of CRVO? (4 pts)

- OIS (disc spared, veins not tortuos, transient visual loss)
- Hyperviscosity (SS, SC, polycythemia vera, leukemia, MM, Waldenstom's)
- Severe anemia and thrombocytopenia (Roth spots)
- Autoimmune diseases (lupus)

<u>Follow up and treatment</u>

What is the follow up for CRVO? (2 pts)

- q 1 month for all for first 6 months
- frquent thereafter for ischemic

TREATMENT GUIDELINES FOR PATIENTS WHO HAVE CENTRAL RETINAL VEIN OBSTRUCTION

No proved effective treatment
Panretinal photocoagulation if intraocular neovascularization present
Lower intraocular pressure if elevated
Treat underlying medical conditions
Macular edema generally does not respond to grid laser

Describe CRVO study results? (1pt)

- INV/TC-ANV outcome

- prophylactic in ischemic 20 vs. 35%
- regression once developed 56% vs. 22%

FOLLOW-UP FOR PATIENTS WHO HAVE CENTRAL RETINAL VEIN OBSTRUCTION
Presenting visual acuity of 20/40 (6/12) or better
Examinations every 1–2 months for 6 months after diagnosis Annual examinations as the patient's condition stabilizes
Presenting visual acuity between 20/50 (6/15) and 20/200 (6/60)
Examinations monthly to bimonthly (at the physician's discretion, based on which end of the spectrum the visual acuity lies) for the first 6 months after diagnosis Examinations every 6 months to yearly afterward
Presenting visual acuity of 20/200 (6/60)
Examinations every month for the initial 6 months Then every 2 months until 8 months after presentation Then every 4 months until 2 years after presentation

How do you treat once INV developes? (1 pt)

PRP for CRVO

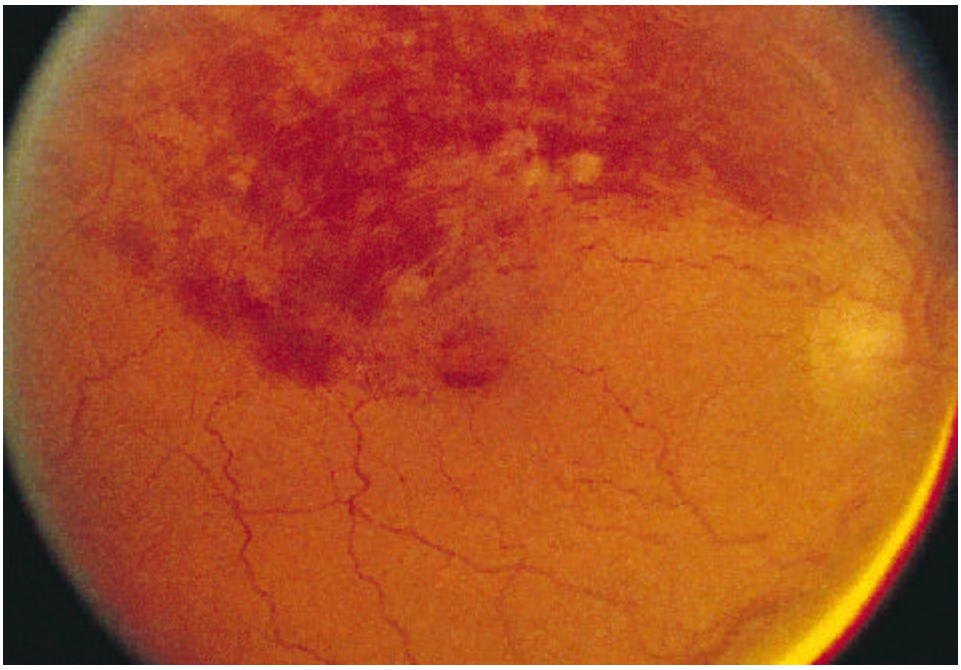
- patients should be examined Q1month for 6 months post CRVO (at least) including gonio
- 75-80% of CRVO are non-ischemic
-1/3 of non-ischemic CRVO go on to become ischemic CRVO (within 1 year)
- treat only once NVI develops (2 clock hours) or earlier if close follow up is not possible
- technique is same as DRS 1500-2000 burn PRP, AG, 500 µ, 0.2 sec, medium, 1000-2000 burns

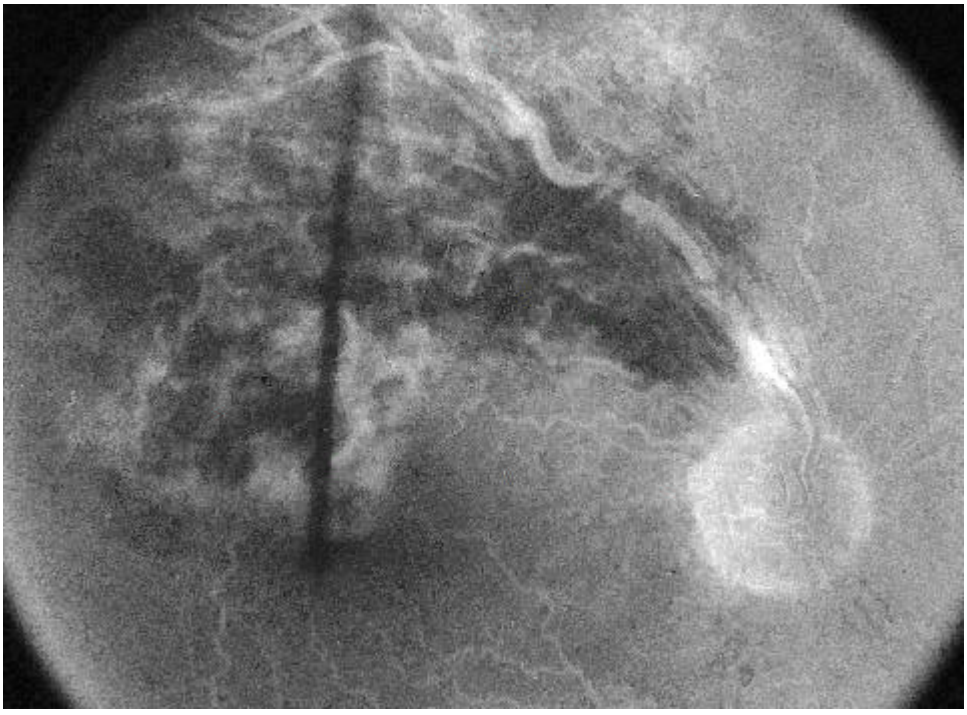
Risk factors for ischemic CRVO developing NV

1) greater than 10 DD of non-perfusion in the posterior pole - definition (greater risk with greater non-perfusion)
2) RAPD
3) decreased visual acuity
4) blood ++
5) ERG: decreased b:a ratio (normal: 2:1) (<1)
6) abnormal EOG
7) elevated central retinal venous pressure
8) duration < 1 month (Bloom
9) male sex (Bloom)

Risk factors for conversion to ischemic CRVO

Risk Factors for CRVO to become ischemic
1) a lot of hemorrhages
2) < 1 month
3) V< 20/200
4) 5-9 disc areas
5) age > 70
6) smoker





BRVO

Epidemiology

How common is BRVO? (1 pt)

- 5.36/1000 in pts > 64 years old

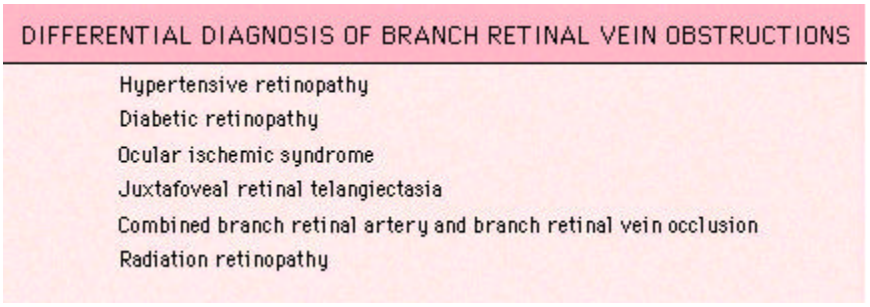
Pathogenesis

How and where do they occur? (2 pts)

- ST (most crossings)
- shared adventia> artery compresses vein> turbulence> clot

DDX

- hypertensive retinopathy, DR, OIS, JRT, Combined art/vein, radiation



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Treatment and BRVO studies

What do you treat?

- treat ME and NV (2pts)

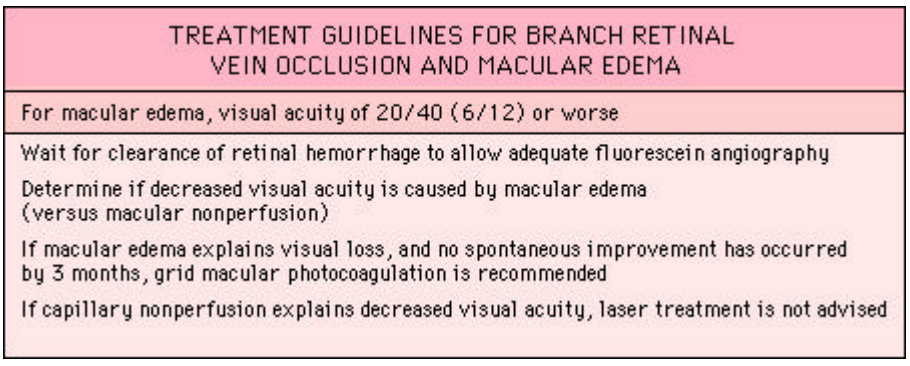
Caveats of treatment? (3 pts, fail if not mentioned)

- >20/40, sufficient clearing of heme, wait 3 months, FA to r/o non-perfusion

How do you treat? (5 pts, any glaring errors you fail)

Grid for BRVO ME

- Eligible eyes: BRVO with a duration of 3 to 18 mo and a visual acuity of 20/40 or worse attributable to macular edema



- don’t treat if macular ischemia is cause of vision loss (vs. DM where you can treat macular ischemia)
- follow up Q 4 months

Procedure

- 100u spots, 0.1 secs, mild to moderate burn, one burn width apart
- applied to the area of macular edema
- treatment extends no closer to the fovea than the avascular zone (500u) and no further peripherally than the major vascular arcades

Follow up: 4 months post laser

B) sectoral scatter for BRVO NV

- treat once NVE or NVD develops
- Eyes with BRVO involving at least a 5 DD area of retina

Procedure

- medium-intensity 200 to 500u argon laser burns spaced one burn width apart
- cover the entire area of involved retina, except within 2 DD of center of FAZ
- 24% of the untreated eyes develop neovascularization versus 12% of the treated eyes.