

Diabetes and Hypertension The Eye in Systemic Disease ...

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Nov 4, 2011, Blueroom Cinebar

Diabetic Retinopathy

What are we looking for? (Clinical Features of Diabetic Retinopathy)

- ⦿ New blood vessels - abnormal vessels in the wrong place
- ⦿ Macular oedema
- ⦿ Other signs of diabetic retinal disease

Classification

- ⌘ Proliferative Diabetic Retinopathy (PDR)
 - ⌘ Presence of *high risk characteristics*
- ⌘ Non-proliferative Diabetic Retinopathy (NPDR)
 - ⌘ Severe NPDR
 - ⌘ Moderate NPDR
 - ⌘ Mild NPDR
- ⌘ No Diabetic Retinopathy

Why classify?

- ⌘ risk of progression can be estimated from stage
- ⌘ severe NPDR - 50% progression to PDR within 12 months, 15% (high-risk PDR)
- ⌘ mild NPDR - 16% risk of progression to PDR in 4 years

PDR

- ⌘ Proliferative DR has either
 - ⌘ Neovascularization
 - ⌘ Vitreous or Pre-retinal haemorrhage
- ⌘ High-risk characteristics
 - ⌘ New vessels >1DA within 1DD of disk
 - ⌘ VH or pre-retinal haemorrhage associated with
 - ⌘ NVD <1DA
 - ⌘ NVE > 1/2 DA

NPDR

- ⊞ 1. Mild NPDR - micro-aneurysms only
- ⊞ 2. Moderate NPDR - more than "1," less than "3"
- ⊞ 3. Severe NPDR: no NV, but any of
 - ⊞ extensive intra-retinal haemorrhages in all 4 quadrants
 - ⊞ venous beading in 2 or more quadrants
 - ⊞ IRMA in one or more quadrants

Micro-aneurysms

- ⊞ usually small red dots <125_ (ie smaller than diameter of veins crossing the disk)
 - ⊞ typically round, but may appear fusiform, or sausage shaped
 - ⊞ have sharp margins and even density
- ⊞ a red spot ≥125_ is a micro-aneurysm if
 - ⊞ it is round with smooth margins
 - ⊞ it has a central light reflex
- ⊞ otherwise, it is assessed as a retinal haemorrhage. Micro-aneurysms are typically red, but may appear pink or dull white

IRMA Intra-Retinal Microvascular Anomalies

- ⊞ precursor lesions to PDR
- ⊞ **intra-retinal** new vessels ie don't break through ILM
- ⊞ may be subtle and need to be looked for specifically and carefully
- ⊞ can be hard to distinguish from NV
 - ⊞ more delicate
 - ⊞ more jagged
 - ⊞ less likely to cross themselves or other retinal vessels
 - ⊞ more likely to occur in open areas between vessels

Hypertension

Hypertension

- hypertension is a major cause of ischaemic heart disease and stroke
- patients with hypertensive retinopathy often present after the loss of vision
- hypertensive changes noted incidentally on routine examination may allow the diagnosis to be made earlier

Hypertensive changes in the retina

- vascular tortuosity
- narrowing of arterioles and broadening of the light reflex
- disk hyperaemia and blurring of disk margins
- disk oedema
- spot and NFL hemorrhages
- hard exudates and cotton-wool spots

Grading hypertensive retinopathy (i)

- » Stage 1
 - » vascular tortuosity
 - » brighter reflexes on arterioles
- » Stage II
 - » **stage 1 + circumscribed areas of narrowed calibre (AV nipping)**
 - » distension and tortuosity of paramacular venules

Grading hypertensive retinopathy (ii)

- » Stage III
 - » **stage II + CWS & retinal hemorrhages**
 - » HE & macular star
 - » segmental constrictions ("rosary-like")
- » Stage IV
 - » **stage III + disk oedema**
 - » retinal oedema, exudative RD

Why grade it?

- » correlates with mortality
- » 3yr survival of grade IV is 6%

Take-home message ...



- » systemic diseases present with eye findings
- » the eye findings have implications for the general health *and* visual potential of the patient
- » communication is what changes your involvement with the patient from an admiration of the disease to a change in their quality of life
 - » explaining to the patient the significance of what you've found
 - » informing the patient's GP of important findings
 - » referring on when appropriate