Descriptive Interpretation of Optical Coherence Tomography
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Descriptive: words that tell or depict

Interpret: To set forth the meaning of; explain
To understand in a particular way

Interpretation: An explanation or analysis of a finding

Excellent references to help you learn:

Guide to Optical Coherence Tomography Interpretation,

Descartian Analysis:
Qualitative and quantitative analysis* + deduction and synthesis = Diagnosis and treatment
*(the physician’s role)

What is the imager’s role?
Critical to the Analysis Process
Provide the best quality images
Facilitate good patient compliance to ease the process and assure repeatability
Understand (interpret) what is being shown in order to make adjustments to improve the quality of the information

Two Types of Analysis

Qualitative analysis
morphology and anomalous structures
reflectivity: hyper, hypo and shadow areas
Quantitative analysis
thickness
volume
area

MORPHOLOGY
Morphological changes
overall retinal structure changes
changes in retinal outline
intraretinal structural changes
morphological changes in the posterior layers

Anomalous structures by region (location)
preretinal
epiretinal
intraretinal
subretinal

**REFLECTIVITY**

*Heightened (hyper)*
- superficial – ERM, hemorrhage, cotton-wool spots
- intraretinal – hemorrhage, hard exudates
- deep – drusen, SRNV, nevi, RPE hyperplasia

*Reduced (hypo)*
- intraretinal – fluid, cysts
- deep – RPE detachments

*Shadow areas* – “screened”
- anterior – asteroid bodies, vitreous hemorrhage
- superficial – normal retinal vessels, CWS, dense hemorrhage
- deep – exudates, pigmented bodies, RPE thickening,
- intraretinal scarring

**Quantitative analysis**
- *Thickness*
- *Volumetry*
- *Surface mapping*

What is “Descriptive Interpretation” of a retinal angiogram?
It is using common terms to describe the action of dye as it circulates through the posterior pole.

There is a “normal pattern” for ocular circulation:

Deviation from the norm = abnormality = pathology

**What is “Descriptive Interpretation” of an OCT?**
It is using common terms to describe the morphology, reflectivity, thickness, volume and area of tissue being scanned with OCT

There are “normals” for ocular structures:

Deviation from the norm = abnormality = pathology

**Being able to discern differences in reflectivity, morphology and qualitative measures either from “normals” or from previous scans is the essence of OCT interpretation**

**Morphological Changes in Structure**

Myopia (concavity)

Detachments (convexity)

Vitreo-retinal traction

Disappearance of the foveal depression
Surface distortions (folds)
Separation of tissue (holes)
Structural changes

**Morphological changes – Abnormal Structures**

Vitreous strands
Preretinal neovascular membranes
Epiretinal membranes
Exudates
Drusen
Choroidal neovascular membranes

**Reflectivity of Normal Retinal Tissues**

High reflectivity
  nerve fibers
  RPE
Medium
  plexiform layers
  nuclear layers
Low
  photoreceptors

**High Reflectivity in Abnormal Findings**

Superficial
  Epiretinal
    membranes, superficial hemorrhages, cotton wool spots
Intraretinal
  thin intraretinal hemorrhages, hard exudates, fibrosis and disciform scars
Deep
  Drusen causing RPE thickening
  Retinal atrophy
  Subretinal neovascularization
  Laser scars and choroidal scars
  Densely pigmented choroidal nevi (heightened reflectivity in the communicating RPE)

**Low Reflectivity in Abnormal Findings  (often associated with fluid)**

Atrophic retina
Tightly packed photoreceptors
Optically “empty” spaces
Fluids in spaces (cysts) or impending holes in the subretinal space
RPE detachments

**Shadow Areas – “Screen effect”**

- Dense, highly reflective structures produce “shadow cones” underneath (retinal vessels)
- Hemorrhages
- Dense cotton wool spots
- Hard exudates in the deep layers
- RPE thickening
- Choroidal nevi

**RETINAL ANATOMY FOR DESCRIPTIVE INTERPRETATION OF OCT**

Images from “Guide to OCT Interpretation” by Rosario Brancato and Bruno Lumbroso