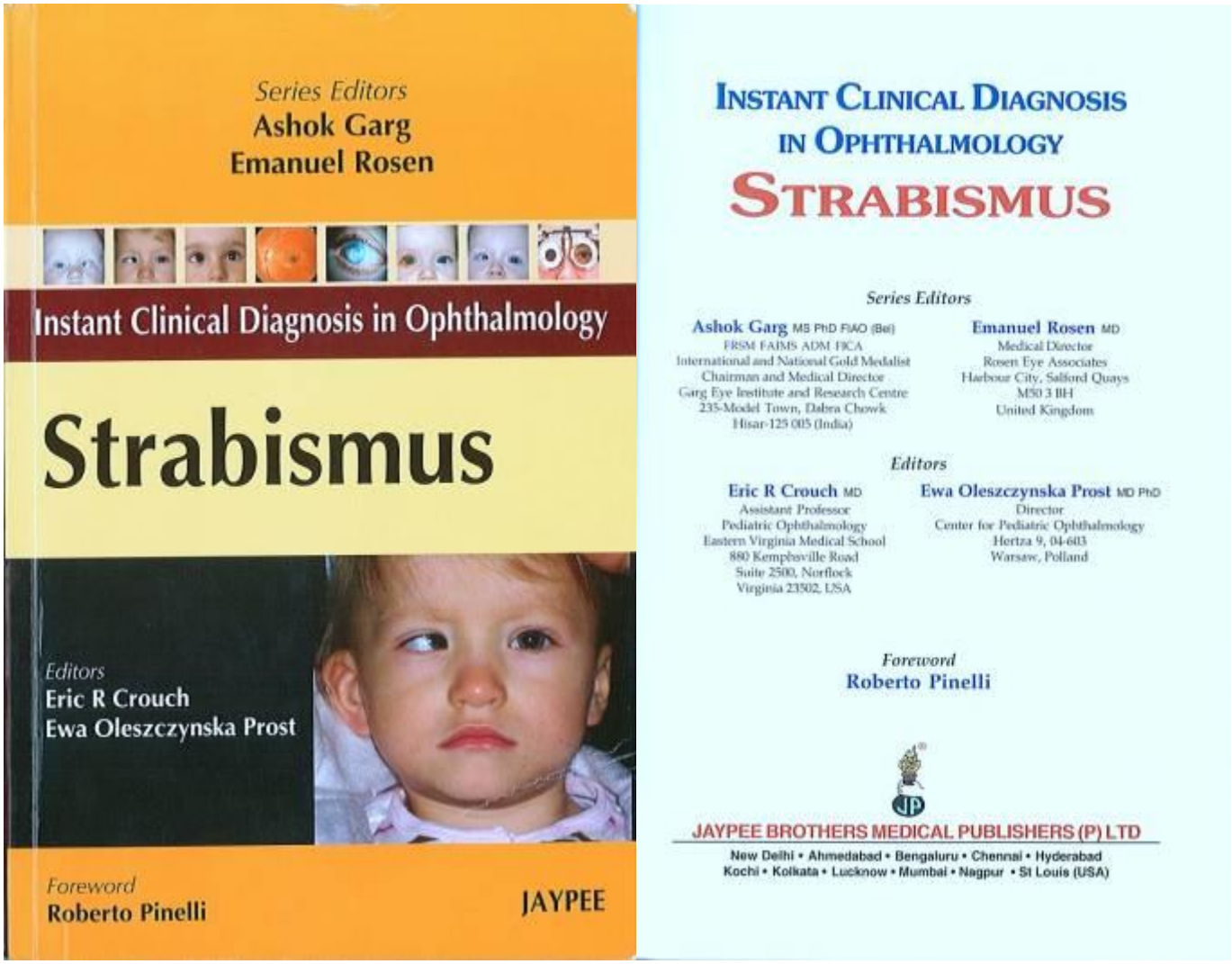

Amblyopia

Amblyopia is a decrease of visual acuity without no causes can be detected by the physical examination of the eye. Poor vision caused by abnormal visual development secondary to abnormal visual stimulation. We use the term ”functional amblyopia “or “amblyopia ex anopsia” to refer to those conditions in which the visual acuity deficit is potentially reversible by occlusion therapy. (Fig 1,3,4).

Fig.1 Young girl 5-year–old treating of amblyopia.

1.Strabismic amblyopia.
2.Anisometropic amblyopia.
3.Ametropic amblyopia
4.Deprivation amblyopia
5.Organic amblyopia
6.Amblyopia from nystagmus

STRABISMIC AMBLYOPIA

Clinical findings:

- one eye strabismus
- amblyopia is unilateral
- constant suppression in deviated eye
- loss of binocularity
- occurs in 50% of patients with congenital strabismus

Investigation:

- Hirschberg test
- positive cover-uncover test
- cycloplegic refraction
- loos of visual acuity in one eye
- eccentric fixation
- poorer contrast sensivity
- neutral density filter test
- stereopsis tests are negative

Differential diagnosis:

- anisometropic amblyopia
- ametropic amblyopia
- deprivation amblyopia
- organic amblyopia

Treatment:

- parent's education and compliance is very important
- wearing apppropriate glasses
- occlusion the sound eye(Fig.1)
- penalization method (fig.2)
- pleoptics therapy
- Cam vision stimulator
- surgical therapy after amblyopia is reversed

Prognosis:

- if amblyopia is detected early ,the less dense it will be and the shorter period of occlusion will be needed to treat it

Fig.2. Strabismic amblyopia in the left eye. Penalization method of treatment by atropine to the sound eye.

Anisometropic amblyopia

Clinical findings:

- differences greater than +1,5Dsph of hypermetropia in both eyes
- sometimes in myopia -3,0Dsph differences between eyes
- differences about 2,0Dsph of astigmatism in each eyes
- amblyopia is unilateral
- occurrence of aniseikonia
- associated with strabismus in about 30%

Investigation:

- cycloplegic refraction
- visual acuity
- poorer contrast sensivity
- crowding phenomen
- fixation pattern
- complete eye examination
- changes in binocular function and stereopsis
- the electrophysiological tests

Differential diagnosis:

- strabismic amblyopia
- ametropic amblyopia
- deprivation amblyopia
- organic amblyopia

Treatment:

- wear a contact lenses is the best solution of anisometropia
- sometimes glasses and occlusion shold be prescribed
- agressive occlusion therapy(Fig.3)
- penalization metod in cases with small amblyopia
- pleoptics therapy
- Cam vision stimulator
- pharmacological modalities (levodopa-carbidopa)

Fig.3.Application color contact lens to patch the sound right eye.

Prognosis:

- vision screening program help of early detection
- agressive occlusion therapy in early ages is the most succesfull treatment
- child wearing the contact lenses can developed partial binocularity
- delay in treatment beyond the critical period results in irreversibility of amblyopia

Ametropic amblyopia

This type of amblyopia is usually bilateral and is caused by an uncorrected refractive error.

Clinical findings:

- high refractive error in both eyes without appropriate correction
- the patients with greater than 6 Dsph of hyperopia
- the patients with greater than 12 Dsph of myopia
- the patients with greater than 3 Dcyl of astigmatism

Investigation:

- cycloplegic refraction
- complete eye examination
- visual acuity
- poorer contrast sensivity
- crowding phenomen
- fixation pattern is usually central
- the electrophysiological tests

Differential diagnosis:

- anisomertopic amblyopia
- deprivation amblyopia
- organic amblyopia
- strabismic amblyopia

Treatment:

- appropriate glasses or contact lenses correction for wearing all day time
- occlusion the sound eye(Fig.4)
- pleoptics therapy
- Cam vision stimulator
- pharmacological modalities (levodopa-carbidopa)

Fig.4.One choose of application of a patch to the sound eye .

Prognosis:

- ametropic amblyopia is ussually correctable by the wearing of appropriate glasses or contact lenses
- vision and refraction screening program help of early detection
- delay in treatment beyond the critical period results in irreversibility of amblyopia

DEPRIVATION AMBLYOPIA

The main factor of deprivation amblyopia is the lack of stimulus of the retina.

Clinical findings:

- unilateral or bilateral amblyopia
- this occurs in cases such as:
  *congenital cataract
  *corneal opacitates (Fig.5,6)
  *vitreous hemorrhage
  *complete ptosis

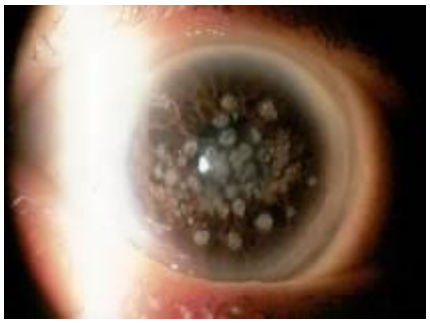

Fig.5 Recurrent corneal erosion.

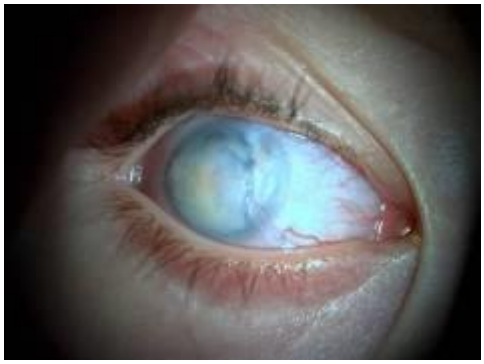

Fig.6 Leucoma cornea

Investigation:

- full ophthalmologic examination
- visual acuity
- the electrophysiological tests
- fixation pattern
- cycloplegic refraction

Differential diagnosis:

- organic amblyopia
- strabismic amblyopia
- anisomertopic amblyopia
- ametropic amblyopia

Treatment:

- diagnosed and treated soon after the onset
- elimination any organic lesion
- full correction anisometropic eye with the contact lenses
- amblyopia treatment

Prognosis:

- if treated soon after the onset and patient have good anatomical condition it may be good
- optimum optical correction usually with contact lenses is very important
- occlusion is used for 80% of the waking day in a very young child can give good result
- visual rehabilitation is also important

Organic amblyopia

This is a form of amblyopia that may be explained by existing structural lesions ,but that improves partially with treatment.

Clinical findings:

- pathologic lesion affecting the fovea and surrounding retinal area such as:

  *toxoplasmosis
  *chorioretinitis
  *retinoblastoma
  *traumatic retinal lesion(Fig.7)

- abnormality of the visual pathway

Fig.7 The eye with traumatic retinal lesion

Investigation:

- cycloplegic refraction
- visual acuity
- full ophthalmologic examination
- fixation pattern
- the electrophysiological tests

Differential diagnosis:

- deprivation amblyopia
- strabismic amblyopia
- anisomertopic amblyopia
- ametropic amblyopia

Treatment:

- try occlusion of the better eye and see how the child responds

Prognosis:

- prognosis must be very guarded
- early detection and treatment are essential for a successful outcome

Amblyopia from nystagmus

Nystagmus is common with different grades of amblyopia. However we do not know if the reason for poor vision is due to nystagmus ,or if the amblyopia leads to the nystagmus.