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PRACTICE

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10-MINUTE CONSULTATION

Herpes zoster ophthalmicus

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What you need to know

- Offer patients systemic antiviral medication to reduce complications, notably post-herpetic neuralgia
- Herpes zoster ophthalmicus may directly involve the eye and/or the skin around the eye, or may occur without ocular involvement, where only the skin of the V1 dermatomal region is affected
- Refer to ophthalmology if a patient has ocular symptoms or signs

A 70 year old man attended with a two day history of painful vesicular rash affecting the left forehead accompanied by a red, painful left eye. Three days before the onset of the rash, he had experienced a tingling sensation at the left forehead. A clinical diagnosis of herpes zoster ophthalmicus with ocular involvement was made.

Herpes zoster, or shingles, is a common infection caused by the reactivation of varicella zoster virus that lies dormant in the dorsal root nerve ganglion following primary chickenpox infection. Herpes zoster ophthalmicus accounts for 10-20% of cases of herpes zoster infection.[1] Patients usually present with painful, vesicular, dermatomal rashes affecting the ophthalmic division of the trigeminal nerve (V1). The diagnosis is usually made on clinical grounds but a viral swab can confirm the diagnosis.

Herpes zoster ophthalmicus may present with ocular involvement such as conjunctivitis, keratitis, iritis, and uveitis. It can also present without ocular involvement (where only the skin of the V_1 dermatomal region is affected). Herpes zoster infection may rarely present without any cutaneous manifestation, also known as "zoster sine herpete," with or without ocular involvement, rendering the diagnosis more difficult.[2]

This article aims to discuss the key points to cover in a history, examination, and initial management plan for a person attending primary care with a likely diagnosis of herpes zoster ophthalmicus.

What you should cover

History

Presenting complaint

When did the rash start? Starting oral antiviral treatment within 72 hours of the onset of rash substantially reduces the risk of long term ocular complications such as corneal pseudo-dendrites, stromal keratitis, and uveitis.[3] Evidence is unclear whether oral antiviral treatment within 72 hours also reduces the incidence and severity of post-herpetic neuralgia.[4 5]

Is there any pain affecting the eye or the periocular skin? Many patients find it hard to distinguish between the pain affecting the eye and the pain around the eye. Eye pain, but not periocular pain, suggests ocular involvement.

Patients with "zoster sine herpete" describe neuropathic pain affecting the V1 dermatome without any rash.

Are there other ocular symptoms such as photophobia, discharge, visual loss/disturbance, floaters, flashing light, or diplopia?

Medical/ocular history

Is there any recent systemic illness? Active systemic illness can impair immunity increasing the risk of developing herpes zoster.

Is there any history of chickenpox or herpes zoster infection? Recurrent episodes should prompt investigation for any underlying immunosuppression.

Is the patient immunosuppressed, for instance, any history of HIV, organ transplantation, or malignancy? Immunosuppressed patients may present with a more aggressive clinical course that requires intravenous antiviral treatment.

Drug history

Is the patient on any immunosuppressive drug?

Has the patient received any shingles vaccination recently? Studies have shown that shingles vaccination, which contains

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live attenuated varicella zoster virus, may rarely result in reactivation of herpes zoster ophthalmicus.[6]

Social history

Is there any recent contact with patients affected by chickenpox or herpes zoster infection? Is there any close contact with children, pregnant women, or immunosuppressed individuals? If the answer is yes, those who have been in contact with the patient are advised to look out for symptoms and signs of chickenpox or shingles and seek medical attention if affected.

Examination

General examination

Pattern of rash—whether the vesicular rash follows the V1 dermatomal distribution and does not cross the midline of the face (figs 1 and 2).

Presence of Hutchinson's sign (fig 1)—rash involving the tip, side, or root of the nose. This sign indicates the involvement of the nasociliary branch of the trigeminal nerve, and is a strong predictor of ocular inflammation and permanent corneal denervation in herpes zoster ophthalmicus (relative risk of 3-4 times).[7] This is because the eyes and the skin of the nose are supplied by the ciliary nerves and the anterior ethmoidal nerve, respectively, which are branches of the nasociliary nerve.

Unilateral or bilateral periorbital swelling—bilateral involvement is usually due to gravitational oedema, rather than because of spread of infection to the contralateral side of the face.

Signs of secondary bacterial infection purulent discharge or worsening, high grade fever. Secondary bacterial infection is usually restricted to the side affected by herpes zoster ophthalmicus.

General wellbeing—if the patient is confused, consider the possibility of coexisting encephalitis.

Ocular examination

Formally examine visual acuity using, for example, a Snellen chart. Examine the external eye for conjunctival redness. Consider instilling a drop of fluorescein 1% to check for corneal pseudo-dendrites using a blue light. Presence of fluorescein stained corneal changes requires a more urgent referral to ophthalmology

Consider viral swab cultures for herpes simplex virus and varicella zoster virus if there is diagnostic uncertainty about whether it is shingles.

Consider other causes of a rash around the eye:

Herpes simplex virus infection—typically presents as multiple vesicles on a raised, erythematous base, followed by ulceration at a later stage. Vesicles usually occur in clusters and do not follow the dermatomal pattern and cross the midline. A viral swab culture for herpes simplex virus and varicella zoster from fresh vesicles helps distinguish between the two infections.

Impetigo—a bacterial skin infection caused by staphylococcus or streptococcus, characterised by a cluster of small blisters or yellow golden crust that do not follow a dermatomal pattern and cross the midline. More common in children than in adults.

Contact dermatitis—an inflammatory skin condition that is caused by contact with either allergens or irritants. The diagnosis can usually be made through careful history taking.

Vaccinia dermatitis—an infective, blistering skin condition that occurs in patients with atopic dermatitis after receiving the smallpox vaccine. This vaccine became obsolete after the eradication of smallpox virus.

What you should do

The diagnosis is usually made on clinical grounds (ie, dermatomal rashes affecting the V1 region and stopping at the midline of the face). Take a viral swab from active vesicles if there is any uncertainty.

Initial stage

Start all patients with herpes zoster ophthalmicus, with or without ocular involvement, on systemic antiviral treatment within 72 hours of the onset of rashes.[8] Systemic antiviral treatment can be offered beyond 72 hours after the onset of rashes (if there are new blisters forming), because the risk of side effects of treatment is low. The first line treatment in the UK is oral aciclovir 800 mg five times a day for 7-10 days. Alternatively, oral famciclovir or valaciclovir may be used as a second line treatment.[8]

If superimposed bacterial infection is suspected start an oral antibiotic.

Consider prescribing analgesia such as topical capsaicin cream, amitriptyline, or gabapentin, for neuropathic pain. Explain to the patients that there is a risk of post-herpetic neuralgia.

Consider prescribing lubricating eye drops for comfort if there are lesions near the eyelid. Topical aciclovir or antibiotic eye drops are usually not recommended acutely.

Stromal keratitis or uveitis requires topical steroids to treat the disease and alleviate the pain. Topical anaesthesia is not used as it prevents corneal healing and may worsen corneal denervation.

Advise patients to avoid contact with children, pregnant women, and immunosuppressed individuals, until the vesicles have crusted over (this usually takes 1-2 weeks).

When to refer

Refer to ophthalmology—refer patients with ocular symptoms such as eye pain and blurred vision, and/or signs, including red eye and positive corneal staining with fluorescein, to the ophthalmology team for further examination. This will include a comprehensive external eye examination and a dilated fundus examination.

Potential periocular, ocular, and extraocular complications of herpes zoster ophthalmicus are summarised in table 1. The commonest complications are conjunctivitis, corneal pseudo-dendrites, disciform keratitis, and uveitis. The most important complications that must not be missed are uveitis and acute retinal necrosis.[9] Uveitis causes pain and photophobia without any discharge. Acute retinal necrosis causes pain with loss of vision and/or floaters. oth conditions can only be confirmed on slit-lamp examination.

Most of the ocular complications can be managed in the outpatient setting, except for acute retinal necrosis —the most serious and blinding complication—which requires hospital admission for immediate intravenous and intravitreal antiviral treatment.

Acute medicine/infectious disease team—consider referring patients to secondary care in hospital for assessment and intravenous antiviral treatment in the following circumstances[8]:

- involvement of central nervous system (eg, reduced mental status)

- elderly patients with severe disease (eg, multi-dermatomal involvement)
- immunosuppressed patients
- those who cannot take oral medication.
- those with acute retinal necrosis.

Pain team—refer patients to the pain team if post herpetic neuralgia is not controlled by simple neuropathic pain killers.

Prevention

Currently there is a shingles vaccination programme available in the UK for people over 70.[13] It has been shown to reduce the incidence rate of shingles and post- herpetic neuralgia.[10]

Longer term complications — include corneal denervation, recurrent uveitis, and post-herpetic neuralgia. Patients with herpes zoster ophthalmicus have a substantially increased risk of developing a cardiac event, stroke, or dementia over periods of three months to more than a year after the onset.[11 12]

Education into practice

- Are you aware how to obtain ophthalmology advice for a patient with suspected herpes zoster ophthalmicus and ocular involvement?
- How do you counsel the patients on the risk of post-herpetic complications, particularly post-herpetic neuralgia?
- Do you routinely provide shingles vaccination to people in their 70s?

How this article was created

This article was written with the aim of improving the assessment and management of herpes zoster ophthalmicus in the primary care setting. A literature search was conducted in the electronic database PubMed to identify important evidence concerning herpes zoster infection, particularly herpes zoster ophthalmicus.

How patients were involved in the creation of this article

We consulted a patient who presented to the eye emergency department with left keratouveitis following a recent herpes zoster ophthalmicus infection. He was affected by ocular pain and photophobia as well as neuropathic pain at the V1 dermatome. His clinical problem has been taken into account during the writing of the “History” and “When to refer” sections. We highlighted the symptoms and signs of uveitis, and the importance of recognising and managing post-herpetic neuralgia in patients with herpes zoster ophthalmicus.

Facial photographs were obtained from two patients with written consent for illustrative purpose.

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Table

Table 1| Potential periocular, ocular, and extraocular complications of herpes zoster ophthalmicus

Complications	Clinical descriptions
Periocular	
Cicatricial ectropion	Scarring and shortening of the periocular skin causing outward turning of the eyelid away from the eye
Trichiasis	Ingrowing of the eyelashes
Ocular	
Conjunctivitis	Inflammation or infection of the conjunctiva, characterised by conjunctival redness and discharge
Episcleritis / scleritis	Inflammation or infection of the episclera / sclera, characterised by deep conjunctival and episcleral injection with dilated episcleral vessels
Corneal pseudo-dendrites	"Dendritic-like" changes on the cornea, which can be visualised using topical fluorescein 1% drop and blue light
Corneal infiltrate	An area of whitish opacity on the corneal stroma caused by infiltration of the white blood cells, suggestive of a corneal infection
Disciform keratitis	An area of cloudy and oedematous cornea caused by dysfunctional corneal endothelium, which is a single-cell layer responsible for maintaining corneal clarity
Corneal denervation	Reduced corneal sensation (can be detected by using a tissue wick to test the sensation of the cornea)
Uveitis	Inflammation of the iris, ciliary body or choroid – the patient usually complains of pain and photophobia without any discharge and the diagnosis can only be confirmed on slit-lamp examination
Raised intraocular pressure	This sign can only be confirmed on tonometry. Patient may or may not complain of any eye pain
Acute retinal necrosis	Infection or inflammation of the retina resulting in necrosis – the patient usually complains of painful eye with loss of vision and / or floaters. This complication can only be confirmed on slit-lamp examination
Optic nerve dysfunction	Inflammation of the optic nerve causing reduced vision, colour vision, visual field defect and afferent pupillary defect
Extraocular	
Orbital inflammation / infection	Inflammation or infection of the orbit – the patient usually complains of pain behind the eye, which is worsened by eye movement, and potentially reduced vision and double vision. Examination may reveal periorbital swelling, redness, proptosis and reduced ocular motility
Cranial nerve palsies	Involvement of the 3rd, 4th or 6th cranial nerves resulting in double vision and reduced ocular motility. Involvement of all 3 cranial nerves can result in complete external ophthalmoplegia

Figures

Fig 1 A patient with left herpes zoster ophthalmicus affecting the forehead and side of the nose (positive Hutchinson's sign; *yellow arrows*). The crusted skin rashes follow the V1 dermatomal distribution and do not cross the vertical midline

Fig 2 A patient with left herpes zoster ophthalmicus affecting the forehead but not the nose (negative Hutchinson's sign). The crusted skin rashes follow the V1 dermatomal distribution and do not cross the vertical midline