

Ocular Muscle Imbalance

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THE incidence of this condition is much higher than ordinarily supposed and it varies from a slight defect, causing no subjective symptoms, to the extreme cases where it causes the patient great distress. Statistics now being gathered show the fairly common occurrence of the condition and much valuable knowledge should be accumulated in the next few years. The condition is quite easily detected by the use of the Maddox Rod, an instrument known to most practitioners, which demands no detailed knowledge of the eye musculature. It should be a routine part of all eye examinations, but in the past, many oculists have neglected its use, thus leaving the patient to suffer from severe headaches and quite often diplopia results if the already weakened muscles are overworked.

Patients showing this condition exhibit two symptoms which vary in intensity according to the degree of imbalance. These are headache and diplopia. There are many causes of this condition, each of which will be discussed in turn. Any patient complaining of such symptoms should immediately be given a complete physical and neurological examination.

Primary or true muscular imbalance is due to congenital defects. Quite often this condition will exist without causing any subjective symptoms but several objective signs are present. Firstly, it is found that the acuity of one eye is greatly decreased or, in other words, the patient is actually only using one eye. Secondly, the patient may be using both eyes while the brain is only interpreting one image. The course of this condition is quite often favourable, the patient never having any subjective symptoms. In other cases, the ability of the patient to overcome the imbalance seems to break down and the subjective symptoms of imbalance appear. In these patients, all other causes having been ruled out, the treatment is tenotomy of the muscle involved. Some cases show a 'wry-neck' which has developed as the patient overcame the imbalance and, in a few cases, operations for wry-neck are recorded where the cause was really imbalance. The diagnosis of the exact muscles involved in the imbalance is a matter of some difficulty and is really the work of a specialist. Straightforward affections of the recti muscles are easily diagnosed and tenotomy in these cases is a relatively easy operation but if the obliques are involved the diagnosis and treatment of the condition is quite a difficult matter.

Secondary muscle imbalance is due to a variety of causes, the most common of which is syphilis, followed by myasthenia gravis. Neoplasms, lead poisoning, goitre and focal infections are less common causes.

A. Eye manifestations in *cerebral syphilis* usually occur in the secondary or tertiary stages and they have in some cases cleared up with treatment of the primary disease. In diplopia due to syphilis there are

usually also signs of neuritis and of damage to the field of vision. A characteristic feature here is the inconstancy and variability of the symptoms. In a few cases the only signs of cerebral syphilis may be affection of the visual path and headache. All patients suffering from diplopia and headache should be investigated for syphilis before any treatment is carried out.

B. Some writers claim that *myasthenia gravis* is the commonest cause of imbalance and go so far as to treat all cases with injections of prostigmine methyl sulphate before further investigation. The most characteristic feature here is the rapid fatigue of the muscles. The symptoms are least marked in the morning, i.e. the ptosis is most marked in the evening. After a few minutes the eyes fail to converge and reading may become impossible. Early in the disease the muscles recover rapidly with rest but the condition becomes progressively worse. The symptoms fluctuate from day to day and reflexes are usually normal. On post mortem examination no pathological changes have been demonstrated in the nervous systems of these cases. In these cases, if prostigmine fails to overcome the ptosis, probably the best treatment is to have the patient wear a shield over one eye and try to improve the general constitution. Tenotomy is contra-indicated here owing to the possibility of further muscular changes at a later date.

C. *Neoplasms* may cause imbalance but more frequently causes loss of vision. Paralysis of the ocular muscles is very rare and is usually a distant pressure manifestation of a tumour or haemorrhage. If a tumour is suspected in any case of imbalance or diplopia a complete neurological examination with x-ray and encephalogram should be carried out.

D. Imbalance is rarely caused by *lead poisoning* but should not be forgotten in the investigation of the condition. A blood picture is usually sufficient to rule out lead poisoning as the primary factor in these cases. The common ocular signs in lead poisoning are optic atrophy or neuritis and, more rarely, a retinitis due to the lead directly, or secondary to a lead nephritis.

E. *G.iore* may rarely cause imbalance without other subptoms, but there are very few cases recorded and these are doubtful.

F. Imbalance du to *toxins*, is sometimes seen in cases of severe boils, appendicitis and infective fevers but here the primary condition is usually so obvious that the patient can be assured of recovery when the primary condition clears up.

G. Lastly, there are a few cases, with no definite etiology, which occur in adults. These patients, with no previous symptoms, will suddenly complain of severe headache and diplopia of varying degrees of intensity. The primary treatment here is prismatic correction of the imbalance; the prisms should be of sufficient strength to stimulate the muscles into activity but not strong enough to allow the muscles to slip into inactivity. If these prisms fail to overcome the patient's distress he should be advised to wear an eye shield over one eye when doing close work. If the condi-

tion persists for two years or more, with all other causes ruled out, it is safe to perform a tenotomy.

When a condition of ocular imbalance presents itself the underlying condition should be sought out and, if found, should be treated. In cases of congenital or developmental origin prismatic corrections should be first tried. Operation, if used in carefully selected cases, gives satisfactory results but should not be attempted until all other measures fail. The success of the operation depends entirely on the correct diagnosis of the muscle involved. The operation is either resection or tenotomy and the technique is essentially the same as that used in correcting strabismus.

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“After the long and weary road that ends in qualification, the desire to make up for lost time in earning a competence too often leads to a plunge into practice, and a neglect of a preparatory period which would bring an added reward later.”—*E. Kaye LeFleming*.

“Every doctor is in a hurry always, but he must acquire the art of hurrying without showing it.”—*E. Kaye LeFleming*.

“It is astonishing with how little reading a doctor can practice medicine, but it is not astonishing how badly he may do it.”—*Sir William Osler (Books and Men)*

“The hospital is the only proper college in which to rear a true disciple of Aesculapius.”—*Abernathy*.