DEFINITIONS

1. **Amblyopia** refers to dimness or partial loss of vision in one or both eyes in the absence of structural abnormality of the eye or eyes.

2. **Amaurosis** refers to total loss of vision in one or both eyes in the absence of ophthalmoscopic or other marked objective signs.

3. **Amblyopia ex anopsia** is the description used if the amblyopia arises in early childhood when the retina receives an imperfect image for some optical reason and the image is entirely suppressed by the brain.

4. **Scotomas** are isolated areas of relative or complete visual loss within a better total field of vision for the particular eye. According to their situation, scotomas are divided into :-

    4.1. **central**, when the macular area or its projections are involved.

    4.2. **peripheral**, when the involvement is away from the macular area.

TYPES AND AETIOLOGY

5.

    5.1. **Congenital**

    Congenital amblyopia is present from birth. It is due to some inherent congenital defect with no demonstrable physical signs and is commonly associated with nystagmus (involuntary rhythmical movements of the eyes).

    5.2. **Hysterical**

    Hysterical amblyopia exhibits many variations. It may be unilateral but is more commonly bilateral. It may take the form of defective day vision or defective night vision. There is usually concentric contraction of the visual fields with or without colour defects. The patients, however, get about perfectly well unaided, an impossibility in the case of genuinely contracted fields. Sometimes there are irritative symptoms such as blinking or lachrymation. The pupillary reactions are normal affording a valuable objective diagnostic sign.

5.3. **Colour**

Colour amblyopia (colour blindness) may be **Congenital** or **Acquired**: -

5.3.1. **Congenital**: This occurs in two forms, **Total** and **Partial**.

5.3.1.1. **Total** colour blindness is very rare and is generally associated with nystagmus and a central scotoma. All images appear grey of different brightness. It is a genetically determined condition probably caused by a central defect.

5.3.1.2. The **Partial** form is seldom discovered unless special tests are made since the subjects compensate for their defect by attention to shade and detail, combined with experience. It is a common defect. Gross cases occur among 3-4% of males, but are rare in females (0.4%). Slighter cases are more common in males. It is an inherited condition, being transmitted through the female who is usually unaffected. In most cases reds and greens are confused so that the defect is a source of danger in certain occupations.

5.3.2. **Acquired** colour amblyopia is common in diseases of the retina and the optic nerve and, depending on the severity of the underlying disease, may be partial or complete. The cause is that of the underlying condition.

5.4. **Toxic**

Toxic amblyopia includes cases where amblyopia results from damage to the optic nerve fibres or the ganglion cells of the retina by exogenous poisons, the most common of which are tobacco, ethyl alcohol and methyl alcohol. Less common causes are lead, arsenic, quinine, iodoform, thallium, ergot, Felix mas, carbon disulphide, stramonium and Cannabis indica.

5.4.1. Tobacco amblyopia results from the excessive use of tobacco, either by smoking or chewing and also, occasionally, from the absorption of dust in tobacco factories. Smokers of strong tobacco mixtures or cigars suffer most frequently. The patients, usually 35 to 50 years of age, may have smoked excessively for years with impunity. Various substances have been regarded as the toxic agents, but a potent factor may be poisoning with the cyanide in tobacco smoke associated with deficiency of vitamin B_{12}. The patient complains of increasing fogginess of vision, usually least marked in the evening and in a dull light. Central vision is greatly diminished and near work becomes difficult. The diagnosis is made from the characteristic scotomata in the visual field.

5.4.2. Although alcohol is usually an adjuvant in tobacco amblyopia, it may cause a similar amblyopia in the absence of the latter. Such patients frequently suffer from alcoholic peripheral neuropathy and the amblyopia is contributed to frequently by avitaminosis owing to chronic lack of nourishment. The disease is characterised by a central scotoma.

5.4.3. Methyl alcohol amblyopia occurs sporadically from drinking methylated spirits. In the acute form nausea, headache and giddiness are followed by coma. If the patient survives vision very rapidly fails passing through the stages of contracted visual fields and absolute central scotoma to blindness. Restoration is rarely complete and optic atrophy usually ensues.

5.4.4. Quinine amblyopia differs strikingly from tobacco amblyopia in that total blindness may follow even small doses in susceptible persons. The pupils are dilated and immobile. Deafness and tinnitus are present. Occasionally blindness is permanent and optic atrophy ensues. In less marked cases, central vision may be restored but the fields of vision are permanently contracted.

5.4.5. Amblyopia resulting from ergot, Felix mas, iodoform, stramonium, carbon disulphide and Cannabis indica is similar to tobacco amblyopia, while that resulting from lead, arsenic and thallium is similar to that resulting from methyl alcohol in that optic atrophy is likely to ensue.

5.4.6. Oral contraceptives are usually a combination of progestogens and oestrogens. They may play a part in the production of occlusive vascular disease, particularly in women who suffer from vascular hypertension, migraine or other vascular syndromes.

5.5. **Nutritional**

Nutritional amblyopia is caused by a deficiency of vitamins in the diet especially thiamine. It is characterised by a central scotoma and optic atrophy, usually partial but occasionally complete, is likely to develop. Such amblyopia is seen in extreme degrees of pellagra, and was relatively common among Far Eastern prisoners of war. An effective diet, if resumed before atrophy develops, is curative but after atrophy has set in the defect is permanent but non-progressive.

6. Squint, errors of refraction, cataract and glaucoma all lead to blurring of vision but this is not, by definition, amblyopia since there is in all these conditions a structural abnormality of the eye(s).

CONCLUSION

7. **Amblyopia** is a condition of dimming of vision which may be the result of congenital or acquired abnormalities of the visual pathway, without obvious structural abnormalities of the eyes. **Amaurosis** is a more severe form comprising total loss of vision. The various types and causes are discussed above.

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