Unraveling AMD: A Clinical Overview and Therapeutic Strategies

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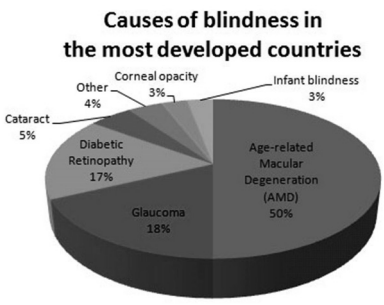

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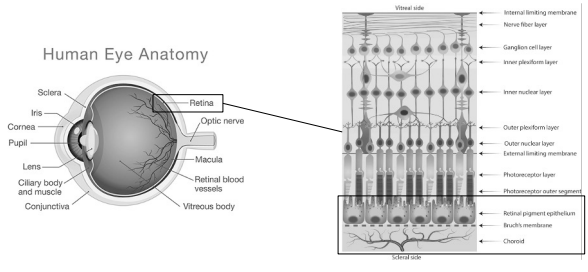
Relevant anatomy



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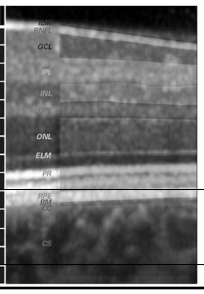
Relevant anatomy OCT

Retinal Layers	
Abbr.	Name
ILM	Internal Limiting Membrane
RNFL	Retinal Nerve Fibre Layer
GCL	Ganglion Cell Layer
IPL	Inner Plexiform Layer
INL	Inner Nuclear Layer
OPL	Outer Plexiform Layer
ONL	Outer Nuclear Layer
ELM	External Limiting Membrane
PR	Photoreceptor Layers
RPE	Retinal Pigment Epithelium
BM	Bruch's Membrane
CC	Choriocapillaris
CS	Choroidal Stroma



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Overview

- A medical condition which may result in blurred or no vision in the center of the visual field.
- Leading cause of vision loss
- 2 main clinical stages:
  - Early/intermediate non-exudative stage (dry AMD)
  - Late stage (advanced AMD)
    - Non-neovascular (central geographic atrophy) - 90%
    - Neovascular (macular/choroidal neovascularization) - 10%

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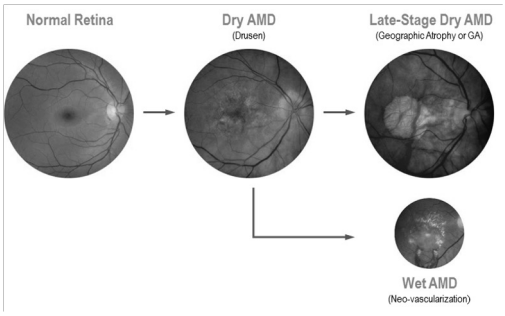

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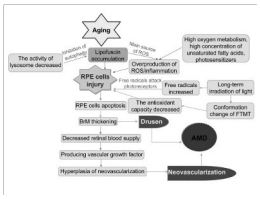
Pathophysiology

- Not entirely known/understood! Some theories:
  - **Drusen Formation**
    - Basal Laminar Drusen, Basal Linear Drusen
    - Small, intermediate, large
    - Hard, soft, confluent
  - **RPE Dysfunction**
    - Focal vs geographic atrophy
    - Serous detachments of the RPE
  - **Choroidal Neovascularization (CNV)**
    - Type 1
    - Type 2
    - Type 3
  - **Inflammatory Responses**
  - **Photoreceptor Cell Death**



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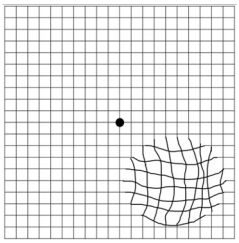
Signs and Symptoms

- Early forms may be **asymptomatic**
- **Decreased vision**
  - Dry: gradual vision loss
  - Wet: rapid vision loss
- **Blurred vision**
- Distorted vision (**metamorphopsia**)



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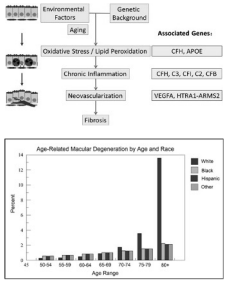
Non-modifiable risk factors

- **Non-modifiable**
  - Age
  - Female sex
  - Race (highest in White, lowest in African-American)
  - <u>Family history</u>
  - Hyperopia
  - Light irides



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Non-modifiable risk factors

- **Modifiable**
  - Smoking
  - Low micronutrient intake
  - Hypertension
  - Hypercholesterolemia
  - Cardiovascular disease

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Progression

Table 4-1 Five- and 10-Year Risks[a] of Advanced AMD in 1 Eye

Number of Risk Factor Points	5-Year Risk, %	10-Year Risk, %
0	0.5	1
1	3	7
2	12	22
3	25	50
4	50	67

AMD=age-related macular degeneration.
[a] Risks are based on the number of Age-Related Eye Disease Study (AREDS) risk factors (see text).

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Imaging Modalities

- Optical Coherence Tomography (OCT)
- OCT Angiography
- Retinal Fundus Photography
- Autofluorescence Imaging
- Scanning Laser Ophthalmoscopy

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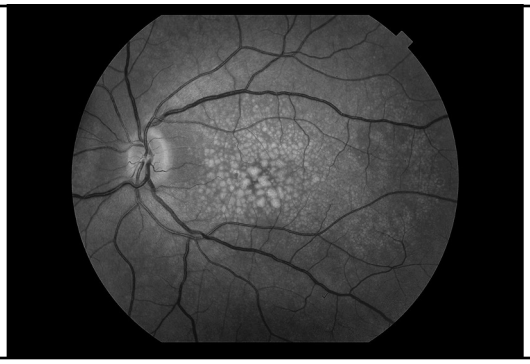

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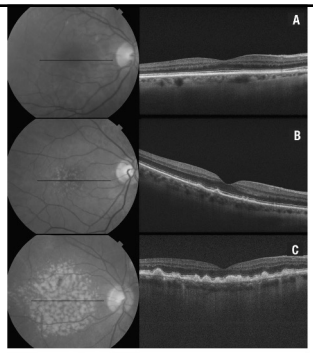

Figure 1. Color fundus photographs and optical coherence tomography scans corresponding to different measurements using the advanced retinal pigment epithelium analysis tool are shown as (A) no measurable drusen, (B) drusen area and volume less than median and (C) drusen area and volume at median or greater. (All figures used with permission of *Investigative Ophthalmology and Visual Science*)

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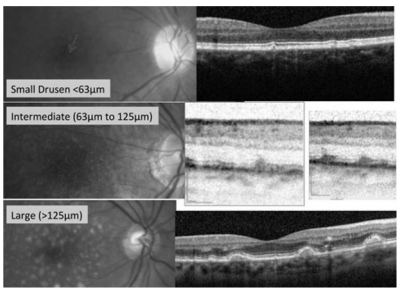

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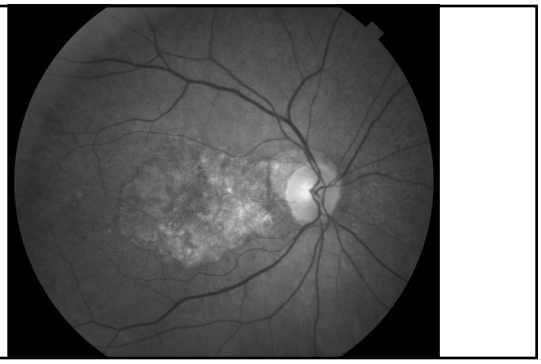

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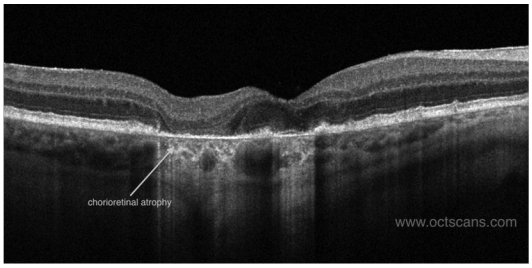

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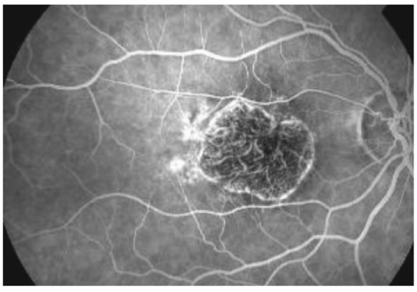

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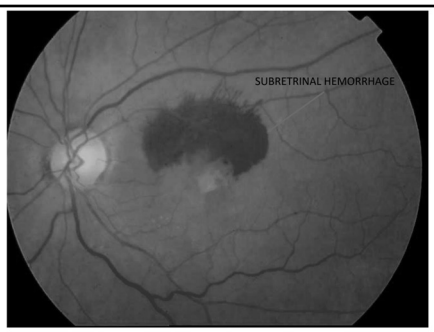

WET ARMD WITH CHOROIDAL NEOVSASCULARIZATION

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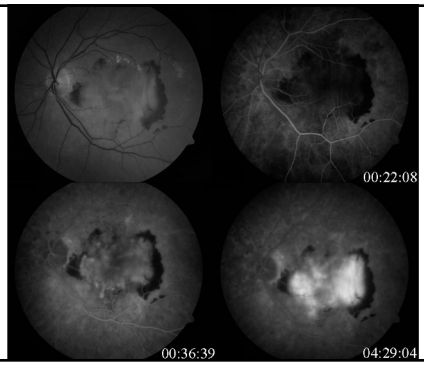

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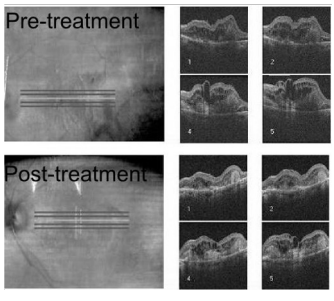

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Management

- **Non-neovascular AMD:**
  - Eliminate modifiable risk factors
  - AREDS vs AREDS2:
    - Vitamin C
    - Vitamin E
    - Beta-carotene vs Zeaxanthin + Lutein
    - Copper Oxide
    - Zinc Oxide
  - Amsler Grid
- **Neovascular AMD:**
  - Laser photocoagulation (rare)
  - Photodynamic therapy
  - Anti-VEGF injections
    - Lucentis (Ranibizumab)
    - Eylea (Aflibercept)
    - Avastin (Bevacizumab)
    - Beovu (Brolucizumab)
  - Combination therapies

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Thank you!

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