Herpes Zoster Of The Trigeminal Nerve-Two Cases Reports.
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Citation
C Makos, G Noussios, M Peios, G Balabanis, C Evangelinou. Herpes Zoster Of The Trigeminal Nerve-Two Cases Reports.
The Internet Journal of Neurology. 2010 Volume 13 Number 2.

Abstract
Background: The herpes zoster of the trigeminal nerve branches caused by Varicella Zoster Virus (VZV) is a clinical entity consisting of erythematous macules, papules, vesicles, bullae, small ulcers and erythematous plaques and characteristic short acute or pre-eruptive phases and long metherpetic periods with pain, burning or tingling in the involved dermatomes like in other peripheral nerves. The diagnosis of herpes zoster is primarily based upon history and clinical examination. The painful periods can induce misdiagnosis with dental signs like trigeminal neuralgia, odontalgia and acute pulpitis and the complications referred in the literature like tooth resorption, periapical lesions, periodontal destruction, osteomyelitis, jaw osteonecrosis and tooth exfoliation promote the dentist's role in diagnosis and management of this disease. Cases Reports: Two cases related to herpes zoster of the trigeminal nerve branches diagnosed at first stages as trigeminal neuralgia are presented in this report. Besides pathogenesis, clinical picture, jaw complications, diagnosis and therapeutic aspects are discussed.

INTRODUCTION
Varicella Zoster Virus (VZV) is an enveloped, spherical, 150-200 nm in diameter virus, with single, linear, double-stranded DNA molecule, 125.000 nt long. It belongs to the genus Varicellovirus, family Herpesviridae, subfamily Alphaherpesvirinae. It is also known as Human Herpes Virus type 3 (HHV 3) and is related to the Herpes Simple Viruses type 1 and 2 (HSV 1, HSV 2) sharing much genome homology. The known envelope glycoproteins (gB, gC, gE, gH, gL, gK, gL) correspond with those in HSV, however there is no equivalent of HSV gD [1].

The virus is ubiquitous in most populations. Primary infection with VZV causes varicella, commonly known as chickenpox. It is spread through direct person-to-person contact with viral lesions and/or airborne droplets. Maternal viremia leads to spread through placenta causing neonatal varicella. Primary infection usually occurs through the bulbar conjunctiva or upper respiratory tract mucosa, following direct contact with skin lesions or inhalation of virus-infected respiratory secretions [2]. Over the next 2-4 days a viral replication takes place in regional lymph nodes and 4-6 days later the virus spreads through circulation causing primary viremia with inoculation mainly in the liver and spleen, where virus is replicated. 14-16 days after initial infection there is a secondary viremia and spreading causing the typical vesicular rash to the skin. At this time hepatitis, encephalitis and or pneumonia may also occur [3]. VZV is neurotropic remaining in a latent patent in sensory neurons and especially in the gasserian, geniculate and dorsal root ganglia. Reactivation related to periods of cellular immunity impairment leads to herpes zoster [4].

Herpes zoster of the trigeminal (V cranial) nerve with involvement of the ophthalmic (V1), maxillary (V2) or mandibular (V3) branch is an interesting clinical entity for the clinicians concerning oral and maxillofacial region. The painful periods can induce misdiagnosis with trigeminal neuralgia, odontalgia and acute pulpitis and the complications mentioned in the literature like tooth resorption, periapical lesions, periodontal destruction, tooth exfoliation, osteomyelitis and jaw osteonecrosis promote the dentist's role in diagnosis and management of this disease.

Cases related to herpes zoster of the trigeminal nerve branches with primary clinical picture like a trigeminal neuralgia are presented in this study. Besides dental complications, laboratory findings, diagnosis and therapeutical methods are also mentioned indicatively.

CASES REPORTS
CASE 1

In 2000, a 61-years-old male patient was referred for acute, periodic and long standing pain like electricity or knife cut for the last week in the left aspect of the head extending in side of the nose, upper eyelid, frontal, parietal and temporal area. Washing his face with cold water or wiping it out with towel was a characteristic trigger action. Trigeminal neuralgia was suspected and carvamazepine was administered. The re-examination 5 days later disclosed erythematous macules, papules, vesicular rash, bullae, fluid excretion, desiccation and crusts with unilateral dermatomal distribution (Fig. 1 and 2) and no improvement with the administered drug was accessed. A collaboration with Dermatological and Neurological Department concluded about herpes zoster of the ophthalmic (V1) and maxillary (V2) branch of the trigeminal (V) nerve and the administration of acyclovir and non steroidal anti-inflammatory drugs for one week was effective.

Figure 1
Figure 1. The erythematous macules, papules, vesicular rash, bullae, fluid excretion, desicication and crusts with unilateral dermatomal distribution on the nose, upper eyelid, frontal, parietal and temporal area.
CASE 2

In 1997, a 73-years-old female patient was referred for acute and periodic pain like electric discharge for two weeks in the left aspect of the face including preauricular area, lower labia, lower lip, chin and posterior one third of the tongue. Washing her face, wiping it with towel and eating were characteristic trigger actions. The diagnosis in an external medical office before two weeks was trigeminal neuralgia and diphenylhydantoine had been administered with no relief. The painful area was covering in a unilateral dermatomal distribution by erythematous macules, papules, vesicular rash, bullae, fluid excretion, desiccation and crusts in dermis and erosions or ulcerations with erythematous circumscription in oral and tongue mucous (Fig. 3 and 4). A collaboration with Dermatological and Neurological Department concluded about herpes zoster of the mandibular (V3) branch of the trigeminal (V) nerve and the glossopharyngeal (IX) nerve. The administration of acyclovir and non steroidal anti-inflammatory drugs for 10 days was effective.

DISCUSSION

In most patients with herpes zoster a two-three day primary
acute or pre-eruptive phase with pain, burning or tingling in
the involved dermatome is recorded. Fatigue, headache, low-
grade fever and myalgia may be present [2,5,6]. The eruptive
phase is characterized by erythematous macules and papules
diverting into vesicular rash with unilateral dermatomal
distribution. Over the next 3-5 days new lesions tend to rise
forming bullae [2]. The vesicular rash is followed by rupture
of the vesicles, fluid excretion, crusts and desiccation
leaving small ulcers’ and erythematous plaques with
deliberate improvement without typically visible scars.
Metherpetic pain in the affected dermatomes is not rare [6].

Herpes zoster of the trigeminal (V) nerve is divided into
herpes zoster of the ophthalmic (V1), maxillary (V2) and
mandibular (V3) nerve respectively. Herpes Zoster
Ophthalmicus (HZO) occurs when VZV invates the
Gasserian Ganglion with a frequency 10-15% of all zoster
cases and it is five times commonest than the maxillary (V2)
and mandibular (V3) type. The eruptive phase of HZO
includes ipsilateral erythema and vesicular rash in V1
dermatome of the forehead and upper eyelid. The ipsilateral
involvement of the preauricular and occasionally
submaxillary lymphnodes, along with headache, pain,
nausea and vomiting are common prodrome symptoms. The
recurrent meningeal branch (Arnold’s nerve) to the
tentorium cerebelli may account for the meningeal irritation
signs and therefore, meningitis must be excluded. The
involvement of the nasociliary nerves correlates with
vesicles on the tip and/or the lateral nose (Hutchinson sign)
[7,8].

Possible serious complications are ocular inflammation and
conical denervation[6]. In herpes zoster of the maxillary
branch (V2) the evidences are in relation to V2 dermatome
i.e. cheek, lateral nose, nasal mucosa, lower eyelid, upper
eyelid, cheek mucosa, maxillary gums, palate, tonsil and
nasopharynx. Sometimes, except oral mucosa, there are no
skin manifestations[6]. Corneal involvement in maxillary
zoster is rare [9]. In herpes zoster of the mandibular branch
(V3) the evidences are localized to V3 dermatome i.e. lateral
head, external ear, external auditory meatus, lower lip, lip
mucosa, mandibular gums and lateral neck[6].

In herpes zoster of the glosopharyngeal (IX cranial) and
vagal (X cranial) nerve the jugular and petrosal ganglia are
involved respectively and the painful vesicular rash is found
on palate, posterior tongue, epiglottis, tonsillar pillars and,
oncasionally, external ear. The affection of Arnold’s
recurrent nerve may be accompanied by a typically mild
encephalomyelitis and rarely by a significant zoster
meningoencephalitis[6]. In Ramsay-Hunt syndrome the
involvement of the geniculate ganglion of the facial (VII
cranial) nerve is indicated with ipsilateral deep otalgia,
tinnitus, loss of hearing, vertigo, facial paresis and
characteristic herpetiform vesicles on the external ear meatus
[10,11]. Ramsay Hunt syndrome is also frequently
associated with VIII cranial nerve and more scare with V,
VI, IX, and X cranial nerves involvement [12]. A case of
Frankl-Hochwart syndrome (polyneuritis cranials
menieriformis) as a variety of Ramsay-Hunt syndrome[13]
and a case of Fisher’s syndrome associated with trigeminal
herpes zoster explained via propagation of the virus to the
brainstem through the trigeminal root [14] is reported.
Immuno compromised patients may develop a disseminated
or a multidermatomes form of herpes zoster with a high risk
in developing visceral affections, like pneumonia or hepatitis
[6]. Concerning herpes zoster of the occipitocollarlis
ganglion (C2 and C3 spinal nerves) the lesions are
estimated in the posterior scalp, neck and part of the external
ear, lower mandible and anterior neck.

The diagnosis of herpes zoster is primarily based upon
history and clinical examination. Sometimes herpes zoster
may be present in an atypical form, especially in
immuno compromised patients, requiring further laboratory
examination like direct immunofluorescence with
fluorescein-tagged antibody (DFA) or polymerase chain
reaction (PCR). The Tzanck smear in vesicular lesions is a
classical method, but there is no differentiation between
herpes zoster and herpes simplex. Biopsy is applied in
difficult cases and VZV can be cultured successfully [2,5,6].

Because the manifestations of a trigeminal herpes zoster
resemble to other oral entities the oral practitioners must be
aware about the differential diagnosis and definitive
treatment modalities before any “dental therapy” is applied
and intraoral examination is necessary when skin facial
lesions are observed by professionals [15-19].

The therapy in herpes zoster infection aims to shorten the
clinical course, provide analgesia and to prevent
complications. Antiviral agents (acyclovir, famcyclovir,
pencyclovir, valacyclovir) are nucleotide-like substances
with per os administration for 7-10 days. Corticosteroids
(prednisone) have anti-inflammatory action used mainly in
acute but not in long-term pain. Analgesics
(acetaminophene, non steroid anti-inflammatory drugs)
and tricyclic antidepressants (amitriptyline) can be used
[2,5]. Active immunity is provided by vaccines with a 99%
effectiveness against varicella infection [6].
CONCLUSION

The herpes zoster of the trigeminal nerve and/or other cranial nerves involving the oral and maxillofacial area may be falsely attributed to other neuralgic conditions mainly in the primary painful stages lacking any other clinically obvious lesions. The history, a detail clinical and radiographical examination, the pain distribution and the short re-examinations may offer in differential diagnosis before any “pulpitis”. “Tooth extraction” or “trigeminal neuralgia” is the administered solution.

References

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