Pathogenesis and Classifications of ROP

Alireza Ramezani MD
Imam Hossein & Labbafinejad Hospital
Shahid Beheshti University of Medical Sciences
Stages of ROP
Table 8-1 Descriptive Terminology for Acute Retinopathy of Prematurity

**Location**

Zone I: posterior retina within a 60° circle centered on the optic nerve  
Zone II: from the posterior circle (zone I) to the nasal ora serrata anteriorly  
Zone III: remaining temporal peripheral retina

**Extent:** number of clock-hours involved

**Severity**

Stage 0: immature retinal vasculature without pathologic changes  
Stage 1: presence of a demarcation line between vascularized and nonvascularized retina (Fig 8-1)  
Stage 2: presence of a demarcation line that has height, width, and volume (ridge); small, isolated tufts of neovascular tissue lying on the surface of the retina, commonly called “popcorn,” may be present (Fig 8-2)  
Stage 3: a ridge with extraretinal fibrovascular proliferation that may be mild, moderate, or severe, as judged by the amount of proliferative tissue present (Fig 8-3)  
Stage 4: partial retinal detachment  
   A. extrafoveal  
   B. retinal detachment including fovea (Fig 8-4)  
Stage 5: total retinal detachment with funnel configuration; combinations are listed in order of frequency: top row is the most common and bottom row the least common configuration (Fig 8-5)  
<table>
<thead>
<tr>
<th>Anterior</th>
<th>Posterior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open</td>
<td>Open</td>
</tr>
<tr>
<td>Narrow</td>
<td>Narrow</td>
</tr>
<tr>
<td>Open</td>
<td>Narrow</td>
</tr>
<tr>
<td>Narrow</td>
<td>Open</td>
</tr>
</tbody>
</table>

**Plus disease:** vascular dilatation (venous) and tortuosity (arteriolar) of posterior retinal vessels in at least 2 quadrants of the eye; iris vascular dilatation and vitreous haze may be present (Fig 8-6)
stage 1
stage 2
From: The International Classification of Retinopathy of Prematurity Revisited

Stage 3
stages 4A and B
stage 5
From: The International Classification of Retinopathy of Prematurity Revisited


plus disease
pre-plus disease
Table 8-2  Classification of Acute Retinopathy of Prematurity (ROP)

**Aggressive posterior ROP (rush disease)**  
Vascularization ends in zone I or very posterior zone II and is accompanied by plus disease; may progress rapidly

**Threshold disease**  
5 contiguous clock-hours of extraretinal neovascularization  
or  
8 cumulative clock-hours of extraretinal neovascularization in association with plus disease and location of the retinal vessels within zone I or II

**Prethreshold disease**  
All zone I and zone II changes, except zone II stage 1, and zone II stage 2 without plus disease, that do not meet threshold treatment criteria, and subdivided into type 1 and type 2 disease:  

*Type 1*  
zone I, any stage ROP with plus disease, or  
zone I, stage 3 ROP without plus disease, or  
zone II, stage 2 or 3 ROP with plus disease

*Type 2*  
zone I, stage 1 or 2 ROP without plus disease, or  
zone II, stage 3 ROP without plus disease
Threshold disease

8+ cumulative clock-hour sectors

5+ contiguous clock-hour sectors
aggressive posterior retinopathy of prematurity (AP-ROP)
RETINOPATHY OF PREMATUREITY

**STAGE ONE**
- Lens
- Vascular retina
- Avascular retina
- Demarcation line

**STAGE TWO**
- Demarcation line widens and thickens forming a ridge

**STAGE THREE**
- Subtotal retinal detachment
- Extraretinal fibrovascular proliferation

**STAGE FOUR**
- Fibrous material attaches to zonules and to lens

**STAGE FIVE RETINOPATHY**
- "Retrolental Fibroplasia"
- Totally detached retina
- Fluid in eye can not drain: glaucoma
- White mass presses on lens
- Edema of cornea
- Pale fetal iris
- Tearing

© 2007 MediVisuals, Inc.
regressed retinopathy
From: The International Classification of Retinopathy of Prematurity Revisited


regressed retinopathy
5 stages of ROP