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# Herpes zoster ophthalmicus in geriatric with malnutrition: A case report



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## ABSTRACT

**Background:** Herpes zoster ophthalmicus (shingles) is a reactivation of latent Varicella Zoster Virus (VZV) affecting the ophthalmic branch of the trigeminal nerve. One of the risk factors that can cause reactivation of shingles are aging and immunosuppression conditions such as malnutrition.

**Case:** We reported a case of 75 years old patient with stabbing pain dan stinging sensation on the left forehead with a Visual Analog Scale (VAS) score of 3. Body mass index was calculated and showed underweight status (malnutrition). Dermatological examination showed erythematous, well-defined macules to patch, topped with a blackish-brown crust, with multiple erosions at some part over the left frontal region, superior palpebra and the parietal area (following the dermatome of the ophthalmic branch of the trigeminal nerve). The patient was given oral acyclovir, oral methylprednisolone, gabapentin,

amitriptyline and vitamin B. The lesions were compressed with saline solution. The patient was also given high calories and protein intake to fix nutrition status. These interventions showed significant improvement of the lesions.

**Discussion:** The incidence and severity of shingles increases in geriatric patients. This can also be explained because aging is associated with a greater susceptibility of nutritional deficiency which can suppress specific and non-specific immunity. Nutritional conditions in herpes zoster patients can influence the severity and incidence of postherpetic neuralgia as well.

**Conclusion:** The purpose of reporting this case is to discuss nutritional status is an important factor that must be considered in dealing with the incidence of herpes zoster as to reduce the incidence of postherpetic neuralgia.

**Keywords:** Herpes Zoster Ophthalmicus, malnutrition, geriatric

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## INTRODUCTION

Herpes zoster is an infection caused by reactivation of latent varicella-zoster virus (VZV) in the sensory ganglion. The manifestation of herpes zoster is characterized by a painful group of vesicles on an erythematous base with a unilateral distribution, limited to dermatomes that conserved by a sensory nerve ganglion.<sup>1-3</sup> Ophthalmic herpes zoster is the reactivation of VZV, which affects the ophthalmic branch of the trigeminal nerve, which occurs in 10% to 25% herpes zoster patients. Clinical manifestations of ophthalmic herpes zoster are periorbital vesicular eruption accompanied by conjunctivitis, keratitis, uveitis and paralysis of the ocular cranial nerve.<sup>6</sup>

Incidence of herpes zoster increased with age. Two-thirds of herpes zoster cases occur above the age of 50 years old, and those over 70 years old have a fourfold increase risk of herpes zoster than those under 60 years old.<sup>4</sup> In dermato-venereology outpatient department Sanglah General Hospital, Denpasar, there were 29 new cases of herpes zoster and 9 cases of ophthalmic herpes zoster during January to July 2019.<sup>5</sup>

Other than increased age, reactivation of VZV are most common in immunosuppressed

conditions such as diabetes mellitus, leukemia, human immunodeficiency virus (HIV) infection, lymphoma, undergoing chemotherapy, radiotherapy, immunosuppressive drugs and malnutrition.<sup>1</sup>

We reported a case of herpes zoster ophthalmicus sinistra in an elderly patient with malnutrition. This case is reported to increase knowledge about risk factors and management of ophthalmic herpes zoster in geriatric with malnutrition cases.

## CASE

We reported 75 years old Balinese, Indonesia male, with the chief complaint of black crust and pain on the left forehead.

From history-taking, eight days before hospitalization, the patient noticed clustered blisters containing clear fluid, which was preceded by pain over the forehead and the left eyelid. The pain was described as stabbing and burning sensation throughout the day and night, interfering sleep. Six days before the consult, the blisters were noted to become cloudy. Four days before the consult, these cloudy blisters ruptured and turned into sores and crust. The patient also noted swelling of the left eyelid and left eye was difficult to open. No fever

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was noted. Due to persistence pain and lesions, the patient was then brought to Sanglah General Hospital.

For past medical history, the patient has ever consulted to the traditional physician and given traditional medicine, but no improvement was noted. The patient also consulted to General Hospital in Tabanan, was given vitamin of B1, B6, B12 and mefenamic acid, no improvement was noted. The patient has never had similar symptoms before. The patient had a history of chickenpox during childhood. History of systemic diseases such as diabetes, kidney or liver diseases and any history of malignancies were denied.

For social history, the patient is a farmer who works daily in a rice field. Before the appearance of the lesions, the patient was exhausted because of the harvest season and attended the traditional ceremony, which requires him to stay up for three days in a row. The patient was married, and there was no history of sexual intercourse with other partners. History of tattoos was denied. The patient only consumes rice and vegetable dishes every day.

On physical examination, we found a general state of weakness, compos mentis awareness and has a normal vital sign and visual analog scale (VAS) score of 3. The patient was found to be underweight with Body Mass Index (BMI) of 17.99 kg/m<sup>2</sup>. (His height was 165cm, and body weight was 49 kilograms) Physical examination showed erythema and oedema in the left eyelid and purulent secretion over the left eye. Another physical examination was found to be normal.

Dermatological examination showed erythematous macules with ill-defined margin and geographical shaped, size 8 × 15 cm, covered with blackish crusts. At several areas, there were multiple erosions, geographical shaped, varying size from 1 × 1 cm to 5 × 6 cm. These lesions were located over the frontal region, superior palpebra, parietal

sinistra according to the dermatome of the left ophthalmic branch of the trigeminal nerve.

### Gram staining at the base of erosion was found to be sterile

History taking and dermatological examination lead to the working diagnosis of herpes zoster ophthalmic sinistra. The patient was then admitted and was given NaCl 0.9% 20 drops per minute intravenously, high-calorie and high-protein diets, intraoral medications such as acyclovir 800 milligrams of tablets every 4.5 hours for seven days, methylprednisolone 16 milligrams every 12 hours, gabapentin 100 milligrams tablets every 12 hours, amitriptyline 25 milligrams tablets every 24 hours at night, vitamin B1, B6, and B12 tablets every 24 hours. For topical treatment, the patient was given 0.9% NaCl fluid compress every 8 hours for 15 minutes over the erosions. Patient and families were given communication, information and education (CIE) about the disease, treatment, possible complications and the importance of consuming enough water and the protein and calories.

The patient was then referred to the ophthalmology department due to redness and pain over the left eye. Physical examination showed visual acuity of 2/60 for both eyes, spasm on left eye palpebra, there're crust, pus, excoriation, and hyperemia. There were Conjunctival Vascular Injection and Pericorneal vascular injection in left eye conjunctiva. There was also an erosion of the left cornea. Both iris were round and regular, pupillary reflexes of both eyes were positive normal, the lens of both eyes looks cloudy, vitreous of both eyes clear, and fundal reflexes of both eyes were positive. The working diagnosis of the patient from the ophthalmology department was ophthalmic herpes zoster ocular sinistra with punctate keratitis, immature senile cataracts of the right and left oculi. Management conducted for the patient were collaborative care, eye toilet every day, lubricant eye drops containing sodium chloride, potassium chloride (1 drop every 4 hours) on the left eye, gentamicin eye drops (1 drop every 8 hours) on the left eye.

### Follow Up

On 12<sup>th</sup> day of observation, pain in the forehead had decreased in intensity and did not interfere with activities or rest at night. There is no sign of stinging pain on the skin when being touch or by a light intervention. Lesions were healed, and the patient can open his left eye completely.

On physical examination, VAS score has decreased to 1, bodyweight of the patient increases to 50.5 kilograms, and Body Mass Index (BMI) of 18.54 kg/m<sup>2</sup> (within normal limit) is obtained.



**Figure 1, 2 and 3** At frontal, superior palpebra, and parietal sinistra region. Efflorescence: Multiple ill-defined erythematous macules, geographical shaped, vary in size, with brownish crusts and erosional lesions above erythematous skin



**Figure 4, 5 and 6** At frontal, superior palpebra, and parietal sinistra region. Efflorescence: Multiple, well-defined borders, hypo-hyperpigmentation macules, there are some lesions covered with a blackish-brown crust

Dermatological examination showed multiple, well-defined, geographical shaped hypo to hyperpigmentation macules, diameter ranging from  $2 \times 3\text{ cm} - 5 \times 8\text{ cm}$ , covered by blackish brown crusts. These lesions were located over the frontal region, superior palpebra, parietal sinistra according to the dermatome of the left ophthalmic branch of the trigeminal nerve.

The working diagnosis was follow-up ophthalmic herpes zoster sinistra, improved. The patient was given Gabapentin 100 milligrams of tablets every 24 hours and B1, B6, B12 multivitamin tablets every 24 hours intraorally. Patient and families were educated about balance dietary meal.

The working diagnosis from the ophthalmologic department is ophthalmic herpes zoster, improved accompanied by immature senile cataracts on both eyes. The patient was given lubricant eye drops one drop every 4 hours over the left eye.

## DISCUSSION

Shingles is an acute vesicular eruption caused by reactivation of VZV. Primary VZV infection will cause varicella disease characterized by fever and generalized vesicular skin lesions. VZV will be on the latent period in the dorsal ganglion after primary infection, and the presence of precipitating factors can cause reactivation of VZV in the form of herpes zoster.<sup>1,7</sup> Ophthalmic herpes zoster is the reactivation of VZV which affects the trigeminal nerve of the ophthalmic branch, where inflammation of the eye, intraneural and perineural inflammation of the sensory nerve can be found.<sup>8</sup>

The diagnosis of ophthalmic herpes zoster can be made directly if a skin eruption is found in the form of erythematous macules with clustered vesicles along the dermatome.<sup>9</sup> The most frequent eye involvement is conjunctivitis with complaints,

and eye examination found swelling of the eyelids, oedema and conjunctival injection.<sup>10</sup>

The additional examination that can be done to help establish the diagnosis of herpes zoster include tzanck smear from vesicle lesions. In tzanck smear with Giemsa staining will found the multinucleated giant cell.<sup>10</sup>

The diagnosis of ophthalmic herpes zoster is made based on history taking and physical examination. Anamnesis obtained the presence of clustered blister in the forehead and left eyelid accompanied by pain and burning sensation. After four days the blister turns into erosion and crust, and there's a history of fatigue before the lesions appeared. A past medical history obtained that he had experience chickenpox disease during childhood. From physical examination found that, on frontal sinistra, superior palpebra sinistra and parietal sinistra region there're unilateral macules, erosions and crusts in the area conserved by the trigeminal cranial nerve of the ophthalmic branch. Then the patient is consulted to the ophthalmology department. It was hyperemic palpebra, pus, crust, and positive CVI on the left eye was found from the examination.

The mechanism of VZV reactivation is still not fully understood, but this reactivation is usually associated with increasing age and immunosuppression condition. VZV reactivation is affected by aging, and conditions that can cause immunosuppression such as malnutrition.<sup>11,12</sup>

One of the main components of the immune system that play an important role in suppressing the VZV virus activity is cellular immunity, namely T cells (lymphocytes) that produced by lymph nodes. One of the major changes that occur with age is the thymic involution process. Over time, many T lymphocytes lose their function and ability against the disease. Generally, the number of lymphocytes do not decrease much in the elderly, but the structures of lymphocytes and their activity against infection decreases, which make the elderly more vulnerable against infection. Substantial changes in functional and phenotypic profiles of T cells are reported with aging process. Aging also influences leukocyte activity, including macrophages, monocytes, neutrophils, and eosinophils. The decrease in the function of T cells and monocytes as a defence against viruses can trigger VZV reactivation and cause herpes zoster.<sup>11</sup>

Elderly patients have a tendency to limit the dietary portion, mainly meat, so they are more prone to malnutrition. In our case, the patient is more likely to eat vegetable and no protein dishes, which leads to malnutrition. Malnutrition can lead to severe immunodeficiency in the elderly, which

affects not only in specific immunity (B lymphocytes and T lymphocytes) but also non-specific immunity (polymorphonuclear and monocytes). Elderly with malnutrition release fewer monokines which causes a decreased in the number of lymphocytes.<sup>12</sup> In underweight patients, there is also a hormonal imbalance, in the form of leptin and adiponectin produced by adipokine, where the leptin which stimulates pro-inflammatory factors is reduced. With the reduction of specific immunity and non-specific immunity, it caused decreased immunity to respond to infections such as in this patient. In a state of malnutrition in herpes zoster patients can also affect the severity and the incidence of postherpetic neuralgia. In our case, the patient is elderly and was suffering from malnutrition which tends to cause reactivation of VZV.

The therapy of ophthalmic herpes zoster is similar to the therapy of herpes zoster in general, which aims to reduce viral replication, accelerate healing, reduce pain, and prevent complications.<sup>13</sup> The management of ophthalmic herpes zoster includes main therapy and supporting therapy. The main therapy of herpes zoster is giving antiviral, while analgesics and topical therapy for both skin and eyes are given as supporting therapies.<sup>13-15</sup>

In this case, the patient was given oral Acyclovir for ten days, even though viremia period has passed, considering antiviral treatment accelerate healing and can reduce the incidence of postherpetic neuralgia.<sup>16-17</sup> However, monitoring the renal function and urine output are important especially in elderly patients, due to this drug is secreted through urine. B1, B6, B12 vitamin tablet is a neurotropic vitamin which increases myelination and axonal transport, resulting in the increase of peripheral nerve regeneration. Methylprednisolone act as an anti-inflammatory agent which reduce inflammation thereby is expected to reduce the incidence of postherpetic neuralgia.<sup>16-17</sup> Gabapentin acts as an analgesic agent who works by reducing the excretion of neurotransmitters, resulting in the reduction of neuropathic pain. Amitriptyline belongs to tricyclic anti-depressants group that works to inhibit the reuptake of serotonin and noradrenaline and reducing neuropathic pain through alpha-2 adrenergic receptors. Its sedative effect is useful, especially in patients who experience pain during the night, and can improve quality of sleep. Topically, lesions were compressed with 0.9% NaCl, which provides vasodilation, resulting in the reduce of pain and sign of inflammation and improve healing. For nutrition, the patient was given high calories and protein diet to improve immunity and reduce the incidence of postherpetic neuralgia. Since malnutrition is an important factor for healing, fixing the nutrition

status in this patient increases patient's immunity which leads to faster healing of the lesion and preventing postherpetic neuralgia. The patient was also given eye toilet every day, lubricant eye drops to decrease irritation, and Gentamicin eye drops to prevent secondary bacterial infection.

The prognosis of ophthalmic herpes zoster is generally good. However, recurrence can happen, especially in elderly and immunocompromised conditions.<sup>18</sup> In this case; the patient is a 75 years old male with malnutrition. Improving nutritional status in this patient accelerate healing and prevent the incidence of postherpetic neuralgia. Therefore, the prognosis for this patient is *dubius ad bonam*.

## CONCLUSION

We have reported a case of ophthalmic herpes zoster in a malnourished elderly patient. The diagnosis of ophthalmic herpes zoster is made based on history taking and physical examination. The main treatments given were antiviral and anti-inflammatory drugs to accelerate healing and prevent the occurrence of postherpetic neuralgia, analgesics to reduce pain, neurotropic vitamins for the neuroprotector and improvement of nutrition to restore the immune function of the patient. Improving the nutritional status increases immunity which leads to the reduction of the incidence of postherpetic neuralgia. The patient was also given eye lubrication and antibiotics to prevent bacterial infection. After giving these treatments, lesions were healed, and the intensity of the pain decreases. Upon 12 days follow up after therapy, there was no sign of postherpetic neuralgia and prognosis for this patient is *dubius ad bonam*.

## CONFLICT OF INTEREST

There is no competing interest regarding the manuscript.

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## AUTHOR CONTRIBUTION

All the authors are responsible for the study from the conceptual framework.

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