I. Congenital and/or developmental

A. Trisomy 21

Hypertelorism (widely spaced eyes)

Keratoconus (cone shaped cornea)

Focal hypoplasia of iris

Cataracts frequently later in life
B. Intrauterine infections

A. Rubella

Cataracts (virus can survive for years in the lens)

Congenital glaucoma

Abnormalities of the iris (won’t dilate)

Pigmentary abnormalities of retina

B. Syphilis

Interstitial keratitis (inflammation of the cornea)

II. Nutritional

A. Vitamin A

Night blindness

Keratomalacia

Corneal necrosis and perforation

III. Conjunctiva

A. Age related sagging and loss of elastic tissue

Pinguecula and pterygium
B. Infectious

*Chlamydia trachomatis*

Conjunctival and corneal epithelium
Multiple stages leading to marked inflammation and scarring

Corneal opacification

C. Tumors and tumor-like conditions

Nevus

Melanoma

Squamous cell carcinoma

Metastatic breast

IV. Cornea

Inflammation and ulceration are the biggies

A. Stromal keratitis

May lead to ulceration

Contact lenses

AIDS
Herpes simplex

B. Hereditary abnormalities of cornea

V. Uvea (choroid, ciliary body and iris)

Inflammation is the biggie here

A. Granulomatous uveitis

Infectious

CMV

Zoster

TB

Syphilis

B. Sarcoid

C. Sympathetic ophthalmia

Penetrating injury to one eye leading to uveal prolapse

Autosensitization to uveal melanocytes

Other eye is destroyed.

Prompt removal of injured eye needed to spare the other one
Granulomatous inflammation

D. Tumors of choroid

Nevi

Melanomas are most common

Several histological patterns

Spindle

Epithelioid

Clinically worst

Combined

Liver mets!!! “Ocular hepatic shunt”
VI. Lens

A. Cataracts

Overall most common cause of blindness

Opacification of lens (many causes)

Congenital

DM

UV light

Glaucoma

Inflammatory conditions

Atopic disease

Steroids

Age related, so called senile cataract

Trauma related

May calcify
Color blindness

- 8% of males, .4% of females
- X-linked
- Red/green
- Receptor most times, although can be anywhere
A. Developmental

Retrolental fibroplasis, retinopathy of prematurity

Premies that get high levels of oxygen after birth

Seeing it more with kids of very low birth weight.

Developmental vasculature is damaged,

Granulation tissue

Fibrosis

B. DM

1. 60% have it within 15 years of onset of DM

2. Non-proliferative retinopathy

   Capillary membrane thickening

   Pericyte degeneration

   Microaneurysms

   Microvascular obstruction

   *Cotton wool spots*

   Arteriolar hylinization

3. Proliferative retinopathy

   Neovascularization and fibroplasia

   Endothelial growth factor (VEGF)

   Retinitis prliferans

   Retinal detachment (traction detachment)
C. Non-diabetic vascular related

Hypertension

Atherosclerosis

Vasculitis

D. Retinitis pigmentosa (a number of conditions fit the picture)

Loss of visual receptor cells, coupled with

Proliferation of retinal pigment epithlium

Hereditary (several patterns, auto dom, sex linked rec, even mitochondrial)

Progressive (sx may begin as early as teens or as late as 60's)

Severity varies

Bilateral

E. Macular degeneration

Macula is a region of the posterior retina rich in photo receptors.

Age related (senile) degeneration

Most common among elderly

UV, genetics, medications

Two grossly identifiable forms or stages

1. Atrophic (dry)

   Receptor atrophy and vascular proliferation

2. Exudative (wet)

   Vascular leakage and hemorrhage
Organization of leakage
Growth of pigment cells

F. Retinal detachement

Separation of retina from choroid with leakage of fluid behind.

Contraction of vitrious collagen
Space occupying lesions
Traction separation (anchor points)

G. Tumors

1. Retinoblastoma

Children  1 in 17,000 live births
Retinoblastoma gene (tumor suppressor gene)
Hereditary (bilateral)
Somatic (unilateral)
Flexner-Wintersteiner rosettes
Spread through optic nerve and subarachnoid space

VIII. Optic nerve

A. Papilledema

B. Optic atrophy
C. Tumors

Gliomas

Meningiomas

IX. Glaucoma

Several disease grouped under this classification

A. Angle-closure glaucoma  1/3s of cases

Anatomic predisposition

Small eyes

Hyperopic

Aqueous humor trapped, leading to increased anterior chamber pr.

B. Open angle glaucoma  2/3s of cases

Angel appears adequate, but doesn’t conduct fluid

C. Congenital or juvenile glaucoma (both dom and rec)

rubella

Robbins Pathologic Basis of Disease, 6th Ed.
D. Increased pressure causes optic nerve damage (glaucomatous cup)

X. Phthisis bulbi