SUMMARY

Amblyopia refers to a decrease of vision, either unilaterally or bilaterally, for which no cause can be found by physical examination of the eye. The term functional amblyopia is often used to describe amblyopia, which is potentially reversible by occlusion therapy. Organic amblyopia refers to irreversible amblyopia.

Amblyopia is the most common cause of monocular visual impairment in children and young adults. Most data show that about 2% of the general population has amblyopia.

Many causes of amblyopia exist; the most important causes are Anisometropia, Strabismus, Strabismic-anisometropia and Visual deprivation. Children with higher levels of anisometropia have both higher prevalence and more profound amblyopia as a result. The amblyopiogenic magnitudes of anisometropia can be defined as approximately 2D for children with hyperopia and approximately 3 - 4 D for children with myopia. In strabismic patients; the incidence of amblyopia is greater in esotropic cases than in exotropic cases. Also, amblyopia may result from disuse or under stimulation of the retina (e.g. cataract, corneal opacities & ptosis).

Although many types of amblyopia exist, it is believed that its basic mechanism is the same. In general, amblyopia is believed to result from inadequate foveal stimulation. Amblyopia occurs during the critical periods of visual development. The period of the highest risk of deprivation amblyopia; is from a few months to 7 or 8 years. Defects in visual functions in amblyopic eyes may have a neuroretinal explanation.

Diagnosis of amblyopia usually requires a 2-line difference of visual acuity between the eyes. In most cases, the more hyperopic eye or the eye with more astigmatism will be the amblyopic eye. The clinician must first rule out an organic cause and treat any obstacle to vision. Strabismic and anisometropic amblyopic eyes have marked losses of threshold contrast sensitivity. Amblyopia usually is associated with changes in binocular function

or stereopsis. Testing preverbal children could be assessed using fixation preference (especially when strabismus is present), induced-tropia test &Teller acuity test.

Most vision loss from amblyopia is preventable or reversible with the right kind of intervention. The recovery of vision depends on how mature the visual connections are, the length of deprivation, and at what age the therapy is begun. The management should respect and follow certain basic points. Organic causes must be first managed (eg, cataract, corneal opacities). Surgical correction of congenital ptosis may aid in the treatment of amblyopia. Capillary hemangiomas of the eyelid and orbit are treated when amblyopia secondary to anisometropic astigmatism or pupillary occlusion is present. Amblyopia in children with unilateral congenital cataracts can arise from visual deprivation, strabismus, or anisometropia. Amblyopia in unilateral cataracts and PCO are major complications of congenital cataract surgery.

The amblyopic eye must have the most accurate optical correction possible. This should occur prior to any occlusion therapy because vision may improve with spectacles alone. Patients with bilateral refractive amblyopia do well with spectacle correction alone. Children who do not tolerate the glasses are usually due to aniseikonia, diplopia or the cosmetic appearance. Despite effectiveness of surgical reduction of anisometropia, yet there is controversy about its role in amblyopia treatment; it is mainly performed when conventional treatment by glasses or contact lenses has failed. The surgical techniques used, progressing from least to most invasive, are photorefractive keratectomy; implantation of a phakic IOL and refractive lens exchange. The following is a general strategy. Children with refractive errors (6 to −10 D) are treated by PRK (LASIK is less advantageous). Children with refractive errors beyond this range, who have anterior chamber depths 3.2 mm or more, receive a phakic IOL. The remainder usually require RLE. The major areas of concern are unstable refraction due to ongoing growth of the eye, and long-term implications.

The next step is forcing the use of the amblyopic eye by occlusion therapy. Patching may be full-time or part-time; using adhesive patches, opaque

contact lenses, occluders mounted on spectacles, and adhesive tape on glasses. The success of occlusion therapy is defined as a visual acuity of 6/12 or better at the end of treatment. The rate of success was 77.2% in strabismic amblyopia, 67.2% in anisometropic-strabismic amblyopia, and 66.0% in anisometropic amblyopia. The risk factors for success were age and degree of visual loss at onset of patching therapy. Patients are at greater risk of recurrence when patching is stopped abruptly rather than when it is reduced to 2 hours a day prior to cessation of patching.

Penalization therapy with atropine would have been offered in 2004 as an alternative to patching in 1998, and in five of the seven scenarios the combination of simultaneous atropine and patching would have been prescribed. In the past, penalization therapy was reserved for children who would not wear a patch or in whom compliance was an issue. Atropine penalization in patients with moderate amblyopia is as effective as patching. Some type of non-specific near work would now be prescribed as an adjunct treatment.

The endpoint of therapy is spontaneous alternation of fixation or equal visual acuity in both eyes. When visual acuity is stable, patching may be decreased slowly, depending on the child's tendency for the amblyopia to recur. As amblyopia recurs in a large number of patients; maintenance therapy or tapering of therapy should be strongly considered.

Treatment of strabismus generally occurs last. The endpoint of strabismic amblyopia is freely alternating fixation with equal vision. Generally, surgery is performed after this endpoint has been reached.

The main complication of not treating amblyopia is long-term irreversible vision loss. Most cases of amblyopia are reversible if detected and treated early. Patients with high anisometropia and patients with organic pathology have the worse prognosis. Patients with strabismic amblyopia have the best outcome. Younger patients seem to do better. The better the initial visual acuity in the amblyopic eye, the better the prognosis is. Also, there is psychological impact of amblyopia on children, where 41% of amblyopic children sometimes became depressed, 21% avoided outside activities and 12% were afraid that they would lose their eye sight.