Recurrent Infection by varicella-zoster virus with facial scarring

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ABSTRACT

Primary contact with the varicella-zoster virus occurs through varicella (chickenpox) and culminates with this virus entering the sensory nerves and remaining latent in the dorsal root ganglion. Transmission occurs by dissemination of infectious particles of the virus in aerosol released from nasopharyngeal secretions or skin lesions, or by direct contact with lesions. Herpes zoster occurs after clinically evident reactivation of the virus, affecting the whole distribution of the infected sensory nerve. When compared with primary infection, herpes zoster has a more severe character, requiring the use of pharmaceutical drugs. The cause of reactivation is unknown and may be associated with predisposing factors, such as age, stress or impaired immune system. This study reports a case of a patient who presented clinical manifestations compatible with varicella zoster infection exacerbated by the use of homemade remedies, resulting in a secondary infection and facial scarring.


INTRODUCTION

The varicella-zoster virus (VZV) or human herpes virus type 3 (HHV3) is from the genus Varicellovirus, subfamily Alphahersvirinae and family Hesperviridae. It is a double-stranded DNA virus with a diameter of 150 to 200 nm, has an icosahedral capsid and a lipoprotein envelope¹. The transmission occurs via dissemination of infectious particles of the virus in aerosol released from nasopharyngeal secretions or skin lesions, or by direct contact with lesions of patients with chickenpox or herpes zoster¹.

Primary infection by the virus varicella zoster results in chickenpox, followed by entrance of this virus in sensory nerves, where it remains latent in the dorsal root ganglion (DRG). When the virus reactivates, it becomes clinically evident by the development of herpes

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zoster, commonly known as shingles, and involves the
distribution of the sensory nerve, from the trunk and
head and neck region\textsuperscript{2-6}.

When many branches of the trigeminal nerve are
affected, it may result in unilateral oral, facial or ocular
lesions. The main complications of herpes zoster include:
postherpetic neuralgia, chronic lesions and changes in the
central nervous system (CNS) and eyes\textsuperscript{4,7-8}.

The reason for reactivation of the virus is unknown
and may be related to predisposing factors, such as
age (incidence increases proportionally with age),
stress or immune system impairment stemming from
tumors, acquired immunodeficiency syndrome (AIDS),
autoimmune diseases and use of immunosuppressive
drugs\textsuperscript{6-11}.

The clinical characteristics of herpes zoster may be
divided into three phases: prodromal, acute and chronic.
During initial viral replication, active ganglionitis develops
and results in neural necrosis and severe pain, responsible
for the prodromal symptom of intense pain that precedes
skin eruption in more than 90\% of the cases. As the virus
spreads along the nerve, pain worsens and manifests as
burning, perforating, cutting, itching and/or discomfort
on the dermatome, which is the area of the epithelium
supplied by the affected sensory nerve. Before the onset
of mucous and/or skin lesions, the patient may also
experience malaise, headache and fever, in addition to the
prodromal pain\textsuperscript{2-3}.

The acute phase begins when clusters of blisters
with erythematous base appear on the affected skin area.
After some time, these blisters begin to pustulate and
ulcerate. Crusts develop usually 7 days after blister onset,
along the path of the affected sensory nerve, and ends
at the midline. The rash in healthy individuals resolves
within 2 or 3 weeks, leaving hypo- or hyperpigmentation
marks. It is usually necessary and extremely important
to work with a multidisciplinary team. The presence of
lesions on the tip of the nose may indicate involvement of
the ophthalmic branch of the trigeminal nerve, with consequent ocular involvement. In these cases, intervention by an ophthalmologist is essential\textsuperscript{2}.

The chronic phase is associated with postherpetic
neuralgia, a denomination that refers to the pain that persists for more than 3 months after the initial manifestation on the skin. The pain is localized, continuous, throbbing, stabbing and burning. Most of the neuralgia subsides within one year\textsuperscript{2}.

Shingles vaccine (Zostavax, Merck Sharp and
Dohme, Haarlem, Netherlands) contains live, attenuated varicella-zoster virus. However, this vaccine is not 100% efficient. Zostavax contains a higher dosage of the vaccine virus than the chickenpox vaccine, and the results are considered good. The vaccine reduces the risk of developing herpes-zoster by 51\%\textsuperscript{12-14}.

The objective of the present study is to report
the clinical case of a female patient aged 28 years who
developed herpes-zoster.

\textbf{CASE REPORT}

A 28-year old woman visited the Integrated
Dental Clinic of the University Center of Pará (CESUPA)
complaining of intense pain, toothache and left facial
swelling (Figure 1). Her medical history included signs and
symptoms of varicella zoster (chickenpox) in childhood.
The patient reported that her initial symptoms were
toothache and intense facial pain, burning and itching.
Later, blisters appeared, which later became ulcers.
The patient applied chicken fat with sulfur on the
affected area. Extraoral signs included facial swelling
with unilateral ulcers, blisters and pustules resulting
from secondary infection, indicating involvement of the
ophthalmic, maxillary and mandibular branches of the
trigeminal nerve (Figure 2). Intraoral signs included white
plaques and ulcers on the left palate, not crossing the
midline, and left buccal mucosa (Figure 3). Based on the
patient's clinical manifestations and medical history, the
diagnosis was herpes-zoster. The prescribed treatment
included a systemic antiviral drug, Penvir® (Famiclovir,
Sigma Pharma, Hortolândia, Brazil) at a dosage of two
125mg capsules at 8-hour intervals, a topical antiviral
ointment, Penciclovir (Sigma Pharma, Hortolândia, Brazil),
to be applied on the area at 2-hour intervals, and four
10mg sublingual tablets a day of ketorolac trometamol
to relieve pain. The patient improved significantly
with pharmacological treatment. The oral lesions
disappeared after 80 (eighty) days and did not leave
sequelae. However, although the skin in the affected
area was still healing, it already presented hypo- and
hyperpigmentation marks, probably stemming from the
secondary infection. Facial swelling also resolved (Figure
4).

Before signing the free and informed consent
form, the patient was informed that her pictures would
DISCUSSION

The prevalence of varicella-zoster virus reactivation varies from 10 to 20%. It increases significantly after age 60 years with children representing less than 5% of the cases\textsuperscript{1-2,15}. The present case occurred in a 28-year-old patient and so is not in the most affected age group according to the literature.

The main complaints of the patient were intense pain on the left side of the face and toothache in the affected region. The affected tissues were significantly swollen. These signs and symptoms were compatible with other published case reports\textsuperscript{1-3}.

Although the disease can be perfectly diagnosed based on history and clinical picture, a classical ELISA assay can be used to confirm herpes zoster diagnosis by determining serum levels of IgG and IgM antibodies. IgG seroconversion or a significant increase in IgG titer/index between two paired samples, collected ten days apart, suggest recent infection\textsuperscript{16-19}. During the medical history, the patient reported that she had already had chickenpox and that the present disease began with toothache, burning, itching and intense pain on the left side of the face. Later blisters appeared, which then became ulcers, manifestations described by Neville & Damm\textsuperscript{2}.
Many opportunistic infections in human immunodeficiency virus (HIV)-infected patients are caused by the herpes group of viruses, presenting in the primary form or as recurrent herpes, especially in infected children. These viral infections increase both HIV dissemination and expression, debilitating the patient’s immune response. Therefore, it is important to determine if the patient with herpes zoster is infected by HIV. The patient of the present study is not infected with HIV, contrary to other clinical cases reported in the literature.

Involvement of the trigeminal nerve manifests by the formation of oral lesions in the mobile or attached mucosa. Often, the lesions extend to the midline and occur together with skin lesions that cover the affected quadrant. Oral lesions are white, opaque, range in diameter from 1 to 4 mm and proceed to form shallow ulcers. Additionally, teeth in the affected area may devitalize, there may be significant bone necrosis and permanent blindness may also ensue. The clinical picture of the patient consisted of blisters and pustules on erythematous bases and considerable edema along the path of the left trigeminal nerve. There were also white plaques and ulcerations in the left palate and buccal mucosa, not crossing the midline, which corroborates other literature reports. The homemade treatment used by the patient consisted of topical application of chicken fat mixed with sulfur. This homemade remedy hindered the healing process and probably caused the secondary infection present in the affected region, which culminated with the formation of fibrous scar tissue.

Initial treatment with appropriate antiviral drugs accelerates the healing process of the skin and mucosal lesions and reduces the duration of acute pain and postherpetic neuralgia. Once the skin lesions heal, neuralgia may become the worst aspect of the disease and it is usually hard to resolve it successfully. This intense pain is usually treated with systemic and preferably topical painkillers but there are other methods available, such as physical medicine, psychotherapy, occupational therapy and anticonvulsant drugs (carbamazepine, phenytoin and sodium valproate). The treatment of the present case was based on the literature and consisted of systemic and topical antiviral drugs and painkillers. However, topical and systemic antiviral drugs, such as acyclovir and vidarabine, only relieve the symptoms of existing lesions; they do not exterminate the virus.

It is important to point out that the amino acid L-lysine can significantly reduce herpes simplex virus 1 (HSV1) replication (herpes labialis) and healing time in animals. However, controlled clinical trials in larger samples are necessary to confirm its efficiency against herpes labialis and herpes zoster.

Finally, it is extremely important to encourage all health professionals who have a negative or doubtful history of the disease or negative serology to receive immunization since, according to the literature, there has been a case of herpes zoster transmission from a patient with active lesions to a health provider. Therefore, occupational risks exist in healthcare facilities, and they need to be dealt with conscientiously and responsibly. The entire staff should be tested for varicella-zoster virus and the facility must have an effective vaccination program.

CONCLUSION

The diagnosis of this disease is clinical. Therefore, the health professional needs to be attentive to its manifestations to diagnose it early and correctly and provide appropriate treatment.

Preventive measures should be used to prevent primary infection by the varicella-zoster virus. This may be achieved by implementing measures that prevent the exposure of patients to the virus, passive immunization (vaccine), active immunization or use of antiviral drugs after exposure.

When the clinical form of the disease is present, institution of treatment and patient education are extremely important to minimize or prevent sequelae, especially with regard to appropriate healing and preservation of the affected tissues.

Collaborators

MM BADARÓ, ISV MARQUES and MSS KATAOKA conceived and helped to write the article. MGR PINHEIRO and AI ATHAYDE treated the patient and helped to write the article. JJV PINHEIRO supervised the study and helped to write the article.
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