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History

Patients with ocular motility disorders present for one or more of the following reasons:

- Manifest strabismus.
- Subjective symptoms.
- Defective ocular movement.
- Nystagmus.
- Abnormal head posture.
- Defective vision.

An accurate and detailed history must be recorded to aid diagnosis, assist in planning management and arrive at a correct prognosis. This first contact with the patient, or the parents if the patient is a child, gives the examiner an opportunity to assess cooperation, to establish a good relationship with the patient and to gain his or her confidence.

General principles

The reason for attendance must first be established. Subsequent questions depend largely on whether the patient is a child or an adult. Greater emphasis is placed on the obstetric history and developmental milestones in children, whereas the medical history can be of paramount importance in adults.

Children

It is important to involve the child in the history taking as much as possible: surprisingly young children are aware of the questions being asked; they can supply helpful information while allowing the examiner to form an impression of their intelligence and capabilities.

Because so many disorders of vision and ocular motility are associated with developmental anomalies, hereditary disorders or diseases of childhood, the patient must be considered as a whole, whatever the reason for presentation, and a full medical, obstetric, family and social history should be recorded.

Medical history

The following information should be obtained:

- the child's general development, including milestones and progress at nursery or school;
- details of any significant or recent illness and its treatment;
- any ongoing conditions, for example eczema, asthma, etc.;
- any trauma, especially to the head or face;
- any allergies.

Obstetric history

Enquiries should be made about:

- The mother's health during pregnancy, including the use of prescription medication, recreational drugs and alcohol.
- Whether the type of delivery was spontaneous vaginal and if forceps were used or caesarean section and if there were complications.
- The child's birth weight and gestational age if known.
- The neonatal history, especially if there were postnatal problems with resuscitation and/or the child was admitted to a special care baby unit.

Family history

Particular reference should be made to a family history of any of the following disorders:

- Strabismus, which is frequently familial. Its presence in other family members makes it more likely that the child has a true rather than an apparent strabismus and should be kept under observation even if the squint is not apparent at the first visit. There may be social problems if more than one child requires treatment. Parents with strabismus or who have children with strabismus may be more reliable witnesses.
- Refractive error.
- Severe visual defects if present in early childhood are frequently hereditary. Parental consanguinity should be noted.
- Several genetic disorders have a high incidence of associated strabismus.

Social history

The examiner should enquire into relevant social background, which may affect the future management of the child. It is, for example, necessary to know if the child is in residential care rather than living with parents.

Adults

Adults are more likely to present with symptoms, particularly diplopia or concern over their appearance. In many cases the symptoms are due

to acquired eye movement defects, comprising neurogenic and myogenic palsies, mechanical restriction of ocular movement. It is essential to find and treat the underlying cause if this is unknown. A detailed medical history should be taken in all cases.

Medical history

The examiner should question the patient on:

- Past and current illnesses.
- Current medication. The drug history is a good guide to the state of the patient's health and may provide a clue to the cause of an acquired motility disorder. Patients may say that they are in good health but on questioning may admit to being on regular treatment with, for example, insulin or digitalis. Some drugs, notably anticonvulsants, can be the cause of nystagmus.
- Trauma affecting the head or face.
- Other symptoms and signs. Examples are unsteadiness of gait, weight loss or gain, or change in appearance noted by the patient's family.
- Ophthalmic history. This may include glasses history. In particular, high levels of ametropia or anisometropia indicate that the cause of visual loss may be amblyopia and incorporated prisms that diplopia is likely to be long standing. Other aspects of the history include visual problems, a childhood squint or previous episodes of diplopia.
- Hereditary factors.

Social history

The patient's occupation should be noted and he or she should be asked how it has been affected by the complaint; patients who hold a driving licence may require advice about continuing to drive. They should be questioned specifically about alcohol consumption, smoking and recreational drugs as these are relevant to recognised motility disorders. Alcoholism can lead to Wernicke's syndrome, which is a rare condition, and cigarette smoking can result in lung cancer which is associated with the paraneoplastic syndromes.

Manifest strabismus

History taking is discussed below in general terms. Points relating to specific types of strabismus are referred to in subsequent chapters.

Children

The majority of patients attending with manifest strabismus are children. Most will have concomitant deviations but children with congenital and acquired defects of ocular movement can present in this way. In all cases it is necessary to ascertain:

- The direction of the strabismus.
- The age at which it was first noticed.
- Who noticed it.
- Whether the onset was sudden or gradual. A history of sudden onset is usually reliable, whereas a gradual onset probably implies a longer duration than that stated. A sudden onset of esotropia should always suggest the possibility of acquired sixth nerve palsy.
- Whether the squint is constant or intermittent. A constant deviation with a variable angle is often mistaken for an intermittent strabismus.
- When the squint is seen, for example on looking up from a book or on lateral gaze. An apparent increase on lateroversion suggests an incomitant deviation but is also a common feature in pseudoesotropia due to epicanthus.
- Whether there has been an increase or a decrease in the angle of deviation since its onset.
- If there are other features that could be related to the strabismus, such as an abnormal head posture. Older children should be asked about symptoms, particularly whether diplopia is present. This is usually but not always indicative of recent onset. Signs suggesting possible diplopia in younger children are:
 - (1) Increased clumsiness.
 - (2) Reluctance to play.
 - (3) Covering or closing one eye, although this is also a common diagnostic sign in intermittent exotropia.

In general, a history of occasional exotropia should be believed, whereas an occasional esotropia may be due to epicanthus or another cause of pseudostrabismus. If the esotropia is not seen on initial examination, risk factors should be considered. A family history of squint and/or hypermetropia,

or the presence of even a small esophoria, are all reasons for believing the parent's observations and keeping the child under review.

Adults

Adults may present with a manifest strabismus dating from childhood, either because they would like surgery to improve alignment or because the strabismus has become symptom producing: diplopia may occur if a change in the angle of deviation causes the image to fall outside the suppression scotoma. As much information as possible should be elicited about the type and onset of the strabismus and its subsequent course. The patient should also be questioned about:

- Poor ocular alignment and related psychosocial problems where the patient may complain of difficulty with communication either socially or in the workplace. Mojon-Azzi and Mojon (2009) have shown that headhunters judged that persons with strabismus are perceived as less attractive and less intelligent by potential employers and would find gaining employment more difficult. This was more significant in exotropia and females.
- The reason for attendance. A patient who is embarrassed by his or her appearance may complain instead about minor symptoms. It can be helpful if the possibility of strabismus surgery is suggested.
- Recent change in the angle of deviation. Some patients present with consecutive exotropia and should be asked when this was first noticed. Photographs taken over the past few years may help in this respect.
- The treatment already received. Particular attention should be paid to previous strabismus surgery and the patient's records should be obtained if possible.

Defective ocular movement

Children may present because limitation of ocular movement has been noticed by the parents or another observer. Usually the defective movement is marked, congenital in origin and mechanical or innervational rather than neurogenic: examples are Brown's syndrome and Duane's retraction

syndrome, although the restricted movement in the latter condition is often masked by head movement. Occasionally an overaction secondary to limitation of movement is the presenting sign, for example a marked overaction of an inferior oblique muscle. It is rare for adults to present for these reasons.

The examiner should enquire about:

- the nature of the defective movement;
- how and when it was discovered;
- any associated signs, particularly an abnormal head posture.

Nystagmus

Children

The parents of an infant or young child may describe rhythmic, irregular or 'dancing' eye movements, or the nystagmus may have been detected by a paediatrician or the family doctor.

The parents should be asked:

- The age of onset. The nystagmus may have been present at birth but is more often acquired in infancy.
- Whether they think it is constant or intermittent. They may have noticed an increase in some gaze positions.
- If the movement has remained static or has improved or deteriorated.
- Their opinion of the child's vision, comparing it with that of siblings at the same age if possible.
- If there are associated signs, such as strabismus, involuntary head movement or an abnormal head posture.
- The obstetric and medical history, particularly whether the child is receiving anticonvulsant therapy, as an overdose of a drug such as phenytoin may induce nystagmus. Older children may present with acquired nystagmus (described later).

Adults

Adults with infantile nystagmus occasionally present because their visual acuity is inadequate for their work, hobbies or interests. More usually

nystagmus in an adult is acquired, mainly due to brainstem, cerebellar or labyrinthine damage. Acquired nystagmus is frequently associated with oscillopsia and is incapacitating. Other neurological signs are probable. The patient should be questioned about the onset and duration of the nystagmus, with particular reference to all symptoms and signs and to the general medical history. Nystagmus is considered in detail in Chapter 24.

Abnormal head posture

A few patients, usually children, may present because of a marked abnormal head posture, adopted to compensate for a congenital ocular muscle palsy, mechanical restriction of ocular movement or infantile nystagmus. Abnormal head posture is discussed in detail in Chapter 2.

Defective vision

A common cause of defective visual acuity without outward sign of strabismus or nystagmus is uncorrected refractive error, especially when one eye is principally affected (anisometropic amblyopia). However, defective vision may be the main reason for attendance in a few patients with strabismus and/or nystagmus. Low vision may be the consequence of either condition, or it may be the underlying cause. The possibility of primary ocular pathology makes differentiation very important.

The examiner should enquire into:

- The nature of the defect.
- How it affects the patient.
- Whether poor vision is a subjective complaint or is deduced from the patient's behaviour. The former applies more to older children and the few adults who present for this reason, whereas the latter applies to young children.
- How the defect was discovered. Monocular low vision in particular is often found through visual screening or by chance.
- Whether vision appears static or is deteriorating.

- Any associated symptoms or signs, including headache or strabismus.
- The patient's medical and family history, particularly one of refractive error

Subjective symptoms

Symptoms commonly fall into two categories, diplopia and asthenopic symptoms of headache and eyestrain.

Diplopia

Diplopia (Table 1.1) occurs when the visual axes are not parallel, causing the image of the fixation object to fall on peripheral retina. The image is seen according to the visual direction of the retinal area stimulated.

Diplopia can be a symptom in the following types of strabismus.

Concomitant strabismus

Diplopia is almost invariably horizontal, with uncrossed or homonymous separation of the images in esotropia (i.e. the right-hand image is seen by the right eye) and crossed or heteronymous separation in exotropia. The separation of the images will not alter significantly in different directions of gaze. Diplopia in concomitant strabismus can signify:

- intermittent strabismus;
- recent onset;
- sudden change in the angle of deviation, usually following strabismus surgery;
- marked improvement in the vision of the squinting eye, for example after cataract extraction and lens implant in exotropia secondary to unilateral cataract.

Decompensated heterophoria and convergence insufficiency

Diplopia is usually transitory and can be fused by blinking or changing fixation in most cases. The patient may complain of blurred vision

Table 1.1 Questions about diplopia

Date of onset
Mode of onset
Sudden
Gradual
Binocular/monocular
Frequency
Constant
Intermittent
Near or distance
Gaze dependent
With time
Change with time
Worsening
Stable
Improving
Characteristics
Horizontal
Vertical
Torsional
Systemic symptoms
At onset
Brainstem symptoms
Hemiparesis
Headache
Weight loss
With time
Facial paraesthesia
Visual loss
Orbital pain
Palpitations, sweating, weight loss
Generalised weakness, speech and swallowing difficult

rather than diplopia if the images overlap. Most patients will be adults, as decompensation in children usually results in persistent manifest strabismus.

Decompensated congenital ocular muscle palsies

If decompensation occurs in childhood, the outcome is often manifest strabismus with suppression; however, some children complain of diplopia. When decompensation occurs in adult life, diplopia is generally the presenting symptom.

Vertical muscle palsies are most likely to decompensate, therefore the diplopia is often vertical, with the higher eye seeing the lower image. Torsional diplopia is rarely, if ever, a feature of congenital muscle palsy. The diplopia is usually intermittent

with a gradual onset and the patient is often vague about its duration.

Acquired limitation of ocular movement

Diplopia can be horizontal, vertical and/or torsional, depending on the nature of the defect. The separation of the images will decrease in the opposite direction, when fusion may be possible. Diplopia is usually the presenting symptom in children and adults and can be the first sign of serious disease. The onset can be gradual or sudden: patients are usually precise about the onset and the duration. Further information can be found in Chapters 18 to 22.

Asthenopic symptoms

Headache and eyestrain can result from decompensating heterophoria and convergence insufficiency, due to the effort required to maintain binocular single vision. Most patients with these complaints will be adults, often those working on exacting visual tasks, recently changed their occupation or activity, or who are unwell or excessively tired. In the context of ocular motor disorders, other causes are uncorrected refractive error, ill-fitting spectacles and accommodative anomalies. When taking the history, the examiner should bear

in mind the many other causes of headache, a number of them with more serious implications. Heterophoria and convergence insufficiency are discussed in Chapter 16.

All patients should be asked about:

- The nature of their symptoms.
- When they first became apparent.
- When they occur, with particular reference to variation during the day.
- Whether they have remained static, improved or deteriorated.
- How they affect work and hobbies.
- If they can be overcome in any way.
- Relevant trauma. However, care should be taken in attributing the symptoms to the trauma; the injury may be unrelated or a fall, for example, may be the result of an underlying problem rather than its cause.
- A detailed medical history should be taken, including current medication. The past ophthalmic history should be recorded, with particular reference to childhood strabismus and spectacle wear.

Reference

Mojon-Azzi S.M., Mojon D.S. (2009) Strabismus and employment: the opinion of headhunters. *Acta Ophthalmologica* 87, 784–788.