Research Article

Eye Pain is Very Common in Ophthalmic Patients

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Abstract

Pain in the eye that occurs on the surface itself can occur in the form of pricking or itching, and the main causes of such pain are irritations caused by a foreign body, infections or trauma. This form of eye pain is very easy to treat. Eye drops are the most common remedy that is enough to solve this problem. Eye pain can be described as sharp, dull, or throbbing and should be distinguished from superficial irritation or foreign body sensation. Eye pain can be the result of a serious disorder and needs to be treated urgently. Many causes of eye pain also cause redness of the eye.

Keywords: *Eye, Eye Pain, Acute Pain, Visual Loss, Health*

Introduction

Pain occurs as the presenting symptom in 63% of cases. It may be mild or quite severe **[**1**]**. It is experienced as a dull retro-orbital ache or as sharp eye pain provoked by eye movement or by palpation of the globe. In 19% of patients, pain may precede loss of vision by 7 days. More commonly, it occurs only 24 to 48 hours before or simultaneous with visual loss. Pain rarely persists longer than 10 to 14 days. If it does, the diagnosis should be reconsidered. No correlation has been noted between the presence of pain and the severity of the visual loss or the appearance of the fundus (papillitis versus retrobulbar optic neuritis). It is of little prognostic significance. Pain possibly originates from distention of the optic nerve and stretching of the nerve sheath.

This is a new onset of a daily headache in someone who has not had headaches in the past—he requires further work up and questioning **[**2**]**. While this could be “new daily persistent headache”—a diagnosis of a headache starting one day and never going away, the real clue in this case is the positional nature of his headache. Anytime there are positional headaches, one has to consider a low cerebrospinal fluid

volume or low intracranial pressure. The most common cause is after a lumbar puncture, but these positional headaches can start spontaneously at any time. Eye pain does occur with these headaches as well, but is often a dull ache— and not the primary complaint. Other things can cause a positional headache too. Individuals who have had a Chiari malformation surgery, a large dural sac, colloid cyst of the third ventricle, post-coital headache, cardiac cephalgia (eye pain and headache with upright position and exertion, relieved by rest), and postural orthostatic tachycardia syndrome (POTS) (usually seen in young women with striking tachycardia after standing up for a while) can have positional headaches. These headaches are commonly mis-diagnosed as tension-type headache. The diplopia is not rare—probably coming from tugging on the sixth cranial nerve as the brain stem slumps downward toward the foramen magnum.

Defective Vision

It is not only customary but essential to record the complaints of the patient before starting the actual examination of the eye **[**3**]**. Like other branches of medicine, the eye patients should be encouraged to describe their ailments. A proper record of history should be maintained.

Defective vision (for distance, near or both), discharge from the eye, redness, photophobia, itching, burning or foreign body sensation and ocular pain or discomfort associated with dull or severe headache are some of the common complaints of the eye patient. The mode of onset (acute or insidious) and duration of the ailment should be enquired. The nature of the discharge—watery, mucopurulent, purulent, sanguineous or ropy— must be verified. The association of itching and burning of eye with the change in season or climate should be looked into. The severity of the ocular pain and its relation with close work or systemic disorders like hypertension or migraine should be ascertained. Any history of trauma, blunt or penetrating, or retained foreign body is taken because such cases may need emergency intervention.

The age of the patient is an important factor in visual disability. Senile cataract and glaucoma predominantly affect a person after fifth or sixth decade. The near vision of an otherwise normal individual suffers a setback in presbyopic period (above 40 years). Youngsters show an increase in the rate of progression of myopia, particularly at puberty.

Refractive errors are seen in the patients of all age groups. However, they produce discomfort in persons engaged in accountancy or fine precision work. Industrial workers are exposed to occupational hazards and some of them may report with serious injuries to the eyes.

Dry Eye Syndrome

Dry eye disease (DED) or keratoconjunctivitis sicca (KCS) is a multifactorial ocular condition resulting from tear film instability that can eventually lead to ocular surface damage **[**4**]**. Typical symptoms of DED include ocular discomfort, visual disturbance, itching, burning, sensation of foreign body, light sensitivity; inflammation and pain. Factors contributing to DED are insufficient tear secretion; excessive evaporation and alteration in the composition of the tear film. The tear film has three essential components: aqueous layer, secreted by the lachrymal glands; mucus layer, produced by the globet cells of the conjunctiva and by epithelial cells of the cornea and conjunctiva and finally a lipid layer, secreted by the meibomian glands. Changes in the tear film can be temporary causing an acute form of DED or long-lasting leading to chronic DED; damage to the ocular surface is usually more severe in the chronic forms than in the acute ones. DED is frequent in some conditions such as Sjögren's disease, or lachrymal gland dysfunction, but it can also be caused by vitamin deficiency, contact lens wear and use of several prescription drugs. As such, it is not surprising that DED is a very frequent condition; the prevalence varies tremendously depending on the study, and the condition is more frequent in patients with autoimmune diseases, postmenopausal women and elderly population.

The mild pain and aching quality sound most consistent with dry eye syndrome (DES) **[**2**]**. It is important to note that DES is the most common cause of eye pain! Most patients with dry eye-related pain describe generally mild, aching, pressure, or pulling sensation. Some say it radiates behind the eye and others say eye movement worsens it. It would be highly unusual for DES to cause sharp, stabbing or pounding pain or for it to be severe. Many patients note that the pain seems to wax and wane with the day. When patients wake up, their corneas have been protected all night and then become painful with exposure to wind and evaporation especially with reading. Interestingly, sometimes DES pain is unilateral. Many patients will note other symptoms of DES such as burning, blurry vision, tearing, redness, and foreign body sensation but not all will. Examination may show punctate epithelial erosions, early tear break up time (TBUT), blepharitis, or abnormal Schirmer's tear testing. In other cases, the slit lamp examination can appear quite unremarkable. In many, a topical anesthetic will greatly improve the pain. However, patients with chronic DES-related eye pain of several months duration may not enjoy improvement. This occurs because of upregulation of pain modulating proteins within the cornea. Looking at her medications, she is on two diuretics, a beta blocker and a SSRI, which may worsen DES.

Migraine

Migraine is the commonest severe primary headache **[**5**]**. The pain is usually recurrent, unilateral, pulsating, associated with nausea and photophobia, aggravated by activity and disabling. There may be visual aura in the form of zigzags, flashes or dots, usually bilaterally. Retinal migraine however is a rarer uniocular presentation of visual loss in one eye only. In some patients the aura occur without a headache following on and these as well as the ones with pain centred on the eyeball are the patients who may present initially to the ophthalmologist as well as those with neurological manifestations of migraine such as transient field loss or nerve palsies. The clue is the evolution of the symptoms, which progress over 5 or more minutes, then resolve within an hour, and may be followed within an hour by a headache. Aura are specifically defined by the International Headache Society as a recurrent disorder developing over 5–29 minutes and lasting less than 1 hour. Once the diagnosis is made the long term management lies in the hands of the general practitioner, or if severe, the neurologist.

Headache

When people suffer from headaches they automatically think they should get their eyes tested **[**6**]**. In fact, probably less than 1% of all headaches have any relationship to the eyes, their function or malfunction. Eye-induced headaches fall into two categories: those induced by pathology within the eye; and those that occur as a malfunction of the co-ordination of the two eyes.

With regard to the first group, eye pain which may radiate into the region of the eye and into the head occurs when an eye is inflamed, when the pressure inside the eye is raised, when the surface of the eye is damaged and/or when an eye is injured. The clinical signs, if not obvious, are easily diagnosed on ophthalmic examination. As noted, the headaches are likely to be localised and varying in severity according to the ocular pathology. In acute, closed-angle glaucoma, for example, a headache can be severe (it may be non-existent but the patient may be nauseated and vomit). In cases of injury to the ocular surface the overwhelming symptom is one of irritation (a foreign body sensation), but severe abrasion will give rise to radiating pain.

The second group of conditions occurs as a result of true eye strain, ie effort of concentration to maintain alignment of two eyes where there is a defect in their motility. Such headaches are characterised by being associated with visual effort, particularly sustained, visual effort, eg reading. The characteristic of the headache is a tension pain in the forehead over the eyes.

Glaucoma

Glaucoma is a form of ophthalmic disorder where the optic nerve suffers permanent damage, leading to progressive loss of vision and, if left untreated, blindness **[**7**]**. The progression is irreversible in nature, emphasizing the importance of adopting serious screening procedures to prevent blindness. The pathophysiology of this disorder is the blockade of aqueous humor flow leading to a condition known as ocular hypertension. Progressive increment of the stagnant aqueous humor level puts pressure on the optic nerve and it is then damaged, causing blindness. Loss of optic nerve denotes the loss of retinal ganglion cells producing optic neuropathy. There are two main types of glaucoma—open angle and closed angle. Open-angle type progresses with a slower pace; closed angle is much faster. However, open-angle glaucoma is considered more dangerous than closed angle, because it is often asymptomatic, while the latter causes eye pain. With open-angle glaucoma, the patient fails to recognize that there is a problem prior to losing his or her vision due to permanent damage of the optic nerve.

The incidence of glaucoma is age dependent. Older people suffer more than the young population. It forms the second most common form of age-related blindness in the world, after cataracts. Glaucoma is much more serious than cataracts due to its irreversibility. As a consequence of this irreversibility, timely diagnosis is crucial in damage control and good management of the glaucomatous condition.

The symptoms include severe eye pain, nausea and vomiting, headache, blurred vision, or halos vision **[**8**]**. These symptoms would disappear after proper treatment. Although sometimes the treatment was not enough leading to glaucomatous optic nerve damage, the patients still felt that they were cured because they no longer suffered from the aforementioned symptoms. For chronic glaucoma patients, in the initial stage of the disease they had no symptoms, and after treatment the patient did not feel any improvement or even felt worse because of glaucoma surgery or long-term usage of eye drops.

Scleritis

Scleritis is a severe, potentially sight-threatening form of ocular inflammation characterized by oedema of episcleral and scleral tissues with involvement of the deep episcleral vascular plexus **[**9**]**. Scleritis may be associated with infection, systemic vasculitis, autoimmune or be idiopathic in nature. A careful history, physical and ocular examination and targeted investigations are essential as scleritis may be the presenting feature of a potentially life-threatening systemic vasculitis or infectious disease. Scleritis remains a therapeutic challenge, particularly in patients with severe ocular inflammation, a systemic vasculitis or associated autoimmune disorder.

The mean age of onset of scleritis is in the fifth decade, with females accounting for 56–71% of patients. Initially, scleritis is frequently unilateral, but bilateral disease develops in 35–51% of patients.

The characteristic feature of scleritis is the subacute onset of deep, boring, periocular pain, which may radiate to the temple and jaw. The pain is typically worse at night, interfering with sleep and waking the patient early in the morning. It may be exacerbated by eye movement or accommodation and can be so severe as to interfere with normal activities—particularly in patients with necrotizing scleritis with inflammation. Pain is not always a prominent feature, particularly patients with posterior scleritis or those taking anti-inflammatory or immunosuppressive medications for an associated systemic disease, such as rheumatoid arthritis. Approximately, 30% of patients with posterior scleritis present with reduced vision.

Injuries

A detailed history is vital in the ophthalmologic evaluation **[**10**]**. Several aspects of the history are important. The history and evaluation should first categorize the patient complaint including vision loss, eye pain, trauma, or change in the appearance of the eye. Eye pain or discomfort should include the type of pain (aching, throbbing, sharp, stabbing, etc.) or a foreign body sensation. Visual fields defects should be evaluated. Flashing lights or a curtain descending suggests retinal detachment. Sudden loss of vision suggests central retinal artery occlusion. Eye pain following trauma may be due to foreign body.

Other important aspects include the mechanism of injury or suspected etiology per the patient, time of symptom onset, and other coexisting complaints. Mechanism of injury is important, as is the time of symptom onset. Patients should also be questioned about similar prior symptoms.

The patient's past medical history is important and can focus the examination and differential diagnosis. Previous ophthalmologic surgeries, corrective vision lens or glasses, and use of ophthalmologic medications should be questioned. Cardiac risk factors such as hypertension, diabetes mellitus, and hyperlipidemia are associated with certain ophthalmologic conditions. A history of other exposures or toxic ingestions should be obtained.

Acute Pain

Similar to acute vision loss, red eye, and photophobia, acute pain in the eye is one of the typical symptoms of an ocular emergency **[**11**]**. Although acute eye pain may result from numerous pathologies, an appropriate history will often help the ophthalmologist disclose the underlying disease.

Ocular pathologies that affect the ocular somatosensory pathway may cause ocular pain. It is well-known that the cornea has one of the most sensitive nociceptors in the body. It is estimated that 7000 nociceptors per mm2 are available in the human corneal epithelium, which is 300– 600 times greater than the density of nociceptors in the dermis. These nociceptors are placed superficially between the epithelial cells and transmit the pain sensation to the ophthalmic branch (majority) and maxillary branch of the trigeminal nerve.

First of all, a detailed anamnesis should be obtained from patients admitted with acute ocular pain. A query of previous ocular diseases (glaucoma, diabetic retinopathy, retinal vascular occlusion), systemic diseases (diabetes mellitus, hypertension, sickle cell anemia), medications (anti-glaucomatous, blood thinners), ocular trauma, and ocular surgery can be very important both diagnostically and therapeutically.

Factors that aggravate the ocular pain should also be questioned. For example, optic neuritis is characterized by ocular pain that is usually exacerbated by eye movements, whereas eyelid movements often increase a foreign body-welded ocular pain.

Sudden Visual Loss

Sudden uniocular loss of vision is caused either by a sudden clouding of the ocular media or by a problem with the retina or optic nerve **[**12**]**. It is important to determine the onset and duration of the visual loss and whether there has been any progression or recovery. It is essential to establish whether this is truly a sudden loss of vision or whether it is a longstanding loss which has been revealed when the fellow eye was covered. It is always important to identify any associated features, such as visual symptoms or pain, which preceded visual loss.

The sudden onset of corneal oedema and clouding in acute angle closure glaucoma, resulting from intraocular pressure building up over minutes or hours, causes blurred vision, accompanied by severe pain and redness of the eye. There may be a history of past attacks of blurred vision and eye pain or

headache which then subsided. Such prodromal attacks may be precipitated in the dark, by pupil dilation, which causes a subacute attack of angle closure glaucoma. Visual loss may also occur quite rapidly with keratitis or a corneal ulcer, again with redness, and usually with severe pain.

Conclusion

Pain in the eye very often causes fear, and certain conditions can also cause very severe pain. Eye pain is not such a common symptom, but when it does occur, it causes great discomfort and fear in anyone who feels it. And while some pain is short-lived and goes away on its own, others must be treated and diagnosed.

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