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# Characteristic of Herpes Zoster in the Dermatology and Venereology Department of Bali Mandara General Hospital

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## ABSTRACT

**Introduction:** Herpes zoster, known as shingles is a unilateral painful, dermatomal rash caused by the reactivation and multiplications of latent varicella zoster virus (VZV) in dorsal root ganglia. Recent studies have shown that the incidence of HZ is increasing globally. It is estimated of HZ global cumulative incidence rates in general population at least 50 years of age are between 2.9-19.5 cases per 1000 individuals.1

**Methods:** In this descriptive retrospective study from, 1st January 2019 to 31st December 2023, we used 93 samples from secondary data collected from the patient's medical records from the Dermatology and Venereology Department at Bali Mandara General Hospital. The data were analyzed descriptively using Microsoft Office Excel 2021.

**Results:** A total of 93 new patients were diagnosed with herpes zoster. From 93 patients were male predominance (53.76%). The highest age group was 45-64 years old in 40 patients (43.01%), followed by aged over 65 years old was 26 patients (27.96%). The most common sites of lesion were the thoracic region in 35 patients (37.63%), followed by the lumbar region in 23 patients (24.73%), ophthalmic region in 12 patients (12.90%), frontalis in 14 patients (15.05%), cervicalis in 8 patients (8.60%) and oticus region in 1 patient (1.08%). Majority of the patients have no risk factors in 66 patients (70.97%), followed by the most common risk factor was hypertension in 11 patients (11.83%), undergoing radiotherapy or chemotherapy in 4 patients (4.30%), post-operative cases in 3 patients (3.23%). The majority of patients had no complication with 45 patients (48.39%), followed by the most common complication is postherpetic neuralgia in 35 patients (37.63%), ocular complication in 9 patients (9.68%), cranial nerve palsy in 3 patients (3.23%), and Ramsay Hunt syndrome in 1 patient (1.08%).

**Conclusion:** Most herpes zoster patients in the Dermatology and Venereology Department, Bali Mandara General Hospital from January 2019 to December 2023 were predominantly male (53.76%), aged between 45-64 years old in 40 patients (43.01%), the most common sites of lesion was thoracic region in 35 patients (37.63%). The highest risk factor was hypertension in 11 patients (11.83%) and the most common complication was postherpetic neuralgia in 35 patients (37.63%).

***Keywords:*** characteristic herpes zoster, risk factor of herpes zoster, complication of herpes zoster

## INTRODUCTION

Herpes zoster (HZ) is a cutaneous viral disease that primarily affects elderly patients. It is characterized by a painful vesicular rash in a dermatomal distribution that results from reactivation and multiplication of latent VZV that persists within neurons following varicella.[2] The overall incidence rate of HZ found in Southeast Asia was 3-10 per 1000 people per year.[1] The incidence of HZ is determined by factors that influence the host-virus relationship and the presence of immune responses necessary to prevent the reaction of latent VZV. [2]

Herpes zoster is common, particularly in older adults, as age-related immune system decline makes it more likely for the virus to reactivate.[3] The incidence of HZ ranges from 1.2 to 3.4 per 1000 persons per year among younger adults to 3.9 to 11.8 per 1000 persons per year in elderly patients (i.e.> 65 years).[1] Other risk factors of HZ are in immunocompromised individuals. It includes patients with HIV, solid organ and bone marrow transplants, hematologic and solid tumor malignancies, and immune-mediated diseases such as systemic lupus erythematosus (SLE), rheumatoid arthritis, patients who undergo chemotherapy or therapy with immune modulators or corticosteroids, psoriasis, cardiovascular disease, diabetes mellitus, and hypertension.[1,4,5] Other factors reported to correlate with the risk of herpes zoster include female sex, physical trauma in affected dermatome, IL-10 gene polymorphism, family history of herpes zoster, and white race.[2]

Clinical symptoms appear in three stages - pre-eruptive, acute exudative, and chronic. The pre-eruptive stage presents with burning or pain within the affected dermatome at least 2 days prior to cutaneous eruptions. Headaches, general malaise, and photophobia may also be present at this stage. In the acute eruptive phase, multiple umbilicated and painful vesicles develop. The acute phase may last 2-4 weeks but the pain can continue longer. Chronic HZ infection is characterized by severe pain that lasts more than 4 weeks. At this stage, patients experience dysesthesia, paraesthesia, and sometimes shock-like sensations. The pain may last for several months.[1] Current treatment includes antiviral like acyclovir, famciclovir, and valacyclovir and patients often require pain management. Vaccination is the main strategy for the prevention of HZ especially in high-risk groups.[1]

HZ infection can lead to further complications. Several studies have found that the most frequent complication is post-herpetic neuralgia (PHN). Other common HZ complications include ocular, neurological, and cutaneous conditions.[6] The global disease burden of HZ is increasing worldwide and given the high burden of PHN and other complications, herpes zoster remains a priority for prevention efforts, especially in the population aged 50 and older where vaccination has been shown to be an effective prophylaxis measure to reduce the burden of disease.[7]

Based on the mentioned above, this study aims to identify the incidence of herpes zoster and the most common complication, as well as the distribution based on gender, age, risk factors, and location of lesions in patients at the Bali Mandara General Hospital from January 2019 to December 2023.

## METHODS

This study using descriptive retrospective drew data from registration book and Bali Mandara General Hospital central medical records. Employing a total sampling method. It encompassed all eligible medical records meeting inclusion and exclusion criteria. Inclusion criteria involved patients at the dermatology and venereology department who were diagnosed with herpes zoster within 2019-2023, detailing gender, age, location of the dermatome, risk factors, and complications. Excluded criteria were incomplete medical records and revisiting herpes zoster patients. All statistical

evaluations were conducted using Microsoft Office Excel 2021. The results were ultimately displayed through a table, along with calculations and percentages.

## RESULT

Based on research conducted at the Dermatology and Venereology Department at Bali Mandara Regional Public Hospital from January 2019 to December 2023 that met the criteria is 93 new cases. Based on gender, herpes zoster was found more frequent in males (50 patients, 53.76%) compared to females (43 patients, 46.24%). Herpes zoster frequency was highest among those aged 45-64 with 40 patients (43.01%), followed by those aged over 65 with 25 patients (27.96%), aged 25-44 years old with 19 patients (20,43%), and aged under 25 with 9 patients (8.60%).

Based on the location herpes zoster patients at Bali Mandara General Hospital, the majority are located in the thoracic region with 35 people (37.63%), followed by lumbar region with 23 patients (24.73%), frontalis region with 14 patients (15.01%), ophthalmic region with 12 patients (12.90%), cervical region with 8 patients (8.06%), and oticus region was 1 patient (1.08%).

The majority of herpes zoster patients at Bali Mandara Regional Public Hospital do not have accompanying risk factors, totaling 66 patients (70.97%). The most frequent risk factor found was hypertension in 11 patients (11.83%), patients undergoing radiotherapy or chemotherapy in 4 patients (4.30%), post-operative cases in 3 patients (3.23%), diabetes mellitus in 2 patients (2.15%), cardiovascular disease in 2 patients (2.15%), psoriasis in 2 patients (2.15%), HIV in 1 patient (1.08%), SLE in 1 patient (1.08%), and respiratory infection in 1 person (1.08%).

Most patients did not experience any complication of herpes zoster, totaling 45 patients (48.39%). The most common complication is post-herpetic neuralgia (PHN), occurring in 35 patients (37.63%), followed by ocular complications in 9 patients (9.68%), with conjunctivitis in 5 patients (5.38%), blepharoconjunctivitis in 3 patients (3.23%), and keratitis in 1 patient (1.08%). Moreover, 3 patients (3.23%) experienced the 7th cranial nerve palsy, and 1 patient (1.08%) had Ramsay Hunt Syndrome.

**Table 1. Distribution of patients**

| **Variables** | | **n (%)** | |
|---|---|---|---|
| **Gender** | | | |
| | Male | 0 | (53.76%) |
| | Female | 3 | (46.24%) |
| **Age (Years)** | | | |
| | < 25 | 8 | (8.60%) |
| | 25 - 44 | 9 | (20.43%) |
| | 45 -64 | 0 | (43.01%) |
| | ≥ 65 | 6 | (27.96%) |
| **Location** | | | |
| | Cervical | | (8.60%) |
| | Frontalis | 4 | (15.05%) |
| | Ophtalmicus | 2 | (12.90%) |
| | Thoracic | 5 | (37.63%) |
| | Lumbalis | 3 | (34.73%) |
| | Oticus | 1 | (1.08%) |
| **Risk Factor** | | | |
| | HIV/AIDS | 1 | (1.08%) |
| | Radiotherapy/ Chemotherapy | 4 | (4.30%) |
| | Systemic Lupus Erythematosus | 1 | (1.08%) |
| | Diabetes Mellitus | 2 | (2.15%) |

| | | | |
|---|---|---|---|
| | Hypertension | 1 | (11.83%) |
| | Cardiovascular disease | 2 | (2.15%) |
| | Psoriasis | 2 | (2.15%) |
| | Post-operative | 3 | (3.23%) |
| | Respiratory disease | 1 | (1.08%) |
| | No risk factor | 66 | (70.97%) |
| **Complication** | | | |
| | Postherpetic neuralgia | 5 | (37.63%) |
| | Ocular complication | 9 | (9.68%) |
| | Cranial nerve palsy | 3 | (3.23%) |
| | Ramsay Hunt Syndrome | 1 | (1.08%) |
| | No Complication | 5 | (48.39%) |

## DISCUSSION

In this study, the samples taken were all new case patients with a diagnosis of herpes zoster who came to the Dermatology and Venereology Department at Bali Mandara General Hospital from January 2019 to December 2023. It was found that the majority of herpes zoster patients were males (53.76% vs 46.24%). According to a systematic review reported that herpes zoster was more common in the female gender.[8] It is still unclear why the incidence is more common in women, but generally, it is reported that women seek treatment for their disease more often than men.[9]

The incidence of HZ increases in age leads to higher severity of HZ disease, especially after the age of 50 years, due to a decline in cell-mediated immunity as people age, a process known as immunosenescence. The incidence ranges from 3 to 5 cases per 1000 person-years in younger adults but rises dramatically to 8-12 cases per 1000 person-years in individuals aged 50 and above.[8] In our study, the age group 45-64 years old was found to have the highest, followed by the age group over 65 years old, 25-44 years old, and under 25 years old, respectively.

Besides older age, other risk factors of herpes zoster are immunocompromised individuals, infections, and mental stress.[10] In our study, we found that the most frequent risk factor or comorbidities that found was hypertension (11.83%), radiotherapy or chemotherapy (4.30%), post-operative cases (3.23%), diabetes mellitus (2.15%), cardiovascular (2.15%), psoriasis (2.15%), HIV (1.08%), SLE (1.08%), and respiratory infection (1.08%), respectively. In some populations such as those with compromised immune systems due to conditions like HIV, diabetes mellitus, cancer, or patients who undergo radiation therapy, bone marrow transplantation, immunosuppressive medication, or prolonged use of steroids, the incidence rates range from 14.5 to 53.6 per 1000 person-years compared to the general population.[5,11] In several studies, patients with psoriasis had a higher incidence of HZ compared to those without psoriatic disease. This is due to their underlying disease, immunosuppressive treatments for psoriasis, or may be influenced by both.[4] Moreover, several studies reported that diabetes mellitus and cardiovascular disease also play a role as a risk factor for herpes zoster. A large cohort study reported that dyslipidemia, prior myocardial infarction, and patients with heart failure especially men, have an increased risk of herpes zoster.[5]

The location of lesion in our study was found to have the highest proportion in the thoracic section, this is in accordance with the literature. HZ commonly affects the thoracic region up to 60% followed by cervical sites up to 20%. Moreover, HZ affecting the trigeminal nerve is involved in up to 20% of cases, particularly its ophthalmic branch, which can result in herpes zoster ophthalmic (HZO) and can lead to serious complications like vision loss.[11, 12]

HZ can lead to the development of various complications, including cutaneous, ocular, neurological, and visceral complications.[1,2] The most common complications of herpes

zoster that were found in Bali Mandara General Hospital were PHN, followed by ocular complication, cranial nerve VII palsy, and Ramsay Hunt syndrome, respectively. Herpes zoster infection can cause various neurological disorders such as PHN, nerve palsy, meningoencephalitis, stroke, radiculitis, polyneuritis, and transverse myelitis. PHN is the most common neurological complication of HZ characterized by intense pain after rash healing lasting for 90 days or more. Although the pain of PHN resolves within a year in the majority of cases, in some cases, it may persist for years and can impact the patient's quality of life.[3, 5, 13] It is reported patients with advanced age and weakened immune systems such as HIV or those undergoing immunosuppressive treatment, women, and patients with comorbidities such as diabetes mellitus, COPD, and heart failure are at higher risk developed PHN.[5]

Herpes zoster opthalmicus (HZO) affects the ophthalmic branch (V1) of the trigeminal nerve leading to ocular complaints such as keratitis, blepharitis, conjunctivitis, scleritis, uveitis, retinopathy, and are at risk of vision loss. VZV triggers immune-mediated damage across all layers of the cornea, leading to thinning, scarring, and neovascularization.[5] The main risk factors for HZO include age > 50 years and immunosuppression by drugs or disease.[13] Moreover, we found 1 patient with lesion located in the oticus, which then developed into a complication known as Ramsay Hunt syndrome. Ramsay Hunt syndrome is a less common but serious complication of HZ, representing <1% of all HZ cases. It is a subtype of HZ involving the geniculate ganglion and facial nerve (7th cranial nerve), characterized by unilateral facial palsy, otalgia, and painful vesicles on the auricle and/or external auditory canal.[5, 13]

## CONCLUSION

From the results of research conducted at the Dermatology and Venereology Department at Bali Mandara General Hospital for the period January 2019 to December 2023, it can be concluded that there were 93 new cases. Herpes zoster was mostly found in the age group 45-63 years, with male predominance (53.76%), the most common location of herpes zoster in the thoracic region was 35 cases (37,63%), hypertension was the most common risk factor (11.83%) and the most common complication was post-herpetic neuralgia (37.63%).

### *Declaration by Authors*

**Ethical Approval:** This ethical clearance number for this study is 077/EA/ KEPK.RSBM.DISKES/2024 was granted by the Bali Mandara General Hospital Ethics Commission.

**Author Contributions:**

Each author has contributed to the data collection, data analysis, assessment of the references, process of writing, and publication

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**Conflict of Interest:** The authors declare no conflict of interest.

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